Acquisition Directorate

Boulevard Léopold III
B-1110 Brussels, Belgium

NCIA/ACQ/2021/07655
08 February 2021

To: All Nominated Prospective Bidders

Subject: **INVITATION FOR BID NO. IFB-CO-115049-NCOP, AMENDMENT NO. 2, IMPLEMENTATION OF THE NATO COMMON OPERATIONAL PICTURE INCREMENT 2**

A. AC/4-D/2261 (1996 Edition)
B. AC/4-DS(2019)0019
C. NCI Agency NOI: NCIA/ACQ/2020/13095 dated 27 February 2020
D. IFB-CO-115049-NCOP NCIA/ACQ/2020/6743 dated 05 November 2020
E. IFB-CO-115049-NCOP-AMD1 NCIA/ACQ/2020/06469 dated 14 January 2021

Dear Madam/Sir,

1. The purpose of this Amendment 2 is to:

   a) Revise the IFB Bid Closing Date to ***March 8 2021*** from ***February 18 2021***

   b) Publish Release 1 of IFB Bidders' questions and NCI Agency answers

   c) Issue revised IFB documents (Book I Bidding Instructions)

2. With the exception of the revisions mentioned above, all other IFB documents remain unchanged from their original version as issued on 05 November 2020.

3. Prospective Bidders are advised that the NATO NCI Agency reserves the right to cancel this IFB at any time in its entirety and bears no liability for bid preparation costs incurred by firms or any other collateral costs if bid cancellation occurs.

4. The NCI Agency point of contact for all information concerning this IFB is Mr. Radu Munteanu, Contracting Officer, who may be reached at Radu.Munteanu@ncia.nato.int or by phone at +31 70 374 30 15.

FOR THE DIRECTOR OF ACQUISITION

Mr. Radu Munteanu
Contracting Officer

Radu Munteanu
Digitally signed by Radu Munteanu
Date: 2021.02.08 19:07:02 +01'00'

NATO Communications and Information Agency
Agence OTAN d'information et de communication
Avenue du Bourget 140
1140 Brussels, Belgium
www.ncia.nato.int

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IFB-CO-115049-NCOP Bidders List

Country	Vendor
BELGIUM	ATOS
	CISCO SYSTEMS BELGIUM
	DELOITTE CONSULTING and ADVISORY
	IBM BELGIUM
	RHEA SYSTEMS
	Creax
	Studiotech
	Brevco
	Hewlett-Packard Enterprise Belgium
BULGARIA	LIREX BG
	Scale Focus AD
CANADA	Compusult Limited
	Gausertec Inc
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	THALES SIX GTS FRANCE SAS
GERMANY	Atos Information Technology GmbH
	SYSTEMATIC GmbH
	Airbus Defense and Space GmbH
	CGI (Germany) Gmbh &Co.KG
	INFODAS GmbH
	Rohde & Schwarz GmbH & Co KG
GREECE	SCYTALYS SA
ITALY	ENGINEERING INGEGNERIA INFORMATICA
	VITROCISET SpA
LATVIA	DATI Group
ROMANIA	certSIGN
SPAIN	GMV
	FCC IIE
	EVERIS
	INDRA SISTEMAS, S.A.
NETHERLANDS	NCIM Groep
	UNI Business Centre B.V.
	Rohde & Schwarz

IFB-CO-115049-NCOP Bidders List

Country	Vendor
TURKEY	TUBITAK BILISIM VE
	HAVELSAN HAVA ELEKTRONIK
	SİMSOFT BİLGİSAYAR TEKNOLOJİLERİ
	SAVRONIK ELEKTRONIK SANAYI
UNITED KINGDOM	BAE Systems PLC
	Elbit Systems
	Garrison Technology
UNITED STATES	NetApp U.S. Public Sector, Inc.
	Environmental Systems Research Institute
Total :	**43**

INVITATION FOR BID

IFB-CO-115049-NCOP2

Implement Increment 2 of the NATO Common Operational Picture (NCOP)

NATO Communications and Information Agency

BOOK I

BIDDING INSTRUCTIONS

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Purpose

1.1.1 The purpose of this Invitation For Bid (IFB) is to award a Contract for the deployment of Increment 2 of the NATO Common Operational Picture (NCOP-2).

1.2 Project Scope

1.2.1 The scope of the NCOP-2 implementation entails the high level objectives:

- To plan and carry-out the installation of NCOP-2
- To carry out data migration from NCOP-1 to NCOP-2 for each organisational node
- To identify and analyse the training needs and prepare the training material
- To activate each authorised organisational node and deliver training to users
- To provide initial support and conduct OT&E to the core organisational nodes of NCOP-2 which have been authorised;

1.3 Overview of the Prospective Contract

1.3.1 The Prospective Contract (Book II) requires the selected Contractor to deliver the scope of the project described above. This will be achieved within the framework of the Contract resulting from this IFB by means of performance of Contract requirements and Work Packages that are further defined in the Statement of Work (SOW), Part IV to the Prospective Contract. Contract award (CAW) is planned for September 2021 with an Effective Date of Contract (EDC) planned for November 2021. Final System Acceptance (FSA) for the main implementation contract is scheduled for 30 months after Effective Date of Contract (EDC).

1.3.2 A Contract will be awarded for the work defined in the SOW, with Implementation at core sites being the Basic Contract, and the Implementation at additional sites being included as Firm Fixed Price options to the Contract.

1.4 Governing Rules, Eligibility, and Exclusion Provisions

1.4.1 This solicitation is issued in accordance with the Procedures for International Competitive Bidding set forth in the NATO document AC/4-D/2261(1996 Edition).

1.4.2 Pursuant to these procedures, bidding is restricted to companies from participating NATO member nations for which a Declaration of Eligibility has been issued by their respective government authorities.

1.5 Lowest Compliant Bidding (LCB) Evaluation Method

1.5.1 The evaluation method to be used in the selection of the successful Bidder under this solicitation is the Lowest Compliant Bidding Procedures set forth in AC/4-D/2261(1996 Edition).

1.5.2 The bid evaluation criteria and the detailed evaluation procedures are described in Section 0.

1.5.3 This IFB will not be subject to a public bid opening.

1.5.4 The Bidder shall refer to the Purchaser all queries for resolution of any conflicts found in information contained in this document in accordance with the procedures set forth in paragraph 2.6 “Request for IFB Clarifications”.

1.6 Security

1.6.1 This Invitation For Bid has been classified as NATO UNCLASSIFIED.

1.6.2 Contractor will be required to handle and store classified material to the level of “NATO SECRET” and the Contractor shall have the appropriate facility and personnel clearances. Should a Contractor be unable to perform the Contract due to the fact that the facility clearance has not been provided by their respective national security agency, this lack of clearance cannot be the basis for a claim of adjustment or an extension of schedule, nor the lack of clearance be considered a mitigating circumstance in the case of an assessment of Liquidated Damages or a determination of Termination For Default by the Purchaser.

1.6.3 Contractor personnel working at NATO sites are required to possess a security clearance of “NATO SECRET”. Contractor personnel without such a clearance, confirmed by the appropriate national security authority and transmitted to the cognisant NATO security officer at least fourteen (14) days prior to the site visit, will be denied access to the site. Denial of such access by the Purchaser may not be used by the Contractor as the basis for a claim of adjustment or an extension of schedule nor can the denial of access be considered a mitigating circumstance in the case of an assessment of Liquidated Damages or a determination of Termination for Default by the Purchaser. s

1.6.4 Bidders are advised that Contract signature will not be delayed in order to allow the processing of security clearances for personnel or facilities and, should the otherwise successful Bidder not be in a position to accept the offered Contract within a reasonable period of time, due to the fact that its personnel or facilities do not possess the appropriate security clearance(s), the Purchaser may determine the Bidder’s Offer to be non-compliant and offer the Contract to the next ranking Bidder. In such a case, the Bidder who would not sign the Contract shall be liable for forfeiture of the Bid Guarantee.

1.6.5 All documentation, including the IFB itself, all applicable documents and any reference documents provided by the Purchaser are solely to be used

for the purpose of preparing a response to this IFB. They are to be safeguarded at the appropriate level according to their classification and reference documents are provided “as is, without any warranty” as to quality or accuracy.

2 GENERAL BIDDING INFORMATION

2.1 Definitions

2.1.1 In addition to the definitions and acronyms set in the Clause 2 entitled "Definitions of Terms and Acronyms" of the NCI Agency Contract General Contract Provisions Book II, (Part III), the following terms and acronyms, as used in this IFB, shall have the meanings specified below:

2.1.1.1 **"Bidder"**: a firm, consortium, or joint venture which submits an offer in response to this solicitation. Bidders are at liberty to constitute themselves into any form of Contractual arrangements or legal entity they desire, bearing in mind that in consortium-type arrangements a single judicial personality shall be established to represent that legal entity. A legal entity, such as an individual, Partnership or Corporation, herein referred to as the "Principal Contractor", shall represent all members of the consortium with the NCI Agency and/or NATO. The "Principal Contractor" shall be vested with full power and authority to act on behalf of all members of the consortium, within the prescribed powers stated in an irrevocable Power of Attorney or equivalent issued to the "Principal Contractor" by all members associated with the consortium. Evidence of authority to act on behalf of the consortium by the "Principal Contractor" shall be enclosed and sent with the Bid. Failure to furnish proof of authority shall be a reason for the Bid being declared non-compliant.

2.1.1.2 **"Compliance"**: strict conformity to the requirements and standards specified in this IFB and its attachments.

2.1.1.3 **"Contractor"**: the awardee of this solicitation of offers, which shall be responsible for the fulfilment of the requirements established in the prospective Contract.

2.1.1.4 "**Firm of a Participating Country**": a firm legally constituted or chartered under the laws of, and geographically located in, or falling under the jurisdiction of a Participating Country.

2.1.1.5 "**IFB**": Invitation for Bid.

2.1.1.6 ''**Purchase**r'': The Purchaser is defined as the current NCI Agency or its legal successor.

2.1.1.7 "**Quotation" or "Bid**": a binding offer to perform the work specified in the attached prospective Contract (Book II).

2.2 Eligibility and Origin of Equipment and Services

2.2.1 As stated in paragraph 1.4.2 above only firms from a Participating Country are eligible to engage in this competitive Bidding process. In addition, all Contractors, sub-Contractors and manufacturers, at any tier, must be from Participating Countries.

2.2.2 In addition, all Contractors, sub-Contractors and manufacturers, at any tier, must be from Participating Countries.

2.2.3 None of the work, including project design, labour and services shall be performed other than by firms from and within Participating Countries.

2.2.4 No materials or items of equipment down to and including identifiable Sub-assemblies shall be manufactured or assembled by a firm other than from and within a Participating Country.

2.2.5 Unless otherwise authorised by the terms of the prospective Contract, the Intellectual Property Rights (IPR) to all design documentation and related system operating software shall reside in NATO member countries, and no license fees or royalty charges shall be paid by the Contractor to firms, individuals or governments other than within the NATO member community.

2.3 Bid Delivery and Bid Closing

2.3.1 All Bids shall be in the possession of the Purchaser at the address given below in paragraph 2.3.2 on/or before 12:00 hours (Brussels Time) on ~~January 27~~**March 8 2021** at which time and date Bidding shall be closed.

2.3.2 Bids shall be delivered to the following email address, which will generate an automatic confirmation of receipt:

IFB-CO-115049-NCOP2.Bids@ncia.nato.int. POCs are shown at 2.5.1.

2.3.3 Late Bids

2.3.3.1 Bids which are delivered to the Purchaser after the specified time and date set forth above for Bid Closing are "Late Bids" and shall not be considered for award. Upon receipt of a late bid. The sender shall be notified that their bid arrived after bid closing.

2.3.3.2 *Consideration of Late Bid* – The Purchaser considers that it is the responsibility of the Bidder to ensure that the Bid submission arrives by the specified Bid Closing Date and Time.

2.3.3.3 A late Bid shall only be considered for award under the following circumstances: The Bid was sent to the email address specified in the IFB and delay was solely the fault of the Purchaser.

2.4 Requests for Extension of Bid Closing Date

2.4.1 Bidders are informed that requests for extension to the closing date for the IFB shall be submitted by the Bidder only through its respective country's NATO Delegation or Embassy to the Purchaser POC indicated in paragraph 2.5.1 below. In accordance with AC/4-D/2261 Final (July 1996 Edition) any request for extension shall be submitted by the respective NATO Delegation or Embassy **no later than fourteen (14) days** prior to the established Bid closing date. The Purchaser is under no obligation to answer requests submitted after this time. Bidders are advised to submit their request in sufficient time as to allow their respective NATO Delegation or Embassy to deliver the formal request to the Purchaser within the above time limit.

2.5 Purchaser's Point of Contact

2.5.1 The Purchaser point of contact for all information concerning this IFB is:

Mr. Radu Munteanu
NATO Communications and Information Agency/Acquisition Directorate
Email : radu.munteanu@ncia.nato.int
Tel: +31 70 374 30 15

Alternate: Mrs. Emira Kapetanovic
NATO Communications and Information Agency/Acquisition Directorate
Email : emira.kapetanovic@ncia.nato.int
Tel: +32 2 707 8582

Bid Delivery E-mail: IFB-CO-115049-NCOP2.Bids@ncia.nato.int

Clarifications E-Mail: IFB-CO-115049-NCOP2.Clarifications@ncia.nato.int

Bid Guarantee Delivery E-mail: TreasuryVendorBank.Finance@ncia.nato.int

2.6 Request for IFB Clarifications

2.6.1 Bidders, at the earliest stage possible during the solicitation period, are encouraged to query and seek clarification of any matters of a Contractual, administrative and technical nature pertaining to this IFB.

2.6.2 All questions and requests for clarification shall be forwarded to the Purchaser via email using the Clarification Request Form provided at BOOK I - ANNEX D of this Book I. Such questions shall be forwarded to the point of contact specified in paragraph 2.5.1 above and shall arrive **not later than twenty eight (28) calendar days** prior to the stated "Bid Closing Date". The Purchaser is under no obligation to answer requests for clarification submitted after this time. Requests for clarification must address the totality of the concerns of the Bidder, as the Bidder will generally not be permitted to revisit areas of the IFB for additional clarification except as noted in paragraph 2.6.3, below.

2.6.3 Additional requests for clarification are limited only to the information provided as answers by the Purchaser to Bidder requests for clarification. Such additional requests shall arrive not later than eighteen (18) calendar days before the established Bid Closing Date.

2.6.4 It is the responsibility of the Bidders to ensure that all Clarification Requests submitted bear no mark, logo or any other form or sign that may lead to reveal the Bidders' identity in the language constituting the clarification itself. This prescription is not applicable to the means used for the transmission of the clarification (i.e. email or form by which the clarification is forwarded).

2.6.5 The Purchaser declines all responsibilities associated to any and all circumstances regardless of the nature or subject matter arising from the Bidders' failure or inability to abide to the prescription in paragraph *2.6.4*.

2.6.6 The Purchaser may provide for the removal of any form of identification in the body of the clarification request in those instances in which such practice is feasible as well as providing for a re-wording of the clarification request in those cases in which the original language submitted is deemed ambiguous, unclear, subject to different interpretation or revelatory of the Bidder's identity.

2.6.7 Bidders are advised that subsequent questions and/or requests for clarification included in a Bid shall neither be answered nor considered for evaluation and may be considered by the Purchaser as grounds for a determination of non-compliance.

2.6.8 Except as provided above, all questions will be answered by the Purchaser and the questions and answers (but not the identity of the questioner) will be issued in writing to all prospective Bidders. The Bidders shall immediately inform the Purchaser in the event that submitted question are not reflected in the answers published.

2.6.9 The published answers issued by the Purchaser shall be regarded as the authoritative interpretation of the IFB. Amendment to the language of the IFB included in the answers shall be incorporated by the Bidder in his offer.

2.6.10 Where the extent of the changes implied by the response to a clarification request is of such a magnitude that the Purchaser deems necessary to issue revised documentation, the Purchaser will do so by the mean of the issuance of a formal IFB Amendment in accordance with paragraph *2.8* below.

2.6.11 The Purchaser reserves the right to reject clarification requests clearly devised or submitted for the purpose of artificially obtaining an extension of the Bidding time (i.e. clarifications re-submitted using different wording where such wording does not change the essence of the clarification being requested).

2.7 Requests for Waivers and Deviations

2.7.1 Bidders are informed that requests for alteration to, waivers, or deviations from the terms and conditions of this IFB and attached Prospective Contract (Book II) will not be considered after the request for clarification process. Requests for alterations to the other requirements, terms or conditions of the IFB or the Prospective Contract may only be considered as part of the clarification process set forth in paragraph *2.6* above. Requests for alterations to the specifications, terms and conditions of the Contract which are included in a Bid as submitted may be regarded by the Purchaser as a qualification or condition of the Bid and may be grounds for a determination of non-compliance.

2.8 Amendment of the IFB

2.8.1 The Purchaser may revise, amend or correct the terms, conditions and/or specifications and provisions of the IFB at any time prior to the date set for the Bid Closing. Any and all modifications will be transmitted to all Bidders

by an official Amendment designated as such and signed by the Contracting Authority. Such Amendment may be accompanied by an acknowledgement of receipt which the Bidder shall complete and forward to the Purchaser. This process may be part of the clarification procedures set forth in paragraph 2.6 above or may be an independent action on the part of the Purchaser.

2.8.2 The Purchaser will consider the potential impact of Amendments on the ability of prospective Bidders to prepare a proper Bid within the allotted time. The Purchaser may extend the "Bid Closing Date" at its discretion and such extension will be set forth in the Amendment document.

2.8.3 All revision or Amendments issued by the Purchaser shall also be acknowledged by the Bidder in its Bid by completing the “Annex B-2 – Acknowledgement of Receipt of IFB Amendments and Responses to Clarification Requests at Annex B-2 – Acknowledgement of Receipt of IFB Amendments and Responses to Clarification Requests. Failure to acknowledge receipt of all Amendments may be grounds to determine the Bid to be non-compliant.

2.9 Modification and Withdrawal of Bids

2.9.1 Bids, once submitted, may be modified by Bidders, but only to the extent that the modifications are in writing, conform to the requirements of the IFB, and are received by the Purchaser prior to the exact time and date established for Bid Closing. Such modifications shall be considered as an integral part of the submitted Bid.

2.9.2 Modifications to Bids which arrive after the Bid Closing Date will be considered as "Late Modifications" and will be processed in accordance with the procedure set forth above concerning "Late Bids", except that unlike a "Late Bid", the Purchaser will retain the modification until a selection is made. A modification to a Bid which is determined to be late will not be considered in the evaluation and selection process. If the Bidder submitting the modification is determined to be the successful Bidder on the basis of the unmodified Bid, the modification may then be opened. If the modification makes the terms of the Bid more favourable to the Purchaser, the modified Bid may be used as the basis of Contract award. The Purchaser, however, reserves the right to award a Contract to the apparent successful Bidder on the basis of the Bid submitted and disregard the late modification.

2.9.3 A Bidder may withdraw its Bid at any time prior to Bid Opening without penalty. In order to do so, an authorised agent or employee of the Bidder must provide an original statement of the firm's decision to withdraw the Bid ~~and remove the Bid from the Purchaser’s premises~~.

2.9.4 Except as provided in paragraph 2.10.4.2 below, a Bidder may withdraw its Bid after Bid Opening only by forfeiture of the Bid Guarantee.

2.10 Bid Validity

2.10.1 Bidders shall be bound by the term of their Bids for a period of twelve (12) months starting from the Bid Closing Date specified in paragraph 2.3.1 above.

2.10.2 In order to comply with this requirement, the Bidder shall complete the Annex B-4 – Certificate of Bid Validity set forth in paragraph 6.4. Bids offering less than the period of time referred to above for acceptance by the Purchaser may be determined to be non-compliant.

2.10.3 The Purchaser will endeavour to complete the evaluation and make an award within the period referred to above. However, should that period of time prove insufficient to render an award, the Purchaser reserves the right to request an extension of the period of validity of all Bids which remain under consideration for award.

2.10.4 Upon notification by the Purchaser of such a request for a time extension, the Bidders shall have the right to:

2.10.4.1 accept this extension of time in which case Bidders shall be bound by the terms of their offer for the extended period of time and the Bid Guarantee and Certificate of Bid Validity extended accordingly; or

2.10.4.2 refuse this extension of time and withdraw the Bid, in which case the Purchaser will return to the Bidder its Bid Guarantee in the full amount without penalty.

2.10.5 Bidders shall not have the right to modify their Bids due to a Purchaser request for extension of the Bid validity unless expressly stated in such request.

2.11 Bid Guarantee

2.11.1 The Bid Guarantee shall be submitted by email to the Purchaser either directly by a banking institution or from the Bidder to the email address specified in section 2.5. In either case, the Bidder shall provide an additional copy of the Bid Guarantee in the Bid Administration Volume. Bidders are reminded that the Bid Guarantee shall reflect any extensions to the Bid Validity Date due to extensions in the Bid Closing Date.

2.11.2 The Bidder shall furnish with its Bid a guarantee in an amount equal to **Three Hundred Thousand Euros (€300,000**). The Bid Guarantee shall be substantially similar to BOOK I - ANNEX C as an irrevocable, unqualified and unconditional Standby Letter of Credit (SLC) issued by a Belgian banking institution fully governed by Belgian legislation or issued by a non-Belgian financial institution and confirmed by a Belgian banking institution fully governed by Belgian legislation. In the latter case signed original letters from both the issuing institution and the confirming institution must be provided. The confirming Belgian bank shall clearly state that it will guarantee the funds, the drawing against can be made by the NCI Agency at its premises in Belgium. Bid Guarantees shall be made payable to the Treasurer, NCI Agency.

2.11.3 Alternatively, a Bidder may elect to post the required Guarantee by certified cheque. If the latter method is selected, Bidders are informed that the Purchaser will cash the cheque on the Bid Closing Date or as soon as possible thereafter.

2.11.4 If the Bid Closing Date is extended after a Bidder's financial institution has issued a Bid Guarantee, it is the obligation of the Bidder to have such Bid Guarantee (and confirmation, as applicable) extended to reflect the revised Bid Validity date occasioned by such extension.

2.11.5 Failure to furnish the required Bid Guarantee in the proper amount, and in the proper form and for the appropriate duration by the Bid Closing Date may be cause for the Bid to be determined non-compliant.

2.11.6 In the event that a Bid Guarantee is submitted directly by a banking institution, the Bidder shall furnish a copy of said document in the Bid Administration Package.

2.11.7 The Purchaser will make withdrawals against the amount stipulated in the Bid Guarantee under the following conditions:

2.11.7.1 The Bidder has submitted a Bid and, after Bid Closing Date (including extensions thereto) and prior to the selection of the lowest compliant price Bid, withdraws its Bid, or states that he does not consider its Bid valid or agree to be bound by his Bid; or

2.11.7.2 The Bidder has submitted a lowest compliant price bid, but the Bidder declines to sign the Contract offered by the Agency, such Contract being consistent with the terms of the IFB;

2.11.7.3 The Purchaser has offered the Bidder the Contract for execution but the Bidder has been unable to demonstrate compliance with the security requirements of the Contract within a reasonable time; or

2.11.7.4 The Purchaser has entered into the Contract with the Bidder but the Bidder has been unable or unwilling to provide the Performance Guarantee required under the terms of the Contract within the time frame required.

2.11.8 Bid Guarantees will be returned to Bidders as follows:

2.11.8.1 to non-compliant Bidders forty-five (45) days after notification by the Purchaser of a non-compliant Bid (except where such determination is challenged by the Bidder; in which case the Bid Guarantee will be returned forty-five (45) days after a final determination of non-compliance);

2.11.8.2 to all other unsuccessful Bidders within thirty (30) days following the award of the Contract to the successful Bidder;

2.11.8.3 to the successful Bidder upon submission of the Performance Guarantee required by the Contract or, if there is no requirement for such a Performance Guarantee, upon Contract execution by both parties;

2.11.8.4 pursuant to paragraph 2.10.4.2 above.

2.11.9 “Standby Letter of Credit" or “SLC” as used herein, means a written commitment by a Belgian financial institution either on its own behalf or as

a confirmation of the Standby Letter of Credit issued by a non-Belgian bank to pay all or part of a stated amount of money, until the expiration date of the letter, upon presentation by the Purchaser of a written demand therefore. Neither the financial institution nor the Contractor can revoke or condition the Standby Letter of Credit. The term “Belgian financial institution” includes non-Belgian financial institutions licensed to operate in Belgium.

2.12 Cancellation of IFB

2.12.1 The Purchaser may cancel, suspend or withdraw for re-issue at a later date this IFB at any time prior to Contract award. No legal liability on the part of the Purchaser for payment of any sort shall arise and in no event will any Bidder have cause for action against the Purchaser for the recovery of costs incurred in connection with preparation and submission of a Bid in response to this IFB.

2.13 Electronic Transmission of Information and Data

2.13.1 The Purchaser will endeavour to communicate answers to requests for clarification and Amendments to this IFB to the prospective Bidders as soon as practicable.

2.13.2 Bidders are cautioned that the Purchaser will rely exclusively on electronic mail communication to manage all correspondence related to this IFB, including IFB Amendments and clarifications.

2.13.3 Bidders are cautioned that electronic transmission of documentation which contains classified information is not permissible.

2.14 Supplemental Agreements

2.14.1 Bidders are required, in accordance with the certificate in paragraph 6.7 of these Instructions to Bidders, to disclose any prospective Supplemental Agreements that are required by national governments to be executed by NATO/NCI Agency or successor organisations as a condition of Contract performance.

2.14.2 Supplemental Agreements are typically associated with, but not necessarily limited to, national export control regulations, technology transfer restrictions and end user agreements or undertakings.

2.14.3 Bidders are cautioned that failure to provide full disclosure of the anticipated requirements and the terms thereof, to the best of the Bidder’s knowledge and experience, may result in the Purchaser withholding award of the Contract or cancelling an executed Contract if it is discovered that the terms of such Supplemental Agreements contradict salient conditions of the Prospective Contract to the extent that either key objectives cannot be accomplished or basic Contract principles and Purchaser rights have been abridged.

2.15 Notice of Limitations on Use of Intellectual Property Delivered to the Purchaser

2.15.1 Bidders are instructed to review Clause 30 of the Contract General Provisions set forth Part III of Book II herein. This Clause sets forth the definitions, terms and conditions regarding the rights of the Parties concerning Intellectual Property developed and/or delivered under this Contract or used as a basis of development under this Contract.

2.15.2 Bidders are required to disclose, in accordance with paragraph 6.10, 6.11, the Intellectual Property proposed to be used by the Bidder that will be delivered with either Background Intellectual Property Rights or Third Party Intellectual Property Rights. Bidders are required to identify such Intellectual Property and the basis on which the claim of Background or Third Party Intellectual Property is made.

2.15.3 Bidders are further required to identify any restrictions on Purchaser use of the Intellectual Property that is not in accordance with the definitions and rights set forth in the Contract concerning use or dissemination of such Intellectual Property.

2.15.4 Bidders are reminded that restrictions on use or dissemination of Intellectual Property conflicting with the objectives and purposes of the Purchaser as stated in the Prospective Contract may result in a determination of non-compliant Bid.

2.16 Receipt of an unreadable electronic bid

2.16.1 If a bid received at the NCI Agency's facility by electronic data interchange is unreadable to the degree that conformance to the essential requirements of the solicitation cannot be ascertained, the CO immediately shall notify the Bidder that the bid will be rejected unless the Bidder provides clear and convincing evidence:

a) of the content of the bid as originally submitted; and,

b) that the unreadable condition of the bid was caused by Purchaser software or hardware error, malfunction, or other Purchaser mishandling.

2.16.2 A Bid that fails to conform to the above requirements may be declared noncompliant and may not be evaluated further by the Purchaser.

2.16.3 If it is discovered, during either the Price or Technical evaluation, that the Bidder has taken exception to the Terms and Conditions of the Prospective Contract, has qualified and/or otherwise conditioned his offer on a modification or alteration of the Terms and Conditions or the language of the SOW, or has submitted an unreadable electronic bid, the Bidder may be determined to have submitted a non-compliant bid.

3 BID PREPARATION INSTRUCTIONS

3.1 General

3.1.1 Bidders shall prepare and submit their Bid in accordance with the requirements and format set forth in this IFB. Compliance with all Bid submission requirements is mandatory. Failure to submit a Bid in conformance with the stated requirements may result in a determination of non-compliance by the Purchaser and the elimination of the Bid from further consideration.

3.1.2 Bidders shall prepare their bid in three (3) parts with the quantities and specific format as stated in paragraph 3.2.1:

(a) Administrative Package (Part I): Electronic Submission.

(b) Price Proposal (Part II): Electronic Submission.

(c) Technical Proposal (Part III): Electronic Submission.

3.1.3 Bidders shall not simply restate the IFB requirements. A Bid shall demonstrate that the Bidder understands the terms, conditions and requirements of the IFB and shall demonstrate the Bidder's ability to provide all the services and deliverables listed in the Schedules of the prospective Contract.

3.1.4 Partial Bids and/or bids containing conditional statements will be declared non-compliant.

3.1.5 Bidders are advised that the Purchaser reserves the right to incorporate the successful Bidder's Offer in whole or in part by reference in the resulting Contract.

3.1.6 If no specific format has been established for electronic versions, Bidders shall deliver documentation in an electronic format which is best suited for review and maintenance by the Purchaser (e.g., Project Master Schedule in MS Project format, Project Highlight Reports in MS Word).

3.1.7 Bids and all related documentation shall be submitted in the English language.

3.1.8 All documentation submitted as part of the Bid shall be classified no higher than "NATO UNCLASSIFIED".

3.2 Packaging and marking of Bids

3.2.1 The complete Bid shall consist of three distinct and separated parts each of which will be send as an individual electronic submission as described bellow. Detailed requirements for the structure and content of each of these packages are contained in these Bidding Instructions.

Part	Format and Quantity Details
I: Admin Package	1 File Submitted by Email not larger than 20MB total , which includes: • 1 Scanned PDF file, with physical (non-digital) signatures

	• Copy of the Bid Guarantee submitted directly to the Purchaser Treasury office: 1 PDF File ✓ This Part shall not be password-protected. ✓ All of the required contents are outlined in Section 3.3
II: Price Proposal	<u>1 File Submitted by Email, which includes:</u> • 1 Excel file, using the Bidding Sheets template provided with the IFB, not larger than 20MB total • 1 PDF file of the Bidding Sheets "Offer Summary" tab ✓ This Part shall not be password-protected. ✓ All of the required contents are outlined in Section 3.4
III: Technical Proposal	<u>1 File Submitted by Email not larger than 20MB total, which includes:</u> • Volume 1: Management and Risk: o Executive and Management, text document: 1 PDF file o Project Master Schedule: 1 MS Project file o Initial Project Management Plan o Initial Project Risk Log o Initial Product Breakdown Structure (PBS) o Initial Work Breakdown Structure (WBS) o Initial Project Master Schedule (PMS) o Basis of Estimate (BOE) o Bidder Qualifications • Volume 2 : Engineering: o Implementation, text document: 1 PDF file o Training, text document: 1 PDF file o Training material sample: 1 PDF file • Volume 3, Supportability, text document (including ILSP and CMP): 1 PDF file ✓ If necessary, the technical volume may be separated into more than one email. Maximum email size per each email is 20MB total. ✓ This Part shall not be password-protected ✓ All of the required contents are outlined in Section 3.5
Bid Guarantee	<u>1 PDF File, Submitted by Email directly to the Purchaser Treasury using the following subject line IFB-CO-115049-NCOP2 Official Bid for [Company Name]</u>

3.2.2 The proposal shall be sent via separate e-mails, as specified in Paragraph 2.5 and Paragraph 3.2.1, and shall have the following subject line:

"IFB-CO-115049-NCOP2 Official Bid for [Company Name], [Part Designation], for Radu Munteanu"

3.2.3 Part 1: Administration Package, containing the documents specified in paragraph 3.3 below, provided as per paragraph 3.2.1 above.

3.2.4 Part 2: Price Quotation, provided as per paragraph 3.2.1 above.

3.2.5 Part 3: Technical Proposal Package consisting of three volumes as specified below. This shall be provided as per paragraph 3.2.1 above.

3.2.5.1 Volume 1 – Management and Risk with the Executive Summary

3.2.5.2 Volume 2 – Engineering: Implementation and Training

3.2.5.3 Volume 3 – Supportability

3.2.6 Bidding instructions describing the expected contents of each of the Bid Parts follows in this Section of the Bidding Instructions.

3.3 Part 1 – Bid Administration Package

3.3.1 The Bid Administration Package must include the copy of the Bid Guarantee required by paragraph 2.11 of the Bidding Instructions to the email address specified in Paragraph 2.5. If the Bid Guarantee is sent to the Purchaser directly from the Bidder's bank, a letter, in lieu of the actual Guarantee, shall be included specifying the details of the transmittal and a copy of the Guarantee. Bidders are reminded that the Bid Guarantee shall reflect any extensions to the Bid Validity Date due to extensions in the Bid Closing Date.

3.3.2 No information disclosing or contributing to disclose the Bid Price shall be made part of the Bid Administration Package. Failure to abide to this prescription shall result in the bid being declared non-compliant.

3.3.3 The Package shall include the Certificates set forth in paragraph 6 Annex B to these Bidding Instructions, signed in the original by an authorised representative of the Bidder. The text of the certificates must not be altered in any way. The Certificates are as follows:

3.3.3.1 Annex B-1 – Certificate of Legal Name of Bidder

3.3.3.2 Annex B-2 – Acknowledgement of Receipt of IFB Amendments and Responses to Clarification Requests

3.3.3.3 Annex B-3 – Certificate of Independent Determination

3.3.3.4 Annex B-4 – Certificate of Bid Validity

3.3.3.5 Annex B-5 – Certificate of Exclusion of Taxes, Duties and Charges;

3.3.3.6 Annex B-6 – Comprehension and Acceptance of Contract Special and General Provisions;

3.3.3.7 Annex B-7 – Disclosure of Requirements for NCI Agency Execution of Supplemental Agreements;

3.3.3.8 Annex B-8 – Certificate of Compliance AQAP 2110:2016 or ISO 9001:2015 or Equivalent;

3.3.3.9 Annex B-9 – List of Prospective SubContractors;

3.3.3.10 Annex B-10 – Bidder Background IPR;

3.3.3.11 Annex B-11 – List of SubContractors IPR;

3.3.3.12 Annex B-12 – Certificate of Origin of Equipment, Services, and Intellectual Property;

3.3.3.13 Annex B-13 – List of Proposed Key Personnel;

3.3.3.14 Annex B-14 – Disclosure of Involvement of Former NCI Agency Employment

3.3.4 In accordance with paragraph 3.2.2, the administrative package shall be contained on a single email submission.

3.3.5 No information disclosing or contributing to disclose the bid price shall be made part of the Bid Administration volume. Failure to abide to this prescription shall result in the bid being declared non-compliant.

3.4 Part 2 – Price Quotation

3.4.1 The Price Quotations shall be submitted in electronic form and contain:

3.4.1.1 The BOOK I - ANNEX A (paragraph 5) “Bidding Sheets”

3.4.1.2 The complete set of sheets contained in the electronic file 2-IFB-CO-115049-NCOP2-Book I-Annex A-Bidding Sheets.xls” submitted as part of this IFB.

3.4.2 Bidders shall prepare their Price Quotation by completing the Bidding Sheets, in accordance with the Bid Package Content instructions specified in paragraph 3.2.4.

3.4.3 The structure of the Bidding Sheets shall not be changed, other than as indicated elsewhere, nor should any quantity or item description in the Bidding Sheets. The currency(ies) of each Contract Line Item and sub-item shall be indicated by the Bidder. The prices provided shall be intended as the comprehensive total price offered for the fulfilment of all requirements as expressed in the IFB documentation including but not limited to those expressed in the SOW.

3.4.4 Bidders shall furnish Firm Fixed Prices for all required items in accordance with the format set forth in the Instructions for preparation of the Bidding Sheets.

3.4.5 Bidders shall furnish Firm Fixed Prices in accordance with the format set forth in the instructions for preparation of the Bidding Sheets for:

3.4.5.1 Work Packages 4; and

3.4.5.2 Options: Work Packages 7 and BMD.

3.4.5.2.1 These options may be exercised by the Purchaser, at the sole discretion of the Purchaser in accordance with Clause 9 of the Contract Special Provisions (Book II Part II). The Purchaser’s decision to exercise any options will take into consideration the Contractor’s successful performance on the basic Contract, as well as the availability of the required funding.

3.4.5.2.2 The Bidder understands that there is no obligation under this Contract for the Purchaser to exercise any of the optional line items and that the Purchaser bears no liability should it decide not to exercise the options (totally or partially). Further, the Purchaser reserves the right to order another Contractor (or the same), to perform the tasks described in the optional line items of the current Contract through a new Contract with other conditions.

3.4.6 Offered prices shall not be “conditional" in nature. Any comments supplied in the Bidding Sheets which are conditional in nature, relative to the offered prices, may result in a determination that the Bid is non-compliant.

3.4.7 Bidders are responsible for the accuracy of their Price Quotations. Price Quotations that have apparent computational errors may have such errors resolved in the Purchaser’s favour or, in the case of gross omissions, inconsistencies or errors, may be determined to be non-compliant.

3.4.8 Bidders shall quote in their own national currency or in EURO. Bidders may also quote in other than their national currency if it can be demonstrated that the Bidder is expected to incur equivalent costs in that/those currency(ies), for example through sub-Contracts or purchased materials/services. In these cases, a Bidder may express its Bid price in multiple currencies.

3.4.9 Bidders are informed that the Purchaser, by virtue of its status stipulated in the provisions of the NATO Communication and Information Organisation (NCIO) Charter, Article 67(e)(3), is exempt from all direct and indirect taxes (e.g., VAT), and all customs duties on merchandise imported or exported. The stated provision reads as follows:

"Each participating nation undertakes to grant to NCI Agency under the terms of Articles 9 and 10 of the Ottawa Agreement, exemption from all direct taxes (except rates, taxes and dues which are no more than charges for public utility services) from the taxes on the sale of movable and immovable properties, and from customs and excise duties in respect of equipment imported or exported by NCI Agency or its appointed agents."

3.4.10 Bidders shall therefore exclude from their price Bid all taxes, duties and customs charges from which the Purchaser is exempted by international agreement and are required to certify that they have done so through execution of the Certificate at Annex B-5 – Certificate of Exclusion of Taxes, Duties and Charges.

3.4.11 Unless otherwise specified in the instructions for the preparation of Bidding Sheets, all prices quoted in the Bid shall be on the basis that all deliverable items shall be delivered on the basis of Delivery Duty Paid (DDP) in accordance with the International Chamber of Commerce INCOTERMS.

3.4.12 The Bidder’s attention is directed to the fact that Price Quotation shall contain no document and/or information other than the priced copies of the Bidding Sheets. Any other document will not be considered for evaluation.

3.4.13 All prices Bid shall be clearly traceable in the detailed Bidding Sheets.

3.4.14 Any adjustment or discount to prices should be clearly traceable to the lowest level of break down in the Bidding Sheets and should not be aggregated or summed. Any lack of clarity or traceability may render the Bid non-compliant.

3.5 Part 3 – Technical Proposal

3.5.1 Volume 1 : Management and Risk

3.5.1.1 Executive Summary

3.5.1.1.1 Bidders shall provide an overview of the salient features of their technical proposal in the form of an executive summary.

3.5.1.1.2 This summary shall provide a general description of the major points contained in each of the required sections of the technical proposal and shall demonstrate the depth of the Bidder’s understanding of the project, implementation environment and the problems and risks of project implementation.

3.5.1.1.3 The Bidder shall highlight the strengths which it and its team bring to the project in terms of minimising the problems and reducing the risks, and the key points of the technical approach and solution.

3.5.1.1.4 This summary shall not exceed 10 pages.

3.5.1.2 Management Proposal

3.5.1.2.1 Table of Contents

Bidders shall compile a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Management Proposal.

3.5.1.2.2 The following documents shall be the part of Management Proposal Package:

- Initial Project Management Plan
- Initial Project Risk Log
- Initial Product Breakdown Structure (PBS)
- Initial Work Breakdown Structure (WBS)
- Initial Project Master Schedule (PMS)
- Basis of Estimate (BOE)
- Bidder Qualifications

The Management Proposal package shall not exceed 100 pages, with the exception of the following items:

- Basis of Estimate (BOE)

“Times New Roman” fonts in size 12 shall be used for normal text, and “Arial Narrow” fonts not smaller than size 10 for tables and graphics.

3.5.1.2.3 Initial Project Management Plan (PMP)

The Bidder shall provide an initial PMP in accordance with the requirements for the PMP as described in section 3.10 of the SOW.

The PMP shall describe the planning, activities and responsibilities that are feasible and appropriate to the requirements.

The PMP shall describe the Project management methodology, processes, including the phases and the Bidder’s staffing, cost and schedule estimate, project control mechanisms, issue management, communication management, security management and the Purchaser involvement in the project management. The proposed approach shall be based on recognized project management practices and reflects a mature level of management capability.

The Bidder shall describe the relationship of the PMP to subordinate plans: System Implementation Plan, and Training Plan. The approach shall show a coherent and integrated approach to implementation.

The PMP shall describe the PMO in terms of manpower and resources to conduct and support the management and administration of operations in order

to meet the objectives of the program, including taking all reasonable steps to ensure continuity of personnel assigned to work on this project and that the proposed resources are adequate for the tasks.

The Bidder shall describe an effective and mature risk management approach, including the Bidder's process for risk identification, assessment, mitigation, monitoring, and reporting.

3.5.1.2.4 Initial Project Risk Log

The Bidder shall provide an initial Risk Log for the project as outlined in paragraph 3.15 of the SOW.

The Bidder shall identifie, assess, and provide sufficient mitigation measures, including contingencies, for the most significant foreseeable risks.

3.5.1.2.5 Initial Product Breakdown Structure (PBS) and Work Breakdown Structure (WBS)

The Bidder shall provide an initial Product Breakdown Structure (PBS) and Work Breakdown Structure (WBS) as described in paragraphs 3.11 and 3.12 of the SOW. The provided PBS and WBS shall include definitions of the major work packages and the relationship between the work packages the end product. The provided PBS and WBS shall decompose the work packages to a level that exposes all project risk factors and allows accurate estimate of each work item's duration, resource requirements, inputs and outputs, and predecessors and successors.

3.5.1.2.6 Initial Project Master Schedule (PMS)

The Bidder shall provide an initial Project Master Schedule (PMS) as described in paragraph 3.13 of the SOW based on the time constraints defined in the SOW.

3.5.1.2.7 Basis of Estimate (BOE)

a) The Bidder shall provide a Basis of Estimate (BOE) for all Work Packages. The BOE shall be an unpriced version of the Bidder's Pricing Summary Sheets. The BOE shall not include unit labour rates or totals nor shall the pricing of other activities and the materials required under each Work Package be priced. The purpose of the BOE is to enable the Purchaser to accurately validate the Management Proposal —outside the price evaluation process— in terms of the proposed level of effort, labour mix, materials and amount of travel and other items proposed for each CLIN.

3.5.1.2.8 Bidder Qualifications

a) Corporate Experience

In this section, the Bidder shall detail the experience of the Contractor in the design, delivery, implementation and training of similar software-based systems, with particular emphasis on recent experience in implementing integrated software solutions to meet military or government requirements. The Bidder shall provide:

- The number and description of Situation Awareness systems deployed/delivered ;
- The purchaser(s) of these systems ;

- ~~The purchaser(s) of these systems ;~~
- The user(s) of these systems ;
- The Contract number(s) ;
- The start date and end date of the Contract ;
- A point of contact for verification purposes ;

The Bidder shall provide information on its experience and expertise in implementing integrated software solutions for Situation Awareness support and when this software/system has been delivered and used by military operators. They should specifically include examples of systems supporting tasks such as: Common Operating Picture management, Common Operating Picture distribution and Common Operating Picture viewing. The Bidder shall provide the same information required above for the major sub-Contractors for critical components. The sub-Contractors must demonstrate the same level of experience applicable to each of the critical items for which they are proposed to deliver.

The Bidder shall describe the Bidder's expertise and experience in the delivery of training courses of a level equivalent to those required for the training of NCOP-2 capabilities. This shall include experience in the preparation of syllabuses, schedules, course prerequisites, student skill prerequisites, course evaluations and instructor materials.

b) Corporate Capabilities

This section shall describe the corporate structure of the Contractor and the administration of the prospective Project within the overall corporate structure. This section should indicate the chain of authority within the Contractor’s organisation from the Project Manager to the Chief Executive Officer. The Bidder shall describe the corporate resources which are available to support the Project which are resident in the organisation of the Contractor but not directly under the authority of the Project Manager. The Bidder shall describe the process by which the Project Manager may have access to these “in-house” corporate resources and what level of authority is required in the Corporation hierarchy to secure the needed resources.

The Bidder shall provide a sub-section which identifies the items and services which are to be developed and/or performed by the corporate resources of the Contractor. The Bidder shall identify the location of the production facilities which will be utilised, and/or the source within the corporate organisation of the services and expertise required. For corporate production facilities, the Bidder shall provide analytical evidence that adequate capacity exists in order that the required items may be made within the time schedule of the Prospective Contract. The Bidder shall show existing capital assets and provide a detailed proposal of what additional equipment or facilities will be acquired or constructed in order to meet the Contract schedule. The Bidder shall further provide a description of any retooling efforts required and a time forecast of when these efforts can be completed.

The Bidder shall provide evidence that its software implementation and testing practices/tools reflect a mature level of capability.

c) Individual Skills and Experience

The Bidder shall provide the resumes of the individuals designated as Key Personnel in SOW 3.5.2. For each role identified, the resumes shall meet or exceed the experience and educational criteria stated in the SOW 6 and demonstrate that they have the expected knowledge, capability and experience to meet the requirements of this Contract.

3.5.2 Volume 2 : Engineering

3.5.2.1 Implementation Proposal

3.5.2.1.1 Table of Contents

a) Bidders shall compile a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Implementation Proposal.

b) The following documents shall be the part of the Implementation Proposal package:

- Initial System Implementation Plan ;
- Initial Installation Test Plan ;
- Initial Activation Test Plan ;
- Initial Site Survey ;

c) The Implementation Proposal package shall not exceed 100 pages with the exception of the following:

- Sample of Site Survey ;

d) “Times New Roman” fonts in size 12 shall be used for normal text, and “Arial Narrow” fonts not smaller than size 10 for tables and graphics.

3.5.2.1.2 Initial System Implementation Plan

The Bidder shall provide an initial System Implementation Plan (SIP) in accordance with the requirements for the System Implementation Plan as described in paragraph 4.4.4 of the SOW.

The SIP shall describe both technical and organizational activities conducted within this contract.

The SIP shall present a clear planning of the way the implementation will be conducted. A parallel approach could be considered if the Bidder can demonstrate all its resource has the appropriate skills to perform multiple implementations at the same time on different sites.

The SIP shall detail the procedures to follow in case of problem during the implementation. The plan shall take into account the delivery of patches to update the product baseline.

The SIP shall provide the sufficient information to ensure that the implementation phase will be executed in a coherent duration with the product baseline deliveries.

The SIP must detail the tools, which will be used within this contract.

3.5.2.1.3 Initial Installation Test Plan

The Bidder shall provide an initial Installation Test Plan in accordance with the requirements for the Installation Test Plan as described in paragraph 4.4.7.6 of the SOW.

The initial TP describes the quality and the completeness of the installation test strategy.

3.5.2.1.4 Initial Activation Test Plan

The Bidder shall provide an initial Activation Test Plan in accordance with the requirements for the Activation Test Plan as described in paragraph 4.4.8.4 of the SOW.

The initial ATP describes the quality and the completeness of the activation test strategy.

3.5.2.1.5 Initial Site Surveys

The Bidder shall provide both initial Site Survey for installation site and for organizational node.

The Bidder shall provide the Site Survey for installation site in accordance with the SOW 4.4.6.5.1.

The Bidder shall provide the Site Survey for organizational node in accordance with the SOW 4.4.6.6.1.

The Bidder shall propose a Site Survey Report, which aggregates the results of both sites surveys.

3.5.2.2 Training Proposal

3.5.2.2.1 Table of Contents

Bidders shall compile a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Training Proposal.

The following documents shall be the part of the Training Proposal package:

- Initial Training Plan ;
- Training Materials ;

The Training Proposal package shall not exceed 50 pages with the exception of the following:

- Sample of training materials ;

3.5.2.2.2 Initial Training Plan

The Bidder shall provide an Initial Training Plan in accordance with the requirements for the Training Plan described in paragraph 4.3.12 of the SOW.

The TP shall describe the quality and the completeness of the training strategy. The TP shall demonstrate the capacity of the bidder in scheduling training on multiple sites in accordance with the implementation planning and without creating any operational impact.

The TP shall detail the training program and related activities in compliance with the SOW Section 4.3. Training Engineering.

3.5.2.2.3 Training Materials

The Bidder shall provide sample training materials from other courses it has previously developed.

The Bidder shall identify at least two such courses it has developed and delivered within the last three years.

The training materials shall cover the subjects as detailed in paragraph 4.3.15 of the SOW:

- Training Syllabus ;
- Student Manuals and Handouts ;
- Instructor Guides ;
- Master Lesson Plans ;
- Training Presentations ;
- Training Scenarios ;
- Course evaluation feedback form ;
- Quick Reference Guides ;

The Bidder shall provide clearly understanding how the training materials balances both trainer-centered activities and learner-centered activities.

The objectives and outcomes in the training materials shall describe what the agents will learn or acquire from each session. They shall be specific, measurable, and clearly defined to:

- Align them with course content.
- Clearly communicate the course expectations to the learners.
- Provide learners with a clear purpose.
- Develop an organized and effective course flow and strategy.
- Select or construct appropriate assessment tools for evaluating learning effectiveness

3.5.3 Volume 3: Supportability

3.5.3.1 Table of Contents

3.5.3.1.1 Bidders shall compile a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Supportability Proposal.

3.5.3.1.2 The following documents shall be the part of the Implementation Proposal package:

- Initial Configuration Management Plan ;
- Initial Integrated Support Plan ;

3.5.3.1.3 The Supportability Proposal package shall not exceed 50 pages.

3.5.3.1.4 “Times New Roman” fonts in size 12 shall be used for normal text, and “Arial Narrow” fonts not smaller than size 10 for tables and graphics.

3.5.3.2 Initial Configuration Management Plan (CMP)

3.5.3.2.1 The Bidder shall provide information on the Configuration Management Plan (CMP) describing configuration management concept and methodology as described in SOW paragraph 3.17.

3.5.3.2.2 The Bidder shall outline how he will adopt the Configuration Management processes and deliverables to the scope of this Contract.

3.5.3.2.3 The Bidder shall provide, as part of the CMP, a project-specific Configuration Control process description, an initial set of project-specific Configuration Item selection criteria for the capabilities as well as an initial set of project-specific Configuration Items (CI) including their attributes and relationships among each other.

3.5.3.2.4 The Bidder shall demonstrate that a Configuration Status Accounting (CSA) database will be maintained using appropriate software tools during the Contract.

3.5.3.3 Initial Integrated Logisitic Support Plan (ILSP)

3.5.3.3.1 The Bidder shall provide the detailed information in the Integrated Logistic Support Plan (ILSP) as described in SOW paragraph 4.5.1.

3.5.3.3.2 The Initial ILSP shall include and detail all the annexes and sections, including the In-Service Support Annex in accordance with the warranty and support requirements detailed in SOW section 4.5.

3.5.3.3.3 The Bidder shall also describe how he will fulfil his roles and responsibilities in relation to each of the elements of the Logistics Support Concept during Contract Implementation in accordance with SOW of the Prospective Contract.

3.6 Bidder’s Check-List

3.6.1 The tables below provide an overview of all items to be delivered by the Bidder as part of this bid. Bidders are invited to use these tables to verify the completeness of their proposal.

Part 1: Bid Administration Package

	Item	Format	Page Limit
1	Annex B-1 – Certificate of Legal Name of Bidder	Electronic (no password)	No Page Limit
2	Annex B-2 – Acknowledgement of Receipt of IFB Amendments and Responses to Clarification Requests		
3	Annex B-3 – Certificate of Independent Determination		
4	Annex B-4 – Certificate of Bid Validity		
5	Annex B-5 – Certificate of Exclusion of Taxes, Duties and Charges		
6	Annex B-6 – Comprehension and Acceptance of Contract Special and General Provisions		
7	Annex B-7 – Disclosure of Requirements for NCI Agency Execution of Supplemental Agreements		
8	Annex B-8 – Certificate of Compliance AQAP 2110:2016 or ISO 9001:2015 or Equivalent		
9	Annex B-9 – List of Prospective SubContractors		
10	Annex B-10 – Bidder Background IPR		
11	Annex B-11 – List of SubContractors IPR		
12	Annex B-12 – Certificate of Origin of Equipment, Services, and Intellectual Property		
13	Annex B-13 – List of Proposed Key Personnel		
16	Annex B-14 – Disclosure of Involvement of Former NCI Agency Employment		

Part 2: Price Quotation

	Item	Format	Page Limit
1	Annex A : Bidding Sheets	Electronic (no password) - The information shall be in MS Excel format which can be manipulated (i.e. not an image) and be the full and complete Price Quotation including the Contract Line Item Number (CLIN) Price breakdown sheets.	No Page Limit
2	Complete Set of Sheets contained in 2- IFB-CO-115049-NCOP2 -Bidding Sheets.xlsx		

Part 3: Technical Proposal

	Item	Format	Page Limit
1	Management and Risk	Electronic (no password)	100-page limit
	a. Executive Summary (10-page limit)		
	b. Management Proposal		
	i. Table of Content		
	ii. Initial Project Management Plan		
	iii. Initial Project Risk Log		
	iv. Initial Product Breakdown Structure (PBS)		
	v. Initial Work Breakdown Structure (WBS)		
	vi. Initial Project Master Schedule (PMS)		
	vii. Basis of Estimate (BOE)		
	viii. Bidder Qualifications		
2	Engineering	Electronic (no password)	50-page limit
	a. Implementation Proposal		
	i. Table of Content		
	ii. Initial System Implementation Plan		
	iii. Initial Installation Test Plan		
	iv. Initial Activation Test Plan		
	v. Initial Site Survey		
	b. Training Proposal		
	i. Table of Content		

	ii. Initial Training Plan		
	iii. Training Materials		
3	Supportability	Electronic (no password)	50-page limit
	a. Table of Contents (No page limit)		
	b. Initial Configuration Management Plan (CMP)		
	c. Initial Integrated Logistic Support Plan (ILSP)		

4 BID EVALUATION AND CONTRACT AWARD

4.1 General

4.1.1 The evaluation of Bids will be made by the Purchaser solely on the basis of the requirements specified in this IFB.

4.1.2 The evaluation of bids and the determination as to the compliance or technical adequacy of the supplies and services offered will be based only on that information furnished by the Bidder and contained in his bid. The Purchaser shall not be responsible for locating or securing any information which is not included in the bid or included only by reference.

4.1.3 To ensure that sufficient information is available, the Bidder shall furnish with its bid all information appropriate to provide a complete description of the work which will be performed and/or the supplies to be delivered. The information provided shall be to a level of detail necessary for the Purchaser to determine exactly what the Bidder proposes to furnish and whether the offer meets the technical, administrative and contractual requirements of this IFB.

4.1.4 During the evaluation, the Purchaser may request clarification of the bid from the Bidder and the Bidder shall provide sufficient detailed information in connection with such requests as to permit the Purchaser to make a final assessment of the bid based upon the facts. The purpose of such clarifications will be to resolve ambiguities in the bid and to permit the Bidder to state its intentions regarding certain statements contained therein. The purpose of the clarification stage is not to elicit additional information from the Bidder that was not contained in the original submission or to allow the Bidder to supplement cursory answers or omitted aspects of the bid. The Bidder is not permitted any cardinal alteration of the bid regarding technical matters and shall not make any change to its price quotation at any time.

4.1.5 The Bidder’s prompt response to the Purchaser’s clarification requests is important and therefore failure to provide the requested clarifications within the time-limits set forth in the specific Clarification Requests (minimum 24 hours next working day) may cause the Bid to be deemed non-compliant

4.1.6 The Purchaser reserves the right, during the evaluation and selection process, to verify any statements made concerning experience and facilities, by making a physical inspection of the Bidder's facilities and capital assets and by interviewing proposed Key Personnel. Physical inspections and interviews shall also apply to assertions in the proposal made on behalf of proposed Subcontractors. The Bidder shall be responsible for providing access to its own or Subcontractors' facilities and personnel.

4.2 Evaluation Procedure

4.2.1 The evaluation will be done in a four step process, as described below.

4.3 Step 1: Administrative Compliance

4.3.1 Bids received shall be reviewed for compliance with the mandatory Administrative requirements specified in paragraph 4.8. Bids not meeting all of the mandatory requirements may be determined to be non-compliant and not further considered in the evaluation or for award.

4.3.2 All Bid Guarantees shall be reviewed for compliance with the mandatory Administrative requirements specified in paragraphs 4.8 and 2.11.

4.4 Step 2: Price Evaluation

4.4.1 The Price Quotations of all Bids remaining after Step 1 will be opened, and evaluated for the lowest compliant price in accordance with paragraph 4.9.

4.5 Step 3: Technical Compliance Evaluation

4.5.1 In Step 3, upon determination of the lowest-priced Bid as described above, that Bid shall be evaluated to confirm compliance with the criteria associated with the respective sections of the Technical Proposal.

4.6 Step 4: Contract Award

4.6.1 The contract resulting from this IFB will be awarded to the Bidder whose offer, as evaluated by the Purchaser, is the lowest priced bid in compliance with the requirements of this IFB.

4.6.2 Bidders that are determined to have submitted non-compliant bids will be so notified and will have an opportunity to challenge such a determination. In such a case, the administrative proposal and the technical proposal of the Bidder who has submitted the apparent second lowest compliant priced bid will be evaluated. The Bidder who has offered the lowest compliant priced, technically compliant bid will then be offered the contract for award.

4.7 Non-Compliant Notification

4.7.1 Bidder(s) that fail to meet any of the steps, will so be notified in accordance with the procedures set forth in paragraph 13(iii)(b) of AC/4-D/2261(1996 Edition).

4.8 Evaluation Step 1 – Administrative Compliance

4.8.1 Bids will be reviewed for compliance with the formal requirements for Bid submission as stated in this IFB and the content of the Administrative Documentation Package. The evaluation of the Administrative Documentation Package will be made on its completeness, conformity and compliance to the requested information. This evaluation will not be scored but is made to determine if a bid complies with the requirements of the Bidding Instructions and Prospective Contract. Specifically, the following requirements shall be verified:

4.8.1.1 The Bid was received by the Bid Closing Date and Time;

4.8.1.2 The Bid is packaged and marked properly (including electronic readability of all packages as detailed in 4.3);

4.8.1.3 The Bid Administration Package contains the documentation listed in paragraph 3.3 above and complies with the formal requirements established in paragraph 3.1 above;

4.8.1.4 The Bidder has not taken exception to the Terms and Conditions of the Prospective Contract or has not qualified or otherwise conditioned its offer on a modification or alteration of the Terms and Conditions or the language of the SOW.

4.8.2 Subject to the stipulation of paragraph 4.8.1.1 through 4.8.1.4, bids failing to conform to the above requirements may be declared non-compliant and may not undergo further evaluation. Bids that are determined to be administratively compliant will proceed to Step 2, Price Evaluation.

4.8.3 Notwithstanding paragraph 4.8.2, if it is later discovered in the evaluation of the Administrative Package, Technical Bid or the Price Quotation that the Bidder has taken exception to the Terms and Conditions of the Prospective Contract, or has qualified and/or otherwise conditioned its offer on a modification or alteration of the Terms and Conditions or the language of the SOW, the Bidder may be determined to have submitted a non-compliant Bid at the point in time of discovery.

4.8.4 All Bid Guarantees shall be reviewed for compliance with the mandatory Administrative requirements specified in paragraphs 2.11 and 4.8.1

4.8.5 Receipt of an unreadable electronic Bid:If a bid received at the NCI Agency's facility by electronic date is unreadable to the degree that conformance to the essential requirements of the solicitation cannot be ascertained, the CO immediately shall notify the Bidder that the bid will be rejected unless the Bidder provides clear and convincing evidence:

- Of the content of the bid as originally submitted; and,
- That the unreadable condition of the bid was caused by Purchaser Software or hardware error, malfunction, or other Purchaser mishandling.

4.9 Evaluation Step 2 – Price Evaluation

4.9.1 All bids having successfully passed Step 1 shall have their Price Quotation evaluated for the lowest compliant price as follows:

4.9.1.1 Compliance with the requirements for preparation and submission of the Price Quotation in accordance with paragraph 3.4.6.

4.9.1.2 All pricing data, i.e., quantities, unit prices, unit price currencies, should be provided as reflected in the Schedule of Supplies and Services and the Bidding Sheets (at Annex A).

4.9.1.3 Bid prices include all costs for items supplied, delivered, and supported.

4.9.1.4 The Bidder must have provided accurate unit price and the unit price currency of each of the sub-items added (if any).

4.9.1.5 The Bidder must have provided accurate unit price, unit price currency and total price for each line item.

4.9.1.6 The grand total shall be accurate.

4.9.1.7 All prices should be accurately entered into appropriate columns, and accurately totaled.

4.9.1.8 Bidders shall indicate that in accordance with the treaties governing the terms of business with NATO, exclude from their prices all taxes, duties and customs charges from which the Purchaser has been exempted.

4.9.1.9 Price quotes for each individual item(s), and totaled prices are accurate and realistic, (based on historic data, and/or market and competitive trends in the specified industrial sectors).

4.9.1.10 Detailed pricing information has been provided and is adequate, accurate, traceable, and complete.

4.9.1.11 The Price Quotation meets requirements for price realism as described below in paragraph 4.9.3.

4.9.2 Basis of Price Comparison

4.9.2.1 The Purchaser will convert all prices quoted into EURO for purposes of comparison and computation of price scores. The exchange rate to be utilised by the Purchaser will be the average of the official buying and selling rates of the European Central Bank (ECB) at close of business on the last working day of the ECB preceding the Bid Closing Date.

4.9.2.2 The price comparison will be based on the offered Grand Total Firm Fixed Price which includes Work Package 4 and Optional Work Package 7 (Evaluated Option) in the Bidding Sheets. The BMD Work Package will not be evaluated.

4.9.3 Price Realism

4.9.3.1 In those cases in which the prices quoted in relation with this IFB appear to be unreasonably low in relation to the performance required under the prospective contract and/or the level of effort associated with the tasks, the Purchaser will reserve the right to request the Bidder clarifications aimed to demonstrate the rationale for such circumstances.

4.9.3.2 Indicators of an unrealistically low bid may be the following, amongst others:

4.9.3.2.1 Labour Costs that, when amortised over the expected or proposed direct labour hours, indicate average labour rates far below those prevailing in the Bidder’s locality for the types of labour proposed.

4.9.3.2.2 Direct Material costs that are considered to be too low for the amounts and types of material proposed, based on prevailing market prices for such material.

4.9.3.2.3 Numerous Line Item prices for supplies and services that are provided at no cost or at nominal prices.

4.9.3.3 If the Purchaser has reason to suspect that a Bidder has artificially debased its prices in order to secure contract award, the Purchaser will request clarification of the bid in this regard and the Bidder shall provide explanation on one of the following bases:

4.9.3.3.1 An error was made in the preparation of the Price Quotation. In such a case, the Bidder must document the nature of the error and show background documentation concerning the preparation of the Price Quotation that makes a convincing case that a mistake was made by the Bidder. In such a case, the Bidder shall petition the Purchaser to either remain in the competition and accept the Contract at the offered price or to withdraw from the competition.

4.9.3.3.2 The Bidder has a competitive advantage due to prior experience or industrial/technological processes that demonstrably reduce the costs of Bidder performance and therefore the price offered is realistic. Such an argument must support the technical proposal offered and convincing and objectively describe the competitive advantage and the net savings achieved by this advantage over standard market practices and technology.

4.9.3.3.3 The Bidder recognises that the submitted Price Quotation is unrealistically low compared to its cost of performance and, for business reasons; the Bidder is willing to absorb such a loss. Such a statement can only be made by the head of the business unit submitting the Bid and will normally be made at the level of Chief Operating Officer or Chief Executive Officer. In such a case, the Bidder shall estimate the potential loss and show that the financial resources of the Bidder are adequate to withstand such reduction in revenue.

4.9.3.3.4 If a Bidder fails to submit a comprehensive and compelling response on one of the bases above, the Purchaser may determine the Bid submitted as non-compliant.

4.9.3.3.5 If the Bidder responds on the basis of paragraph 4.9.3.3.1 above and requests to withdraw from the competition, the Purchaser may, depending on the nature and gravity of the mistake, allow the Bidder to withdraw with or without penalty.

4.9.3.3.6 If the Purchaser accepts the Bidder’s explanation of mistake in paragraph 4.9.3.3.1 and allows the Bidder to accept the Contract at the offered price, or the Purchaser accepts the Bidder’s explanation pursuant to paragraph 4.9.3.3.3 above, the Bidder shall agree that the supporting pricing data submitted with his Bid will be incorporated by reference in the resultant contract. The Bidder shall agree as a condition of contract signature, that the pricing data will be the basis of determining fair and reasonable pricing for all subsequent negotiations for modifications of or additions to the contract and that no revisions of proposed prices will be made.

4.9.3.3.7 If the Bidder presents a convincing rationale pursuant to paragraph 4.9.3.3.2 above, no additional action will be warranted. The Purchaser, however, reserves its right to reject such an argument if the rationale is

not compelling or capable of objective analysis. In such a case the Bid may be determined to be non-compliant.

4.9.3.4 An award shall be made on the basis of Work Packages 4. However, for the purposes of the lowest compliant price bid, the price evaluation will be based on Work Package 4 **and** Optional Work Package 7.

4.10 Evaluation Step 3 – Technical Evaluation

4.10.1 Upon the determination of the lowest-priced Bid as described above, that Bid shall be evaluated to confirm compliance with the following criteria associated with the respective sections of the Technical Proposal.

4.10.2 In order for a Bid to be determined to be compliant, the Bidder shall have submitted a Technical Proposal which has met, after evaluation by the Purchaser, all the criteria which are set forth below. All criteria will be evaluated be default also regarding comprehensiveness, feasibility, logic and reasonableness.

4.10.3 Volume 1 – Management and Risk with the following information provided:

4.10.3.1 Executive Summary

4.10.3.1.1 Bidders provided an overview of the salient features of their technical proposal in the form of an executive summary.

4.10.3.1.2 This summary provides a general description of the major points contained in each of the required sections of the technical proposal and demonstrates the depth of the Bidder's understanding of the project, implementation environment and the problems and risks of project implementation.

4.10.3.1.3 The Bidders highlighted the strengths which it and its team bring to the project in terms of minimising the problems and reducing the risks, and the key points of the technical approach and solution.

4.10.3.2 A Table of Contents

A detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Management Proposal was provided.

4.10.3.3 Initial Project Management Plan (PMP)

The Bidder has provided an initial PMP in accordance with the requirements for the PMP as described in section 3.10 of the SOW.

The PMP describes the planning, activities and responsibilities that are feasible and appropriate to the requirements.

The PMP describes the Project management methodology, processes, including the phases and the Bidder's staffing, cost and schedule estimate, project control mechanisms, issue management, communication management, security management and the Purchaser involvement in the project management. The proposed approach is based on recognized project management practices and reflects a mature level of management capability.

The Bidder describes the relationship of the PMP to subordinate plans: System Implementation Plan, and Training Plan. The approach shows a coherent and integrated approach to implementation.

The PMP describes the PMO in terms of manpower and resources to conduct and support the management and administration of operations in order to meet the objectives of the program, including taking all reasonable steps to ensure continuity of personnel assigned to work on this project and that the proposed resources are adequate for the tasks.

The Bidder describes an effective and mature risk management approach, including the Bidder's process for risk identification, assessment, mitigation, monitoring, and reporting.

4.10.3.4 Initial Project Risk Log

The Bidder has provided an initial Risk Log for the project as outlined in paragraph 3.15 of the SOW.

The Bidder has identified, assessed, and provided sufficient mitigation measures, including contingencies, for the most significant foreseeable risks.

4.10.3.5 Initial Product Breakdown Structure (PBS) and Work Breakdown Structure (WBS)

The Bidder provided an initial Product Breakdown Structure (PBS) and Work Breakdown Structure (WBS) as described in paragraphs 3.11 and 3.12 of the SOW. The provided PBS and WBS includes definitions of the major work packages and the relationship between the work packages the end product. The provided PBS and WBS decomposes the work packages to a level that exposes all project risk factors and allows accurate estimate of each work item's duration, resource requirements, inputs and outputs, and predecessors and successors.

4.10.3.6 Initial Project Master Schedule (PMS)

The Bidder provided an initial Project Master Schedule (PMS) as described in paragraph 3.13 of the SOW based on the time constraints defined in the SOW.

4.10.3.7 Basis of Estimate (BOE)

The Bidder has developed a Basis of Effort Estimate (BOE). This plan indicates appropriate and sufficient support for the project related activities and demonstrates that the Bidder has a realistic knowledge of the level of effort and labour mix associated with the different tasks necessary to complete this Contract.

4.10.3.8 Bidder Qualifications

4.10.3.8.1 Corporate Experience

In this section, the Bidder detailed the experience of the Contractor in the design, delivery, implementation and training of similar software-based systems, with particular emphasis on recent experience in implementing integrated software solutions to meet military or government requirements.

The Bidder provided:

- the number and description of Situation Awareness systems deployed/delivered ;
- the purchaser(s) of these systems ;
- the user(s) of these systems ;
- the Contract number(s) ;
- the start date and end date of the Contract ;
- a point of contact for verification purposes ;

The Bidder provided the same information required above for the major sub-Contractors for critical components. The sub-Contractors has demonstrated the same level of experience applicable to each of the critical items for which they are proposed to deliver.

4.10.3.8.2 Corporate Capabilities

This section described the corporate structure of the Contractor and the administration of the prospective Project within the overall corporate structure. This section should indicate the chain of authority within the Contractor's organisation from the Project Manager to the Chief Executive Officer. The Bidder described the corporate resources which are available to support the Project which are resident in the organisation of the Contractor but not directly under the authority of the Project Manager. The Bidder described the process by which the Project Manager may have access to these "in-house" corporate resources and what level of authority is required in the Corporation hierarchy to secure the needed resources.

The Bidder provided a sub-section which identifies the items and services which are to be developed and/or performed by the corporate resources of the Contractor. The Bidder identified the location of the production facilities which will be utilised, and/or the source within the corporate organisation of the services and expertise required. For corporate production facilities, the Bidder provided analytical evidence that adequate capacity exists in order that the required items may be made within the time schedule of the Prospective Contract.

The Bidder provided evidence that demonstrates its software implementation and testing practices and tools reflect a well-established and mature level of capability.

4.10.3.8.3 Individual Skills and Experience

The Bidder provided the resumes (3-page limit per resume) of the individuals designated as Key Personnel in SOW 3.5.2. For each role identified, the resumes meet or exceed the experience and educational criteria stated in the SOW 6 and demonstrate that they have the expected knowledge, capability and experience to meet the requirements of this Contract.

4.10.4 Volume 2 – Engineering

4.10.4.1 Implementation with the following information provided:

a) A Table of Contents

The Bidder has provided a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required

set forth in these Instructions or implicit in the organization of the Implementation Proposal.

b) Initial System Implementation Plan

The Bidder provided an initial System Implementation Plan (SIP) in accordance with the requirements for the System Implementation Plan as described in paragraph 4.4.4 of the SOW.

The SIP describes both technical and organizational activities conducted within this contract.

The SIP presents a clear planning of the way the implementation will be conducted. A parallel approach could be considered if the Bidder can demonstrate all its resource has the appropriate skills to perform multiple implementations at the same time on different sites.

The SIP details the procedures to follow in case of problem during the implementation. The plan takes into account the delivery of patches to update the product baseline.

The SIP provides the sufficient information to ensure that the implementation phase will be executed in a coherent duration with the product baseline deliveries.

The SIP details the tools, which will be used within this contract.

c) Initial Installation Test Plan

The Bidder provided an initial Installation Test Plan (ITP) in accordance with the requirements for the Installation Test Plan as described in paragraph 4.4.7.6 of the SOW.

The initial TP describes the quality and the completeness of the installation test strategy.

d) Initial Activation Test Plan

The Bidder provided an initial Activation Test Plan (ATP) in accordance with the requirements for the Activation Test Plan as described in paragraph 4.4.8.4 of the SOW.

The initial ATP describes the quality and the completeness of the activation test strategy.

e) Initial Site Survey

The Bidder provided both initial Site Survey for installation site and for organizational node.

The Bidder has provided the Site Survey for installation site in accordance with the SOW 4.4.6.5.1.

The Bidder has provided the Site Survey for organizational node in accordance with the SOW 4.4.6.6.1.

The Bidder has proposed a Site Survey Report, which aggregates the results of both sites surveys.

4.10.4.1.2 Training with the following information provided:

a) A Table of Contents

The Bidder has provided a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Training
Proposal.

b) Initial Training Plan (TP)

The Bidder provided an Initial Training Plan in accordance with the requirements for the Training Plan described in paragraph 4.3.11 of the SOW.

The TP describes the quality and the completeness of the training strategy. The TP demonstrates the capacity of the bidder in scheduling training on multiple sites in accordance with the implementation planning and without creating any operational impact.

The TP detail the training program and related activities in compliance with the SOW Section 4.3. Training Engineering.

c) Training Materials

The Bidder provided sample training materials from other courses it has developed.

The Bidder identified at least two such courses it has developed and delivered within the last three years.

The training materials covers the subjects detailed in paragraph 4.3.15 of the SOW:

- Training Syllabus ;
- Student Manuals and Handouts ;
- Instructor Guides ;
- Master Lesson Plans ;
- Training Presentations ;
- Training Scenarios ;
- Course evaluation feedback form ;
- Quick Reference Guides ;

The Bidder provides clearly understanding how the training materials balances both trainer-centered activities and learner-centered activities.

The objectives and outcomes in the training materials describes what the agents will learn or acquire from each session. They are specific, measurable, and clearly defined to:

- Align them with course content.
- Clearly communicate the course expectations to the learners.
- Provide learners with a clear purpose.
- Develop an organized and effective course flow and strategy.
- Select or construct appropriate assessment tools for evaluating learning effectiveness

4.10.4.2 Volume 3 – Supportability with the following information provided:

4.10.4.2.1 Tables of contents

The Bidder has provided a detailed Table of Contents which lists not only the section headings but also the major sub-sections, and topic headings required set forth in these Instructions or implicit in the organisation of the Supportability Proposal.

4.10.4.2.2 Initial Configuration Management Plan (CMP)

The Bidder provided information on the Configuration Management Plan (CMP) describing configuration management concept and methodology as described in SOW paragraph 3.17.

The Bidder has outlined how he adopts the Configuration Management processes and deliverables to the scope of this Contract.

The Bidder has provided, as part of the CMP, a project-specific Configuration Control process description, an initial set of project-specific Configuration Item selection criteria for the capabilities as well as an initial set of project-specific Configuration Items (CI) including their attributes and relationships among each other.

The Bidder has demonstrated that a Configuration Status Accounting (CSA) database will be maintained using appropriate software tools during the Contract.

4.10.4.2.3 Initial Integrated Logistic Support Plan (ILSP)

The Bidder provided sufficiently detailed information on the Integrated Support Plan (ILSP) as described in SOW paragraph 4.5.1.

The Initial ILSP includes and details all the annexes and sections, including the In-Service Support Annex in accordance with the warranty and support requirements detailed in SOW Section 4.5.

The Bidder has also described how he will fulfil his roles and responsibilities in relation to each of the elements of the Logistics Support Concept during Contract Implementation in accordance with SOW of the Prospective Contract.

4.11 Step 4: Contract Award

4.11.1 The contract resulting from this IFB will be awarded to the Bidder whose offer, as evaluated by the Purchaser, is the lowest priced bid in compliance with the requirements of this IFB.

4.11.2 Bidders that are determined to have submitted non-compliant bids will be so notified and will have an opportunity to challenge such a determination. In such a case, the administrative proposal and the technical proposal of the Bidder who has submitted the apparent second lowest compliant priced bid will be evaluated. The Bidder who has offered the lowest compliant priced, technically compliant bid will then be offered the contract for award.

4.11.3 Non-Compliant Notification

4.11.3.1 Bidder(s) that fail to meet any of the steps, will so be notified in accordance with the procedures set forth in paragraph 13(iii)(b) of AC/4-D/2261(1996 Edition).

INVITATION FOR BID

IFB-CO-115049-NCOP2

IMPLEMENT INCREMENT 2 OF THE NATO COMMON OPERATIONAL PICTURE (NCOP)

NATO Communications and Information Agency

5 BOOK I - ANNEX A

BIDDING SHEETS

Annex A Bidding Sheets

See separate Excel Workbook attached
"2- IFB-CO-115049-NCOP2 -Bidding Sheets.xls"

Bidding Sheets

On behalf of the firm stated below I hereby offer the Purchaser the services and deliverables (collectively referred as "ITEMS") set forth in the attached schedules[1], at the specified prices, and subject to the terms and conditions stated in IFB-CO-115049-NCOP2.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

Bid Reference _____

[1] Bidders shall submit in electronic form the cover page and an electronic copy of the worksheets contained in the file "2- IFB-CO-14252-NNMS-Bidding Sheets.xls" that was submitted to them as part of the IFB package.

5.1 Instructions for the Preparation of Bidding Sheets

5.1.1 INTRODUCTION

Bid pricing requirements as addressed in this Annex are mandatory. Failure to abide to the prescriptions of Bid submission referred in this section may lead to the Bid being declared non-compliant and not being taken into consideration for award. No alteration of the Bidding sheets including but not limited to quantity indications, descriptions or titles are allowed with the sole exception of those explicitly indicated as allowed in this document. Additional price columns may be added if multiple currencies are Bid, including extra provisions for all totals.

5.1.2 GENERAL REQUIREMENTS

Bidders shall follow the specific instructions provided in each worksheet.
Bidders shall insert information in all yellow cells.
The prices and quantities entered on the document shall reflect the total items required to meet the Contractual requirements. The total price shall be indicated in the appropriate columns.
In preparing the Bidding Sheets, Bidders shall ensure that the prices of the Sub-items total the price of the major item of which they constitute a part.
All metrics (e.g., cost associated with labour) will be assumed to be standard or normalised to 7.6 hour/day, for a five day working week at NATO sites and Contractor facilities located within Europe and 8 hours/day at NATO sites and Contractor facilities located in the United States.
Should the Bid be in other than Euro currency, the award of the Contract will be made in the currency or currencies of the Bid.
Bidders are advised that formulae are designed to ease evaluation of the Bidders Bid have been inserted in the electronic copies of the Bidding Sheets. Notwithstanding this the Bidder remains responsible for ensuring that their figures are correctly calculated and should not rely on the accuracy of the formulae electronic copies of the Bidding Sheets.
If the Bidder identifies an error in the spreadsheet, it should notify the Purchaser who will make a correction and notify all the Bidders of the update.
Any discounted or reduced prices offered by the Bidder must be traceable to a CLIN or CLINs at the lowest level. Prices and detail of the traceability of application of the discount shall be clearly identified in the supporting detail sheets and applied at the unit price level.

5.1.3 STRUCTURE OF BIDDING SHEETS

The Bidding Sheets provided in MS Office Excel format are organised according to the following structure:

- Instructions
- Section 1. Offer & CLIN Summary sheets
- Section 2. Detailed Bidding sheetsfor
- Labour,Material,Travel,ODC and Rates

5.1.4 COMPLETING SECTION 1 (Offer & CLIN Summary Sheets)

5.1.4.1 Section 1 corresponds to the Schedule of Supplies and Services of the Prospective Contract. Each Work Package (WP) included in the Contract is represented by a detailed schedule showing the Contract Line Items

(CLINs) included within the scope of the Work Package (Detailed Bidding sheet tabs) and a detailed cost breakdown attached to each WP schedule.

5.1.4.2Filling in the Offer Summary

Bidders shall fill in the Offer Summary sheet based on the information provided in the CLIN summary sheet. The Offer Summary is a high level summary that separates the offer prices for the investment and the Operations and Maintenance offers. CLIN 5 is the Operations and Maintenance offer. CLINs 1, 2, 3 and 4 are to be considered investment.

5.1.4.3Filling the CLIN Summary Sheet

Bidders shall fill in the CLIN summary sheet based on the information provided in the detailed Bidding sheets (CLIN Price Breakdown sheets). The detailed Bidding sheets are broken down in to the categories listed in Section 5. Bidders are expected to aggregate the prices in the detailed Bidding sheets that make up the line items in the CLIN summary sheet. The line items in the CLIN Summary Sheet shall be all INCLUSIVE of the price being Bid in order to fulfil the requirement for the line item in the CLIN Summary Sheet. Bidders shall make sure that the total price indicated in the Detailed Bidding Sheets matches the price stated in the CLIN summary sheet for the same corresponding CLIN or sub-CLIN.

5.1.5 COMPLETING SECTION 2 (Detailed Bidding Sheets)

Bidders are instructed to prepare their cost Bids in sufficient detail to permit thorough and complete evaluation. For each of the CLINs the Bidder shall use the separate Sheets as provided, adding additional sheets if multiple currencies are used. Change the currency in the header of the Sheets if necessary.

5.1.5.1 MATERIAL

Purchased Parts: Provide a consolidated priced summary of individual material quantities included in the various tasks, orders, or Contract line items being proposed and the basis for pricing.

a. Raw Material: Consists of material in a form or state that requires further processing. Provide priced quantities of items required for the Bid. Show total cost.
b. Standard Commercial Items: Consists of items that the Bidder normally fabricates, in whole or in part, and that are generally stocked in inventory. Provide an appropriate explanation of the basis for pricing on attached schedule.
c. The Bidder shall provide a level of detail down the unique sellable item level (e.g. A server, a laptop, a printer)
d. The Bidder shall provide unit prices that shall be EXCLUSIVE of any applicable overhead, general and administrative costs, profit, costs associated to travel, per-diem and/or incidentals as well as Personnel Installation costs at the sites of performance. Factors for overhead shall be applied in the MATERIAL LABOUR OVERHEAD section of the detailed Bidding sheet to the total cost of material.

5.1.5.2 DIRECT LABOUR

Show the hourly rate by year and the total hours for the categories and disciplines of direct labour proposed. Unit prices shall be EXCLUSIVE of any applicable overhead,

general and administrative costs, profit, costs associated to travel, per-diem and/or incidentals as well as Personnel Installation costs at the sites of performance. Factors for overhead shall be applied in the DIRECT LABOUR OVERHEAD section of the detailed Bidding sheet to the total cost of direct labour.

5.1.5.3 SUBCONTRACT LABOUR

Show the hourly rate by year and the total hours for the categories and disciplines of subContract labour proposed. Unit prices shall be EXCLUSIVE of any applicable overhead, general and administrative costs, profit, costs associated to travel, per-diem and/or incidentals as well as Personnel Installation costs at the sites of performance. Factors for overhead shall be applied in the SUBCONTRACT LABOUR OVERHEAD section of the detailed Bidding sheet to the total cost of subContract labour.

5.1.5.4 TRAVEL

Show the number of trips being made, the number of people travelling, the number of days per trip, the cost of traveling (e.g. flight costs), and the daily per diem rate. Insert comments/descriptions/references/explanation of calculation method under the 'Notes' column including the location & reference to SOW.

5.1.5.5 OTHER DIRECT COSTS

5.1.5.5.1 Special Tooling/Equipment. Identify and support specific equipment and unit prices. Use a separate schedule if necessary.

5.1.5.5.2 Individual Consultant Services. Identify and support the proposed contemplated consulting. State the amount of services estimated to be required and the consultant’s quoted daily or hourly rate.

5.1.5.5.3 Other Costs. List all other direct charge costs not otherwise included in the categories described above (e.g., services of specialized trades, computer services, preservation, packaging and packing, leasing of equipment, ex-pat costs etc.) and provide bases for pricing.

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6 BOOK I - ANNEX B

Prescribed Administrative Forms and Certificates

Annex B Prescribed Administrative Forms and Certificates

6.1 Annex B-1 – Certificate of Legal Name of Bidder

This Bid is prepared and submitted on behalf of the legal corporate entity specified below:

FULL NAME OF CORPORATION: _____

DIVISION (IF APPLICABLE): _____

SUB DIVISION (IF APPLICABLE): _____

OFFICIAL MAILING ADDRESS

_____
_____
_____
_____

E-MAIL ADDRESS: _____

TELEFAX No: _____

POINT OF CONTACT REGARDING THIS BID:

NAME: _____
POSITION: _____
TELEPHONE: _____

ALTERNATIVE POINT OF CONTACT:

NAME: _____
POSITION: _____
TELEPHONE: _____

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.2 Annex B-2 – Acknowledgement of Receipt of IFB Amendments and Responses to Clarification Requests

I confirm that the following Amendments and responses to Clarification Requests to Invitation for Bid CO-115049-NCOP2 have been received and the Bid, as submitted, reflects the content as such.

Amendment no./Responses to CR release no.	Date of Issued	Date of receipt	Initials

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.3 Annex B-3 – Certificate of Independent Determination

It is hereby stated that:

a. we have read and understand all documentation issued as part of CO-115049-NCOP2. Our Bid submitted in response to the referred solicitation is fully compliant with the provisions of the IFB and the prospective Contract.
b. our Bid has been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, with any other Bidder or with any competitor;
c. the contents of our Bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to award, directly or indirectly to any other Bidder or to any competitor; and
d. no attempt has been made, or will be made by the Bidder to induce any other person or firm to submit, or not to submit, a Bid for the purpose of restricting competition.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

Bid Reference _____

6.4 Annex B-4 – Certificate of Bid Validity

I, the undersigned, as an authorised representative of the firm submitting this Bid, do hereby certify that the pricing and all other aspects of our Bid will remain valid for a period of twelve months from the Bid Closing Date of this Invitation for Bid.

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.5 Annex B-5 – Certificate of Exclusion of Taxes, Duties and Charges

I hereby certify that the prices offered in the price quotation of this Bid exclude all taxes, duties and customs charges from which the Purchaser has been exempted by international agreement.

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.6 Annex B-6 – Comprehension and Acceptance of Contract Special and General Provisions

The Bidder hereby certifies that he has reviewed the Special Contract Provisions and the NCI Agency General Provisions set forth in the Prospective Contract, Book II of this Invitation for Bid. The Bidder hereby provides its confirmation that he fully comprehends the rights, obligations and responsibilities of the Contractor as set forth in the Articles and Clauses of the Prospective Contract. The Bidder additionally certifies that the offer submitted by the Bidder is without prejudice, qualification or exception to any of the Terms and Conditions and he will accept and aBide by the stated Special and General Provisions if awarded the Contract as a result of this Invitation for Bid.

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.7 Annex B-7 – Disclosure of Requirements for NCI Agency Execution of Supplemental Agreements

I, the undersigned, as an authorised representative of _____, certify the following statement:

All supplemental agreements, defined as agreements, documents and/or permissions outside the body of the Contract but are expected to be required by my Government, and the governments of my subContractors, to be executed by the NCI Agency, or its legal successors, as a condition of my firm's performance of the Contract, have been identified, as part of the Bid.

These supplemental agreements are listed as follows:

Examples of the terms and conditions of these agreements have been provided in our Offer. The anticipated restrictions to be imposed on NATO, if any, have been identified in our offer along with any potential conflicts with the terms, conditions and specifications of the Prospective Contract. These anticipated restrictions and potential conflicts are based on our knowledge of and prior experience with such agreements and their implementing regulations. We do not certify that the language or the terms of these agreements will be exactly as we have anticipated.

The processing time for these agreements has been calculated into our delivery and performance plans and contingency plans made in the case that there is delay in processing on the part of the issuing government(s).

We recognise that additional supplemental agreements, documents and permissions presented as a condition of Contract performance or MOU signature after our firm would be selected as the successful Bidder may be cause for the NCI Agency, or its legal successors, to determine the submitted Bid to be non-compliant with the requirements of the IFB;

We accept that should the resultant supplemental agreements issued in final form by the government(s) result in an impossibility to perform the Contract in accordance with its schedule, terms or specifications, the Contract may be terminated by the Purchaser at no cost to either Party.

Signature of authorised Representative: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.8 Annex B-8 – Certificate of Compliance AQAP 2110:2016 or ISO 9001:2015 or Equivalent

I hereby certify that _____ (name of Company) possesses and applies Quality Assurance Procedures/Plans that are equivalent to the AQAP 2110 or ISO 9001:2015 as evidenced through the attached documentation[1].

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

[1] Bidders must attach copies of any relevant quality certification.

6.9 Annex B-9 – List of Prospective SubContractors

Name and Address of Sub-Bidder	DUNS Number [3]	Primary Location of Work	Items/Services to be Provided	Estimated Value of Sub-Contract

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

[3] Data Universal Numbering System (DUNS). Bidders are requested to provide this data in order to help NCI AGENCY to correctly identify SubContractors. If a SubContractor's DUNS is not known this field may be left blank.

6.10 Annex B-10 – Bidder Background IPR

I, the undersigned, as an authorised representative of Bidder _____, warrant, represent, and undertake that:

A. The Contractor Background IPR specified in the table below will be used for the purpose of carrying out work pursuant to the prospective Contract.

ITEM	DESCRIPTION

B. The stated Bidder has and will continue to have, for the duration of the prospective Contract, all necessary rights in and to the Background IPR specified above.

C. The Background IPR stated above complies with the terms specified in Clause 32 of the Special Contract Provisions and shall be licensed to the Purchaser according to the terms and conditions specified in the prospective Contract, and more particularly, in accordance with Clause 32 of the Special Contract Provisions and Clause 30 of the NCIA General Contract Provisions.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

Bid Reference _____

6.11 Annex B-11 – List of SubContractors IPR

I, the undersigned, as an authorised representative of Bidder _____, warrant, represent, and undertake that:

A. The SubContractor IPR specified in the table below will be used for the purpose of carrying out work pursuant to the prospective Contract.

ITEM	DESCRIPTION

B. The stated Bidder has and will continue to have, for the duration of the prospective Contract, all necessary rights in and to the IPR specified above necessary to perform the Contractor's obligations under the Contract.

C. The SubContractor IPR stated above complies with the terms specified in Clause 32 of the Special Contract Provisions and shall be licensed to the Purchaser according to the terms and conditions specified in the prospective Contract, and more particularly, in accordance with Clause 32 of the Special Contract Provisions and Clause 30 of the NCIA General Contract Provisions.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

Bid Reference _____

6.12 Annex B-12 – Certificate of Origin of Equipment, Services, and Intellectual Property

The Bidder hereby certifies that, if awarded the Contract pursuant to this solicitation, he will perform the Contract subject to the following conditions:

A. none of the work, including project design, labour and services shall be performed other than by firms from and within participating NATO member countries;

B. no material or items of equipment down to and including identifiable sub-assemblies shall be manufactured or assembled by a firm other than from and within a participating NATO member country. (A sub-assembly is defined as a portion of an assembly consisting of two or more parts that can be provisioned and replaced as an entity); and

C. The intellectual property rights to all design documentation and related system operating software shall reside in NATO member countries, and no license fees or royalty charges shall be paid by the Bidder to firms, individuals or Governments other than within the NATO member countries.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Company: _____

Bid Reference _____

6.13 Annex B-13 – List of Proposed Key Personnel

Position	SOW/Work Package Reference	Labour Category	Name	Designation Period
Project Manager				EDC thru Contract expiration date
Implementation Lead				EDC thru Contract expiration date
Training Lead				EDC thru Contract expiration date
Other (tbd by Bidder):				EDC thru Contract expiration date

Signature of authorised Representative:

_____

Printed Name: _____

Title: _____

Date: _____

Company: _____

6.14 Annex B-14 – Disclosure of Involvement of Former NCI Agency Employment

A. The Bidder hereby certifies that, in preparing its Bid, the Bidder did not have access to solicitation information prior to such information been authorized for release to Bidders (e.g., draft statement of work and requirement documentation).

B. The Bidder hereby acknowledges the post-employment measures applicable to former NCI Agency Personnel as per the NCI Agency Code of Conduct.

C. The Bidder hereby certifies that its personnel working as part of the company's team, at any tier, preparing the Bid:

☐ Have not held employment with NCI Agency within the last two years.

☐ Has obtained a signed statement from the former NCI Agency personnel below, who departed the NCI Agency within the last two years, that they were not previously involved in the project under competition (as defined in the extract of the NCI Agency Code of Conduct provided in Annex B of the prospective Contract Provisions):

Employee Name	Former NCIA Position	Current Company Position

D. The Bidder also hereby certifies that it does not employ and/or receive services from former NCI Agency Personnel at grades A5 and above or ranks OF-5 and above, who departed the NCI Agency within the last 12 months. This prohibitions covers negotiations, representational communications and/or advisory activities.

Date : .....

Signature : .....

Name & Title : .....

Company : .....

Bid Reference : .....

INVITATION FOR BID

IFB-CO-115049-NCOP2

IMPLEMENT INCREMENT 2 OF THE NATO COMMON OPERATIONAL PICTURE (NCOP)

NATO Communications and Information Agency

7 BOOK I - ANNEX C

Bid Guarantee - Standby Letter of Credit

Annex C Bid Guarantee - Standby Letter of Credit

Standby Letter of Credit Number:

Issue Date: _____

Beneficiary: NCI Agency, Financial Management Office
Boulevard Leopold III, B-1110, Brussels
Belgium

Expiry Date: _____

A. We, (issuing bank) hereby establish in your favour our irrevocable standby letter of credit number {number} by order and for the account of (NAME AND ADDRESS OF BIDDER) in the original amount of € 300,000.00 (Three Hundred Thousand Euro). We are advised this Guarantee fulfils a requirement under Invitation for Bid IFB CO-115049-NCOP2 dated _____.
B. Funds under this standby letter of credit are available to you upon first demand and without question or delay against presentation of a certificate from the NCI Agency Contracting Officer that:
    1) (NAME OF BIDDER) has submitted a Bid and, after Bid Closing Date (including extensions thereto) and prior to the selection of the lowest priced, technically compliant Bid, has withdrawn its Bid, or stated that he does not consider its Bid valid or agree to be bound by its Bid, or
    2) (NAME OF BIDDER) has submitted a Bid determined by the Agency to be the lowest priced, technically compliant Bid, but (NAME OF BIDDER) has declined to execute the Contract offered by the Agency, such Contract being consistent with the terms of the Invitation for Bid, or
    3) The NCI Agency has offered (NAME OF BIDDER) the Contract for execution but (NAME OF BIDDER) has been unable to demonstrate compliance with the security requirements of the Contract within a reasonable time, or
    4) The NCI Agency has entered into the Contract with (NAME OF BIDDER) but (NAME OF BIDDER) has been unable or unwilling to provide the Performance Guarantee required under the terms of the Contract within the time frame required.
C. This Letter of Credit is effective the date hereof and shall expire at our office located at (Bank Address) on _____. All demands for payment must be made prior to the expiry date.
D. It is a condition of this letter of credit that the expiry date will be automatically extended without Amendment for a period of sixty (60) calendar days from the current or any successive expiry date unless at least thirty (30) calendar days prior to the then current expiry date the NCI Agency Contracting Officer notifies us that the Letter of Credit is not required to be extended or is required to be extended for a shorter duration.

E. We may terminate this letter of credit at any time upon sixty (60) calendar days notice furnished to both (NAME OF BIDDER) and the NCI Agency by registered mail.

F. In the event we (the issuing bank) notify you that we elect not to extend the expiry date in accordance with paragraph 4 above, or, at any time, to terminate the letter of credit, funds under this credit will be available to you without question or delay against presentation of a certificate signed by the NCI Agency Contracting Officer which states

G. “The NCI Agency has been notified by {issuing bank} of its election not to automatically extend the expiry date of letter of credit number {number} dated {date} pursuant to the automatic renewal clause (or to terminate the letter of credit). As of the date of this certificate, no suitable replacement letter of credit, or equivalent financial guarantee has been received by the NCI Agency from, or on behalf of (NAME OF BIDDER), and the NCI Agency, as beneficiary, hereby draws on the standby letter of credit number _____ in the amount of € (Amount up to the maximum available under the LOC), such funds to be transferred to the account of the Beneficiary number _____ (to be identified when certificate is presented).”

H. Such certificate shall be accompanied by the original of this letter of credit and a copy of the letter from the issuing bank that it elects not to automatically extend the standby letter of credit, or terminating the letter of credit.

I. The Beneficiary may not present the certificate described in paragraph 6 above until 20 (twenty) calendar days prior to a) the date of expiration of the letter of credit should {issuing bank} elect not to automatically extend the expiration date of the letter of credit, b) the date of termination of the letter of credit if {issuing bank} notifies the Beneficiary that the letter of credit is to be terminated in accordance with paragraph 6 above.

J. Multiple drawings are allowed.

K. Drafts drawn hereunder must be marked, “Drawn under {issuing bank} Letter of Credit No. {number}“ and indicate the date hereof.

L. This letter of credit sets forth in full the terms of our undertaking, and this undertaking shall not in any way be modified, amended, or amplified by reference to any document, instrument, or agreement referred to herein (except the International Standby Practices (ISP 98) hereinafter defined) or in which this letter of credit is referred to or to which this letter of credit relates, and any such reference shall not be deemed to incorporate herein by reference any document, instrument, or agreement.

M. We hereby engage with you that drafts drawn under and in compliance with the terms of this letter of credit will be duly honoured upon presentation of documents to us on or before the expiration date of this letter of credit.

N. This Letter of Credit is subject to The International Standby Practices-ISP98 (1998 Publication) International Chamber of Commerce Publication No.590.

INVITATION FOR BID

IFB-CO-115049-NCOP2

IMPLEMENT INCREMENT 2 OF THE NATO COMMON OPERATIONAL PICTURE (NCOP)

NATO Communications and Information Agency

8 BOOK I - ANNEX D

Clarification Request Form

Annex D Clarification Request Form

INSERT COMPANY NAME HERE
INSERT SUBMISSION DATE HERE

INVITATION FOR BID
IFB CO-115049-NCOP2

Implement Increment 2 of the NATO Common Operational Picture (NCOP)

CLARIFICATION REQUEST FORM

INSERT COMPANY NAME HERE
INSERT SUBMISSION DATE HERE

ADMINISTRATION or CONTRACTING				
Serial NR	**IFB REF**	**QUESTIONS**	**ANSWERS**	**Status**
A.1.				
A.2.				
A.3.				

INSERT COMPANY NAME HERE
INSERT SUBMISSION DATE HERE

PRICE				
Serial NR	**IFB REF**	**QUESTIONS**	**ANSWERS**	**Status**
P.1				
P.2				
P.3				

INSERT COMPANY NAME HERE
INSERT SUBMISSION DATE HERE

TECHNICAL				
Serial NR	**IFB REF**	**QUESTIONS**	**ANSWERS**	**Status**
T.1				
T.2				
T.3				

Index no. NCIA	Date received	Index no. bidder	IFB Source Document	IFB Parag Ref	Bidder's Question	Type	NCI Agency's Response
1	13-Nov	T.1	SOW		The SOW is missing a network architecture diagram.	Technical	A network architecture diagram is not relevant for bidding on this IFB
2	13-Nov	T.2	SOW	1.6.2.4	Needs the bidder provide a Mission Anchor Functions (MAF) solution or is a legacy MAF used?	Technical	Provision of a Mission Anchor Functions is not part of this contract. Current MAF is used
3	13-Nov	T.3	SOW	4.2.13	The MAF will provide the required cross-domain capability to access and allow information exchange between the security domains. What are the requirements for the MAF?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
4	13-Nov	T.4	SOW		IEG: Will be the security labels for the unstructured or structured data created by a legacy solution or may the bidder offer an own security labelling solution.	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
5	13-Nov	T.5	SOW		IEG: Will structured data filtered out by configurable rules?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
6	13-Nov	T.6	SOW		IEG: Will structured data have security labels?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
7	13-Nov	T.7	SRS	1.1.0-5 NCOP2-IF-327	How is the NATO core Metadata specification defined?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
8	13-Nov	T.8	SRS	1.1.0-6 NCOP2-IF-328	Please provide the latest version of the NATO interoperability standard.	Technical	Document is being provided as part of AMD2
9	13-Nov	T.9	SRS	1.2.1.0-1	NCOP is expected to communicate with: 1. Other Bi-SC AIS Functional Services: AirC2IS, LC2IS, TRITON, TOPFAS, JOCWATCH, LOGFS, Intel FS, CBRN FS, Cyber Defence FS, N-JTS, NCOP 2. Fielded Prototype Systems until Bi-SC AIS Functional Services will be available: ICC, LOGFAS, JCHAT, JTS 3. Bi-SC AIS Core Services: DHS, NIP, CoreGIS, IEG-C, E-NPKI, SOA platform components, IdM, NEDS, ITM, SMC 4. Other NATO fielded systems: AGS, including CSD and Sensor Information Interface, ETEE, ACCS, NIRIS, Alternate SO system (in place of SOF FS) Which of the above-named communication is going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all supported communication should also be possible through an IEG --- The IEG is not in scope of the deliverable of this contract.
10	13-Nov	T.10	SRS	1.2.1.2.0-1	Does the NCOP need to support an information exchange mechanism through an IEG for: - File exchange? - Web services? Which kind of web services are used: REST API or SOAP (with XML)? Which data format is used by REST API: HTML, XML or JSON?	Technical	All supported information exchange mechanisms should also be possible through an IEG Kind of web service used: both REST API and SOAP Data format used by REST API: JASON
11	13-Nov	T.11	SRS	1.2.1.2.1.0-6 NCOP2-IF-385	NCOP shall be interoperable with CIDNE Web Services. Will these CIDNE Web services also go through IEG? Which kind of web services are used and which data format?	Technical	This web-service is a Prio3 requirement, which will be out of scope for NCOP-2 BL1 and BL2
12	13-Nov	T.12	SRS	1.2.2.1.0-2 To 1.2.2.1.0-31 NCOP2-IF-50, 128, 51, 116, 110, 115, 111, 112, 113, 214, 126, 114, 117, 118, 258, 259, 121, 122, 123, 124, 125, 127, 256, 387, 129,130,260,163, 165, 257, 378	Which of information products will be transported through the IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all supported Information Products should also be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
13	13-Nov	T.13	SRS	1.2.2.2.1.0-1	NCOP will support ADatP-3 Baseline 13.1 based information exchange. Only a selected set of Formatted Messages out of the APP-11 (C) Chg.1 Message Catalogue will be used. Are the selected set of messages the messages mentioned in 1.2.2.2.1.0-2?	Technical	All messages listed in section 1.2.2.2.1
14	13-Nov	T.14	SRS	1.2.2.2.1.0-1	If newer versions are available when the implementation starts, the most recent versions of the standards will be used in addition to these ones in order to keep backward compatibility when necessary. How can the NCOP determine if a received message is based on a newer version?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
15	13-Nov	T.15	SRS	1.2.2.2.1.0-2 NCOP2-IF-207	Must the IEG C support the following AdatP-3 messages: ACO, AOD, ASSESSREP, ATO, CCISSTATREP, CISSITREP, CMOSITREP, COMMEDREP, COMPASSESSREP, COMSPOT, COVREP, ENSITREP, EVENTREP, FRAGO, GENINFOMSG, HELLSREP, HELOPSUM, INCREP, INCSOPTREP, INTREP, INTSUM, LOCATOR, LOGASSESSREP, MARINTREP, MARINTSUM, MOVASSESSREP, MSGCORRCANX, NAVSITREP, NAVSITSUM, NBCSITREP, ORBATAIR, ORBATLAND, ORBATSEA, OWNSITREP, PERSREP, PISITREP, PSOCOMASSESSREP, PSYREP, RMPSITSUM, SARSIT, SENSCOVER, SITREP, SUBSITREP	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all supported AdatP-3 messages should also be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.

16	13-Nov	T.16	SRS	1.2.2.2.1.0-3 To 1.2.2.2.1.0-18 NCOP2-IF- 265,266,267,270, 269,268,280, 281, 282,283,284,285, 286,287,288,289	Which of these ADatP-3 messages will be transported through the IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all supported protocols should be possible through an IEG --- The IEG is not in scope of the deliverable of this contract.
17	13-Nov	T.17	SRS	1.2.2.2.2.0-1 NCOP2-IF-64	NCOP shall support the same formatted messages as NCOP Increment-1 Functional Baseline. Which are the NCOP Increment-1 Functional Baseline messages? How are they defined?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
18	13-Nov	T.18	SRS	1.2.2.2.2.0-2	NCOP shall support the OTH-T Gold protocol. Need the IEG support the OTH-T Gold protocol?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all supported protocols should be possible through an IEG --- The IEG is not in scope of the deliverable of this contract.
19	13-Nov	T.19	SRS	1.2.2.3.0-1 NCOP2-IF-358	NCOP shall exchange information with IEG C to cross from NATO Secret to Mission Secret Security domains. Is a legacy IEG C used or needs the bidder provide an IEG?	Technical	Legacy IEG C will be used
20	13-Nov	T.20	SRS	1.2.2.3.0-2 NCOP2-IF-360	NCOP shall exchange information with IEG D to cross from NATO Secret to NGO's or IO's. Is a legacy IEG D used or needs the bidder provide an IEG?	Technical	Legacy IEG D will be used
21	13-Nov	T.21	SRS	1.2.2.4.0-1 NCOP2-IF-70	NCOP shall support the same alternate Information Exchange as NCOP Increment-1 Functional Baseline. How is the NCOP Increment-1 Functional Baseline defined?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
22	13-Nov	T.22	SRS	1.2.2.5.0-1	NCOP shall support the same Legacy System Information Exchange as NCOP Increment-1 Functional Baseline. How is the NCOP Increment-1 Functional Baseline defined?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
23	13-Nov	T.23	SRS	1.2.3.0-2 NCOP2-IF-201	NCOP shall support the same system interfaces and protocols as NCOP Increment-1 Functional Baseline. Which interfaces, protocols and formats are used by NCOP Increment-1 Functional Baseline?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
24	13-Nov	T.24	SRS	1.2.3.1.2.0 -2 to -15 NCOP2-IF-222, 199, 208, 210, 212, 213, 215, 218, 219, 220, 221, 224, 261, 262	By which of these systems will the data exchange go through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all systems should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
25	13-Nov	T.25	SRS	1.2.3.1.2.0-8 1.2.3.1.2.0-11 1.2.3.1.2.0-13 NCOP2-IF-215 NCOP2-IF-220 NCOP2-IF-224	In Object number 1.2.1.0-1: NCOP is expected to communicate with: - Other Bi-SC AIS Functional Services: Not mentioned are: SOF FS, Environmental FS and ETEE FS. Is this a mistake?	Technical	1.2.10-1 is Description only
26	13-Nov	T.26	SRS	1.2.3.1.3.0-2 NCOP2-IF-82	NCOP shall have a dedicated interface for AGS, information products to be decided at design stage. Need the IEG support AGS? If yes how is the format and protocol defined?	Technical	AGS and CSD are Prio3 requirements, which will be out of scope for NCOP-2 BL1 and BL2
27	13-Nov	T.27	SRS	1.2.3.1.3.0-3 NCOP2-IF-244	NCOP shall have a dedicated interface for CSD, information products to be decided at design stage. Need the IEG support CSD? If yes how is the format and protocol defined?	Technical	AGS and CSD are Prio3 requirements, which will be out of scope for NCOP-2 BL1 and BL2
28	13-Nov	T.28	SRS	1.2.3.1.3.0-4 NCOP2-IF-83	NCOP shall be able to receive Track Data from AGS through NIRIS, if the [AGS ICD] is available at the time of implementation. Need the IEG support AGS ICD? If yes how is the format and protocol defined?	Technical	AGS and CSD are Prio3 requirements, which will be out of scope for NCOP-2 BL1 and BL2
29	13-Nov	T.29	SRS	1.2.3.1.3.0-5 NCOP2-IF-84	Need the IEG support AGS? If yes how is the format and protocol defined?	Technical	AGS and CSD are Prio3 requirements, which will be out of scope for NCOP-2 BL1 and BL2
30	13-Nov	T.30	SRS	1.2.3.1.4.1.0-1 To 1.2.3.1.4.1.0-8 NCOP2-IF-209 NCOP2-IF-211 NCOP2-IF-216 NCOP2-IF-217 NCOP2-IF-377 NCOP2-IF-161 NCOP2-IF-159 NCOP2-IF-264	Need the IEG support communication with the related systems mentioned in the requirements? If yes how are the formats and protocols defined?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
31	13-Nov	T.31	SRS	1.2.3.1.4.2.0-1 To 1.2.3.1.4.2.0-4 NCOP2-IF- 362, 363, 364	Does the NCOP need to exchange electronic messages with other Domains with different security levels? Are these messages going through an IEG?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
32	13-Nov	T.32	SRS	1.2.3.1.4.3.0-1 To 1.2.3.1.4.3.0-7 NCOP2-IF- 263, 266, 370, 369, 368, 367	Does the NCOP need to communicate with NIRIS through an IEG? Please provide NIRIS API specification.	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
33	13-Nov	T.33	SRS	1.2.3.4.0-1 NCOP2-IF-252	NCOP shall support all the protocols and formats, supported by the latest NCOP-1 product baseline. Which protocols and formats do support NCOP-1 product baseline? Please provide detailed information about these protocols and formats. Which of these protocols are used by a communication that is going through an IEG?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
34	13-Nov	T.34	SRS	1.2.3.4.0-2 NCOP2-IF-167	How is the ESRI-REST protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG
35	13-Nov	T.35	SRS	1.2.3.4.0-3 NCOP2-IF-168	How is the OGC WMS protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.

36	13-Nov	T.36	SRS	1.2.3.4.0-4 NCOP2-IF-169	How is the OGC WMC protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
37	13-Nov	T.37	SRS	1.2.3.4.0-5 NCOP2-IF-170	How is the OGC EFS protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract
38	13-Nov	T.38	SRS	1.2.3.4.0-6 NCOP2-IF-171	How is the OGC KML protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract
39	13-Nov	T.39	SRS	1.2.3.4.0-7 NCOP2-IF-298	How is the GeoRSS protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
40	13-Nov	T.40	SRS	1.2.3.4.0-8 NCOP2-IF-299	How is the OGC WMTS protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
41	13-Nov	T.41	SRS	1.2.3.4.0-9 NCOP2-IF-250	How is the NVG protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract
42	13-Nov	T.42	SRS	1.2.3.4.0-10 NCOP2-IF-251	How is the NVG Streaming protocol defined? Is it going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract
43	13-Nov	T.43	SRS	1.2.3.4.0-11-12 NCOP2-IF-173 and -174	Must NCOP2 have the capability to create Security Labels?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
44	13-Nov	T.44	SRS	1.2.3.4.0-17 to 1.2.3.4.0-46	Which of the named protocols are used by a communication that is going through an IEG?	Technical	Specific details of communication going through an IEG will be situation/mission dependent. In principle all formats and protocols should be accessible through an IEG --- The IEG is not in scope of the deliverable of this contract.
45	02-Dec	T.1		Book II Part IV paragraph 1.3	Please confirm that the scope of the project will include only installation, activation, training and support and related activities, not any software development, improvement or modification?	Technical	Scope of the project does not include any software development, improvement or modification
46	02-Dec	T.2	SRS	SOW Annex A SRS	Are all existing NCOP1 requirements covered by the SOW?	Technical	Technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
47	02-Dec	T.3	SRS	SOW Annex A SRS	Can the Agency indicate which requirements are essential for NCOP2 BL1?	Technical	All Prio1 and Prio2 requirements are part of NCOP software as PFE. NCOP-2 BL1 will include the requirements related to upgrade of the COTS infrastruture and non-regression to NCOP-1.
48	02-Dec	T.4		IFB covering letter	Will the Agency be hosting a Bidders Conference? Can you provide details?	Commercial	At this point, there is no plan for a Bidders conference
49	02-Dec	T.5	SOW	Book II Part IV section 5.1	The schedule has compressed timeline, particularly in the early phases. Is there flexibility in replanning milestones?	Technical	The bidder must propose a schedule in its bid which will be reviewed with purchaser after Contract award and validated at PMR. The schedule must take into account the two AFPL milestones which give the pace of the implementation
50	02-Dec	T.6	SOW	Book II Part IV section 5.1	What is the contingency if ITM is not delivered to meet NCOP2 milestones?	Technical	This project will deliver on existing NATO datacenters
51	02-Dec	T.7	SRS	SOW Annex A SRS	Is there a governing document to the Excel spreadsheet that explains the requirements with more context and detail?	Technical	The Nations approved the scope of this project based on the NCOP-2 TBCE
52	02-Dec	T.8	SOW	Book II Part IV section 4.4	Is there a preferred methodology the Agency would prefer to use for implementation?	Technical	For project management Prince2 and for service delivery ITIL. For any other aspects the Bidder shall be in line with standards in the SoW
53	02-Dec	T.9	SRS	SRS: NCOP2-187, NCOP2-196	Can the difference between these two requirements be explained?	Technical	There is no difference between the two requirements
54	02-Dec	T.10	SRS	SOW Annex A SRS: NOP2-858	How is the requirement to “operate in a comfortable way” to be demonstrated and accepted?	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
55	02-Dec	T.11	SRS	SRS: NCOP2-874, NCOP2-875	What is expected to be delivered for L1 and L2 training? Neither are covered in Book I Annex A -SSS; Book II Part IV-SOW Section 4.3; or SOW Annex B – Initial Training Requirements.	Technical	The question refers to the technical scope of the NCOP software as PFE that has no significant impact on the deliverables of this contract
56	02-Dec	T.12	SRS	SRS: Requirement NCOP2-306	Are the DFAS NCISG's administrator requirements available?	Technical	These requirements are Prio4 and therefore are not part of this contract deliverables
57	02-Dec	T.13	SRS	SRS: NCOP2-307	Is feedback provided by NCOP administrators available?	Technical	These requirements are Prio4 and therefore are not part of this contract deliverables

58	02-Dec	T.14	SOW	NCOP Book II Part IV-SOW Annex D	When will existing NCOP1 training materials be provided? Only an initial TRA was provided with the IFB.	Technical	At Contract award, access will be granted to the collaborative space with all the doc and materials
59	02-Dec	T.15	SOW	NCOP Book II Part IV-SOW Section 4.3	Paragraph 4.3.11 states that training courses for the five user roles identified can be assumed to be combined into two courses. Book I Annex A - SSS lists five separate courses. How many courses are to be delivered?	Technical	Courses for 5 User Roles. Experience from NCOP-1 training curriculum shows that these can be distributed over two combined courses, the first grouping NCOP General User, NCOP Advanced User, NCOP Contributor and the second grouping COP Manager and Functional Manager
60	02-Dec	T.16	SOW	NCOP Book II Part IV-SOW Table 1-1	Can the NCI Agency provide details of the distribution of the 42 nodes to be costed for WP4 in the SSS? SOW Table 1-1 only provides high level location information for 11 organisational nodes.	Technical	Please see TBCE Table 8-6 provided with AMD2
61	02-Dec	T.17	SOW	NCOP Book II Part IV-SOW Table 1-2	Can the NCI Agency provide details of the distribution of the 21 nodes to be costed in the SSS? SOW Table 1-3 only provides high level location information for 18 organisational nodes.	Technical	Please see TBCE Table 8-6 provided with AMD3
62	28-Dec	A.1	Book I	Book1 – Bidding Instructions - §2.3.1	In 1_IFB-CO-115049-NCOP2 Book 1, you request a bid delivery before January 27, 2021. In the cover letter, the closing date is January 28, 2021. Which date should we consider as the last bid delivery date?	Admin	NCIA revised the Bid Closing date to 08 March 2021 via IFB AMD2
63	28-Dec	A.2	Book I	Book1 – Bidding Instructions - § 2.9.3	This article is mentioning the Bid Opening date as a limit for withdrawal. Could you advise precisely the date planned for this Bid Opening?	Admin	Bid opening date is at the discretion of the Purchaser, any time after Bid closing date
64	28-Dec	A.3	Book I	Book1 – Bidding Instructions - § 3.4.11	This article is mentioning INCOTERMS. Could you confirm it refers to INCOTERMS 2000 edition as per NCIA Contract General Provisions Art. 20.1?	Admin	Confirmed, NCIA Contract General Provisions Art. 20.1 applies
65	28-Dec	A.4	Book I	Book II – Prospective Contract - Special Provisions - § 13.3	Could you confirm Termination as mentioned in this Article applies only when Liquidated Damages have reached the caps specified in Article 13.5?	Admin	Article 13.3 does not apply only when Liquidated Damages have reached the caps specified in Article 13.5
66	28-Dec	A.5	CSP	Contract Special Provisions - § 16.5 & 16.6	Could you confirm these provisions apply, provided Export Control regulations allow it and National Authorities have agreed to such measures??	Admin	The provisions 16.5 and 16.6 apply, provided Export Control regulations allow it.
67	28-Dec	A.6	CSP	Book II – Contract General Provisions - § 8.6	Could you confirm clause 8.6 does not apply to this Contract?	Admin	Confirmed, the performance guarantee will stay at €300,000 for the duration of the contract, therefore the CGP 8.6 does not apply
68	28-Dec	A.7	CSP	Book II – Prospective Contract - Special Provisions - § 2.1.4.	Could you clarify if Article 7 of Special Provisions supplements OR replaces clause 25 of the CGP?	Admin	Clause 25 (Invoices and Payment) is supplemented by Article 7 (Invoices and Payment Terms) of the Contract Special Provisions
69	28-Dec	A.8	Book I	Book1 - § 3.3.3.3 & 3.3.3.5	Could you confirm these 2 sub-articles are void and without content?	Admin	They are not void, formating fixed in Book I AMD2
70	28-Dec	A.9	Book I	Book1 - Bidding Instructions - § 3.5.1.2.8.	Could you confirm in paragraph "a)" of this article, the second and third bullet points are covering the same item: "the purchaser(s) of these systems"?	Admin	Confirmed, please see amended Book I
71	28-Dec	A.10	Book I	Book1 - Bidding Instructions - § 2.1.1.1	Could you confirm the possibility for a consortium to submit a bid for this IFB where the "Principal contractor" has been nominated by its national representation to NATO and where the other member of the consortium didn't apply to be nominated by its national delegation for this IFB?	Admin	A consortium may submit a bid for this IFB where the "Principal contractor" has been nominated by its national representation to NATO. The other member of the consortium would still need to be nominated by its national delegation. The Declaration of Eligibility could be submitted prior to Bid submission.
72	28-Dec	P.1	Book I	Book I-Annex A-Bidding Sheets	In CLIN 4.1.2. and following ones, our understanding of unit price content is that it is related to one installation (BL1 or BL2) plus two patches. Is it correct?	Price	The figures are for two baselines so 5+5. and up to two patches by baseline.
73	28-Dec	P.2	Book I	Book I-Annex A-Bidding Sheets	CLIN 2.1 and 2.2 take implementation management activities such as planning into account. These activities are related to CLIN 2. and other WP4 tasks. Where to quote equivalent activities for optional WP 7 and BMD as only recurring installation or training activities are expected in these WP?	Price	The effort is to be added in the relative CLINs.
74	28-Dec	T.1			It is common practise to conduct NATO CIS training sessions with two instructors per classroom. Is this policy applicable to this project?	Technical	It is common practice to expect two instructors per classroom, due to the number of trainees expected as per TBCE table 8-10 (provided with AMD2)
75	28-Dec	T.2			A large set of implementations (installation / training / OT&E) are related to deployable instances. Our understanding is that, for these instances, the location of the implementation operations will be in headquarters located in NATO countries. Is it correct? Have you any additional information on these locations in order to quote travel expenses?	Technical	Locations for the deployable scope for this contract are limited to NATO Countries in Continental Europe

Table 8-6 - NCOP-2 Physical Reach

Organisational Nodes, Requirements and Activations

N.	Abbrev.	Name	Location	Size	Dedicated installation	NCOP Inc 1	NCOP Inc 2	BMD Function	Core capability	Estimated users	Activations per Organisational Node: Core (WP4)	Activations per Organisational Node: Add (WP7)
1	SHAPE (CCOMC and BMDCC)	SHAPE Comprehensive Crisis and Operations Management Centre and BMD Coordination Cell, Mons	BEL	L	No	Yes	Yes	Yes	Core	100	1	
2	JFC-BS HQ	HQ Allied Joint Force Command Brunssum	NLD	L	No	Yes	Yes	Yes	Core	250	1	
3	JFC-NP HQ	HQ Allied Joint Force Command Naples	ITA	L	No	Yes	Yes	Yes	Core	250	1	
4	LANDCOM HQ	HQ Allied Land Command, Izmir	TUR	L	No	Yes	Yes	Yes	Core	150	1	
5	AIRCOM HQ	HQ Allied Air Command, Ramstein	DEU	S	No	Yes	Yes	Yes	Core	50	1	
6	MARCOM HQ	HQ Allied Maritime Command, Northwood	GBR	M	No	Yes	Yes	Yes	Core	75	1	
7	JFTC HQ	Joint Force Training Centre, Bydgoszcz	POL	L	Yes	Yes	Yes	Yes	Core	200	1	
8	JWC HQ	Joint Warfare Centre, Stavanger	NOR	L	Yes	Yes	Yes	Yes	Core	200	1	
9	JTF HQ	Joint Task Force HQ (NRF 2x = prep, standby)	depl	L	Yes	Yes	Yes	No	Core	300	2	
		Joint Task Force HQ (1x = MJO1)	depl	L	Yes	No	Yes	No	Add	300		1
10	JLSG HQ	Joint Logistics Support Group HQ (3x = prep, standby, MJO1)	depl	S	Yes	No	Yes	No	Add	25		3
11	CAOC (BMDOC Backup)	Allied Combined Air Operations Centre, Uedem	DEU	S	n/a	Yes	Yes	Yes	Add	25		1
12	CAOC (BMDOC Backup)	Allied Combined Air Operations Centre, Torrejon	ESP	S	n/a	Yes	Yes	Yes	Add	25		1
13	SACT HQ	HQ Supreme Allied Command Transformation (ACT), Norfolk	USA	S	No	Yes	Yes	No	Add	10		1
14	AGS MOB	AGS Main Operating Base	ITA	S	Yes	No	Yes	No	Add	**30**		1
15	AGS XGCS	Alliance Ground Surveillance TGGS(2), MGGS(4)	depl	S	Yes	No	Yes	No	Add	**30**		6
16	CTC	NATO Centralised Targeting Centre	GBR	S	Yes	No	Yes	No	Add	**30**		1
17	LCC	Land Component Command (2 NRF, MJO1)	depl	L	Yes	No	Yes	No	Add	***150***		3
18	MCC	Maritime Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	***75***		3
19	JFACC	Joint Force Air Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	***75***		3
20	SOCC	Special Ops Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	75		3
21	NCISS HQ	NATO CIS School / Training capability	PRT	S	Yes	No	Yes	Yes	Add	15		1
22	DEMO	NATO Demonstration system	various	S	No	No	Yes	No	Add	15		0
23	REFSYS	NCIA Reference System	NLD/BEL	S	Yes	Yes	Yes	Yes	Core	10	0	
24	DEV	NCIA Integr. Test & Develop. System	NLD/BEL	S	Yes	Yes	Yes	Yes	Core	20	0	
25	IVV	NCIA Independent Verification and Validation System	NLD/BEL	S	Yes	No	Yes	Yes	Core	10	0	
25		**Total**			16	14					**10**	**28**

Fixed Installation Nodes / Deployable Installation Nodes / AGS nodes

N.	Abbrev.	Data Centers DC-1 BEL NS	DC-1 BEL MS	DC-1 BEL NU	DC-2 ITA NS	DC-2 ITA MS	DC-2 ITA NU	DC-3 >2019 BEL NS	DC-3 BEL MS	DC-3 BEL NU	MAF/MIR MIR DC-1 BEL MS	MAF/MIR MIR DC-2 ITA MS	EN LAND COM TUR NS	SN AIR COM DEU NS	EN MAR COM GBR NS	DCIS/DCM DCM JTF NRF MS	DCM JTF MJO1 MS	DCM JLSG NRF MS	DCM JLSG MJO1 MS	DCM LCC MS	MCC MS	DCM JFACC MS	DCM SOCC MS	DCM Ref-Sys MS	AGS MOB ITA AGS Core	AGS TGGS MGGS AGS Core
1	SHAPE (CCOMC and BMDCC)	1			1			1			X	X														
2	JFC-BS HQ	X			X			X			X															
3	JFC-NP HQ	X			X			X				X														
4	LANDCOM HQ	X			X			X					0													
5	AIRCOM HQ	X			X			X						0												
6	MARCOM HQ	X			X			X							0											
7	JFTC HQ		2			2																				
8	JWC HQ		2			2																				
9	JTF HQ										1	1				2								1		
																	1									
10	JLSG HQ																	2	1							
11	CAOC (BMDOC Backup)	X			X			X																		
12	CAOC (BMDOC Backup)	X			X			X																		
13	SACT HQ			X																						
14	AGS MOB																								1	
15	AGS XGCS																									0
16	CTC	X																								
17	LCC																			3						
18	MCC										1										2					
19	JFACC										1											2				
20	SOCC																						3			
21	NCISS HQ	1		1																						
22	DEMO			1																						
23	REFSYS	1		4																				1		
24	DEV		1	4																						
25	IVV		1	2																						

Node configuration totals

	DC-1 NS	DC-1 MS	DC-1 NU	DC-2 NS	DC-2 MS	DC-2 NU	DC-3 NS	DC-3 MS	DC-3 NU	MIR DC-1	MIR DC-2	LAND COM	AIR COM	MAR COM	DCM JTF NRF	DCM JTF MJO1	DCM JLSG NRF	DCM JLSG MJO1	DCM LCC	MCC	DCM JFACC	DCM SOCC	DCM Ref-Sys	AGS MOB	AGS TGGS MGGS	Total	Fixed	Deployable
Total nodes - WP4																										**WP4**	**WP4**	
SN - Single Node configuration	1	4	3		2																		2			12	10	2
SC - Scaled (Medium) Node configuration		2	2		2																					6	6	0
HA - High Availability Node configuration			2												2											4	2	2
XL - Extra Large Scale Node config. (for MIR/DC)	1		3	1						1	1															7	7	0
Total nodes - WP7																										**WP7**	**WP7**	
SN - Single Node configuration	1	0	2		0												2	1		2		3		1		12	3	9
SC - Scaled (Medium) Node configuration		0			0																2					2	0	2
HA - High Availability Node configuration										2						1			3							6	2	4
XL - Extra Large Scale Node config. (for MIR/DC)							1																			1	1	0

Legend
Main installation
Shared installation
During Exercise
Support installation
Regular installation

Table 8-10 NCOP-2 Training requirement

	Organisational Nodes			Requirements							Training						
											User Roles					Provided NCOP-2 Courses (per BL)	
N.	Abbrev.	Name	Location	Size	Dedicated installation	NCOP Inc 1	NCOP Inc 2	BMD Function	Core capability	Estimated users	NCOP General User	NCOP Advanced User	NCOP Contributor	COP Manager	Functional Admin	Combined User Courses	Combined COP/FAS Manager Course
																Total per BL	Total per BL
																Weeks	Weeks
1	SHAPE (CCOMC and BMDCC)	SHAPE Comprehensive Crisis and Operations Management Centre and BMD Coordination Cell, Mons	BEL	L	No	Yes	Yes	Yes	Core	100	71	21	7	2	2	2	1
2	JFC-BS HQ	HQ Allied Joint Force Command Brunssum	NLD	L	No	Yes	Yes	Yes	Core	250	179	54	18	4	2	3	1
3	JFC-NP HQ	HQ Allied Joint Force Command Naples	ITA	L	No	Yes	Yes	Yes	Core	250	179	54	18	4	2	3	1
4	LANDCOM HQ	HQ Allied Land Command, Izmir	TUR	L	No	Yes	Yes	Yes	Core	150	107	32	11	2	2	2	1
5	AIRCOM HQ	HQ Allied Air Command, Ramstein	DEU	S	No	Yes	Yes	Yes	Core	50	36	11	4	2	2	1	1
6	MARCOM HQ	HQ Allied Maritime Command, Northwood	GBR	M	No	Yes	Yes	Yes	Core	75	54	16	5	2	2	2	1
7	JFTC HQ	Joint Force Training Centre, Bydgoszcz	POL	L	Yes	Yes	Yes	Yes	Core	200	143	43	14	2	2	1	1
8	JWC HQ	Joint Warfare Centre, Stavanger	NOR	L	Yes	Yes	Yes	Yes	Core	200	143	43	14	2	2	1	1
9	JTF HQ	Joint Task Force HQ (NRF 2x = prep, standby)	depl	L	Yes	Yes	Yes	No	Core	300	214	64	21	4	2	6	2
		Joint Task Force HQ (1x = MJO1)	depl	L	Yes	No	Yes	No	Add	300	214	64	21	4	2	3	1
10	JLSG HQ	Joint Logistics Support Group HQ (3x = prep, standby, MJO1)	depl	S	Yes	No	Yes	No	Add	25	18	5	2	n/a	n/a	3	
11	CAOC (BMDOC Backup)	Allied Combined Air Operations Centre, Uedem	DEU	S	n/a	Yes	Yes	Yes	Add	25	18	5	n/a	n/a	n/a	1	
12	CAOC (BMDOC Backup)	Allied Combined Air Operations Centre, Torrejon	ESP	S	n/a	Yes	Yes	Yes	Add	25	18	5	n/a	n/a	n/a	1	
13	SACT HQ	HQ Supreme Allied Command Transformation (ACT), Norfolk	USA	S	No	Yes	Yes	No	Add	10	7	2	n/a	n/a	n/a	0	
14	AGS MOB	AGS Main Operating Base	ITA	S	Yes	No	Yes	No	Add	**30**	21	6	n/a	n/a	n/a	1	
15	AGS XGCS	Alliance Ground Surveillance TGGS(2), MGGS(4)	depl	S	Yes	No	Yes	No	Add	**30**						6	
16	CTC	NATO Centralised Targeting Centre	GBR	S	Yes	No	Yes	No	Add	**30**	21	6	n/a	n/a	n/a	1	
17	LCC	Land Component Command (2 NRF, MJO1)	depl	L	Yes	No	Yes	No	Add	***150***	107	32	11	3	3	6	3
18	MCC	Maritime Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	***75***	54	16	5	2	2	3	3
19	JFACC	Joint Force Air Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	***75***	54	16	5	2	2	3	3
20	SOCC	Special Ops Component Command (2 NRF, MJO1)	depl	M	Yes	No	Yes	No	Add	75	54	16	5	2	2	3	3
21	NCISS HQ	NATO CIS School / Training capability	PRT	S	Yes	No	Yes	Yes	Add	15						0	0
22	DEMO	NATO Demonstration system	various	S	No	No	Yes	No	Add	15						0	0
23	REFSYS	NCIA Reference System	NLD/BEL	S	Yes	Yes	Yes	Yes	Core	10						0	0
24	DEV	NCIA Integr. Test & Develop. System	NLD/BEL	S	Yes	Yes	Yes	Yes	Core	20						0	0
25	IVV	NCIA Independent Verification and Validation System	NLD/BEL	S	Yes	No	Yes	Yes	Core	10						0	0
25		**Total**			16	14										52	23

	Trainees					Courses	
Total	**1711**	**513**	**163**	**36**	**28**	**Weeks**	**Weeks**
Training - WP1							
System Administrator Courses (per BL)							3
Test crew training (per BL)							1
Refresher courses (BL1 -> BL2) NOT NEEDED							
Total trainees (Bi-SC AIS + BMD) - WP4	**1125**	**338**	**113**	**24**	**18**		
Combined User Courses (per BL)						21	
Combined COP/FAS Manager Courses (per BL)							10
Operational Trainer Courses (per BL)							
Refresher courses (BL1 -> BL2) NOT NEEDED							
Total trainees (Bi-SC AIT + BMD) - WP7	**586**	**176**	**50**	**12**	**10**		
Combined User Courses (per BL)						31	
Combined COP/FAS Manager Courses (per BL)							13
Refresher courses (BL1 -> BL2) NOT NEEDED							

NATO UNCLASSIFIED

14 March 2013

NOTICE
AC/322-N(2013)0026-REV1
Silence Procedure ends:
22 Mar 2013 12:00

CONSULTATION, COMMAND AND CONTROL BOARD (C3B)

NATO Interoperability Standards and Profiles (NISP) version 7

Allied Data Publication 34 (ADatP-34(G))

Note by the Secretary

Reference: AC/322-N(2013)0026-ADD1

1. Please find enclosed the revised NISP v7 Volume 2. This revision addresses the comments on Volume 2 circulated with Reference.

2. Unless the Action Officer is notified to the contrary by **12:00 hours on Friday, 22 March 2013,** it will be assumed that the C3B has approved the revised NISP v7 Volume 2 at Enclosure 1.

(Signed) M. ELLIOTT

Enclosure 1: Revised NISP v7 Volume 2 (electronic distribution only)

1 Enclosure

Action Officer: Maj. B.M. Deveci, Ext 5552
Original: English

ENCLOSURE 1
AC/322-N(2013)0026-REV1

Allied Data Publication 34

(ADatP-34(G))

NATO Interoperability Standards and Profiles

Volume 2

Near Term

8 March 2013

C3B Interoperability Profiles Capability Team

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1. INTRODUCTION

001. Volume 2 of the NISP focuses on interoperability standards and profiles in the near-term or a timeframe of 0 to 2 years into the future. This is the short-term step describing the state-of-the-art of NATO systems today and the framework for new systems actually under procurement or specification. For new systems, it describes the initial step towards the NII.

002. The Combined Communications Electronics Board (CCEB) nations will use NISP Volume 2 Chapter 3, Section 3.2, Section 3.3, Section 3.4, Section 3.5 and Section 3.6 tables to publish the interoperability standards for the CCEB under the provisions of the NATO-CCEB List of Understandings (LoU)[1]. For the CCEB Chapter 4 is only applicable to the CCEB Nations when taking part in NATO lead operations.

1.1. SCOPE

003. The scope of this volume will include:

- Identifying the standards, profiles and technologies that are relevant to a service oriented environment, as described in the NATO NNEC Technical Services Strategy,
- Describing the near term standards, profiles, and technologies to support the initial step towards NNEC Technical Services,
- Planning the transition of legacy systems.

[1]References:NATO Letter AC/322(SC/5)L/144 of 18 October 2000, CCEB Letter D/CCEB/WS/1/16 of 9 November 2000, NATO Letter AC/322(SC/5)L/157 of 13 February 2001

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2. REFERENCE MODELS: TRANSITION FROM PLATFORM CENTRIC TO SERVICE ORIENTED MODELS

004. Information technology is undergoing a fundamental shift from platform-oriented computing to network-oriented computing. Platform-oriented computing emerged with the widespread proliferation of personal computers and the global business environment. These factors and related technologies have created the conditions for the emergence of network-oriented computing. This shift from platform to network is what enables the more flexible and more dynamic network-oriented operation. The shift from viewing partners as independent to viewing partners as part of a continuously adapting ecosystem fosters a rich information sharing environment.

005. This shift is most obvious in the explosive growth of the Internet, intranets, and extranets. Internet users no doubt will recognize transmission control protocol/internet protocol (TCP/IP), hypertext transfer protocol (HTTP), hypertext markup language (HTML), Web browsers, search engines, and Java[1] Computing. These technologies, combined with high-volume, high-speed data access (enabled by the low-cost laser) and technologies for high-speed data networking (hubs and routers) have led to the emergence of network-oriented computing. Information "content" now can be created, distributed, and easily exploited across the extremely heterogeneous global computing environment. The "power" or "payoff" of network-enabled computing comes from information-intensive interactions between very large numbers of heterogeneous computational nodes in the network, where the network becomes the dynamic information grid established by interconnecting partners participating in a collaborative, coalition environment. At the structural level, network-enabled warfare requires an operational architecture to enable the common processes to be shared by all parties.

006. One of the major drivers for supporting net-enabled operations is Service-Oriented Architectures (SOA). SOA is an architectural style that leverages heterogeneity, and thus inherently platform-neutral. It is focused on the composition of Services into flexible processes and is more concerned with the Service interface and above (including composition metadata, security policy, and dynamic binding information), more so than what sits beneath the abstraction of the Service interface. SOA requires a different kind of platform, because runtime execution has different meanings within SOA. SOA enables business users and business process architects to compose Services into processes, and then manage and evolve those processes, in a declarative fashion. Runtime execution of such processes is therefore a metadata-centric operation of a different kind of platform -- a Service-oriented composite application platform.

007. Network-enabled operations are characterized by new concepts of speed of command and self-synchronization.

008. The most important SOA within an enterprise is the one that links all its systems. Existing platforms can be wrapped or extended in order to participate in a wider SOA environment. NATO use of the NISP will provide a template for new systems development, as well as assist in defining the path for existing systems to migrate towards net-enabled operations.

[1]Registered Trademark of SUN Microsystems, INC.

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3. STANDARDS

3.1. INTRODUCTION

009. This purpose of this chapter is to specify the NISP near term standards. The document organises these standards into five service areas and included service categories:

- Operational Mission/Activities/Tasks
- User Information Services
- Technical Services
  - COI Services
    - Generic COI Services
    - Specific COI Services
  - Information Integration
    - Core Enterprise Services
      - Discovery
        - Service Discovery Services
        - Information Discovery Services
      - Repository
        - Metadata Registry Services
        - Enterprise Directory Services
      - Mediation
        - Composition Services
        - Translation Services
      - Interaction
        - Messaging Services
        - Publish/Subscribe Services
        - Transaction Services
        - Collaboration Services
      - Infrastructure
        - Application Services
        - Storage Services
  - Communication Services
    - Network and Transport Services
    - Data Link and Connection Services
- Information Assurance
  - SMI Services
  - Confidentiality
  - Encryption
  - Integrity
  - Authentication
  - Detection
  - Transsec
- Service Management and Control

010. This section describes the role and requirements of each service area, and presents all associated standards in tabular form. The tables refine each service area into one or more service categories, with service components mapping to one or more mandatory, emerging near term or fading categories (see NISP vol. 1). A remarks column provides optional supplementary information on each standard plus CCEB-specific information.

3.1.1. Releasability Statement

011. In principle, NISP includes only standards/STANAGs/documents, which are generally available for NATO/Nato member nations/CCEB.

012. However, a subset of documents are only available for those nations/ organisations, who are joining a specific mission (e.g. ISAF) or are member of a special working group (I-ICWG). The membership in these activities is outside the scope of NISP.

3.2. OPERATIONAL MISSION/ACTIVITIES/TASKS

013. In the military organisations operational missions are generally planned activities that can be viewed in terms of distinct chronological stages of completion which in turn consist of shorter tasks. Operational missions do not involve combat (see combat mission, and can vary in duration from a few hours to several weeks, though usually in peacetime are limited to the working week.

014. This set of services is described in mission related terms to provide consistency with the set of possible NATO missions identified through the NATO Defense Planning Process (NDPP). Each Operational Service is dependent on one or more Information Services.

3.2.1. List of Standards

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks

3.3. USER INFORMATION SERVICES

015. These services are hierarchically organised and focused on information: content, management, processes, and standards. Each Information Service is enabled by one or more NNEC Services.

016. These NNEC services represent the technology required to enable the Information Services to make information available to user communities of interest. At the lowest level, NNEC Services are composed of components, processes, management.

3.3.1. List of Standards

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks

3.4. TECHNICAL SERVICES

017. Technical services provide fundamental support to service based frameworks both in the form of information integration and communication services, and in the form of COI independent general service building blocks.

018. COI services provide more specialized services in order to give the business more specific business benefits within a “domain” or “area of interest”.

019. A COI is a collaborative group of users who have shared goals, interests, missions or business processes that result in information exchange and shared vocabulary.

020. Information services include services that are either made available to all users by the infrastructure, or are mandatory to be provided by all users, by all providers or by all consumers. Information services also include specification of services of general interest that may be voluntarily exchanged by any parties on the network.

021. Actually information services are based only on core enterprise services (CES), but may be extended in the future.

022. Any service based framework, such as the Business Process Infrastructure Framework (BPIF), needs to provide a basic set of services that support and facilitate implementation and deployment of actual business services and processes. Such basic services are usually referred to as Core Enterpise Services.

023. Here we will provide an overview of such CESs in a BPIF context in terms of the way such services are categorized. A few examples of CESs in each category is also provided, but a complete set of well defined core services cannot be provided as it to a large extent will depend on the actual implementation of the BPIF.

024. Core services in a BPIF context are divided into two main categories according to their primary role in the implementation of business services and processes.

3.4.1. List of COI Standards

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
Generic COI Services				
Meteo				
Map View				
Map Mgmt				
Spatial Geography Visualisation				
		Sensor Planning Servicde (SPS) (OGC 09-000:2011)		
Document Management				
	Joint Brevity Words Publication (APP-7(E) Change 1, STANAG 1401 ed.14:2011)			
Specific COI Services				
Communicate and Inform				
Battlespace Mgmt				
Orbat Mgmt				
Overlay Mgmt				
	Additional military Layers for digital geospatial data products (AML), STANAG 7170 ed.2:2010			STANAG 7170 is the reference to the NATO Maritime Concepts standard and describes the product Addition-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				al Military Layers. This standard includes the Features, Attributes and enumerations specified by AML, but not covered by the IHO S-57 version 3.1.2 (June 2009) Object Catalogue. Once all required maritime definitions are included in DFDD/NG-FCD, reference to STANAG 7170 may be unnecessary.
	DIGEST V2.0 and DIGEST V2.1, STANAG 7074 ed.2:1998, AgeoP-3 (VMaps, USRP, ASRP)			IGEOWG is in the process of implementing DFDD as a STANAG called the NG-FCD (NATO Geospatial Feature Concept Dictionary). The IGEOWG will regulate any proposals that DGIWG may put forward with respect to DIGEST replacements. For CCEB interoperability the mandatory stand-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				ard is DGIWG Feature Data Directory (DFDD) 2006 and DIGEST v2.1 is fading
	Vector Product Format (VPF) (DoD, Mil-Std. 2407:1996)			
	Vector Map (VMap) Level 1 (STANAG 7163 ed.1:2003)			
	NetCDF v1.0 OGC 10-090r3 (OGC:2011)			
	GeoPDF OGC 08-139r3 (OGC:2011)			
	Geospatial Symbols for Digital Displays (GeoSym) (NIMA:2000)			
	DTED (STANAG 3809 ed.4:2006)			Digital Terrain Elevation Exchange Format STANAG 3809 is based on US MIL-PRF-89020B, Digital Terrain Elevation Data (DTED), dated 23 May 2000. The USA, custodians of DTED,

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				are working with the DGIWG to define and develop appropriate replacement standards for the exchange format in order to address new and emerging elevation requirements. Used in Profile: AMN
Meteo Svc				
	Specifications for Naval Mine Warfare Information and for Data Transfer - AMP 11 (STANAG 1116 ed.9:2010)			For CCEB interoperability this standard is not applicable
	NATO Handbook of Military Oceanographic Information and Services(STANAG 1171 ed.9:2008)			For CCEB interoperability this standard is only applicable for NATO lead operations
	NATO Oceanographic Data Exchange Format (STANAG 1317 ed.3:2008)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Interoperability between Naval Mine Warfare Data Centres			For CCEB interoperability this standard is not applicable

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	(STANAG 1456 ed.2:2010)			
	Warning and Reporting and Hazard Prediction of Chemical, Biological, Radiological and Nuclear Incidents (STANAG 2103 ed.10:2010)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Adoption of a Standard Ballistic Meteorological Message (STANAG 4061 ed.4:2000)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Adoption of a Standard Artillery Computer Meteorological Message (STANAG 4082 ed.3:2012)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Format of Requests for Meteorological Messages for Ballistic and Special Purposes (STANAG 4103 ed.4:2001)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Adoption of a Standard Target Acquisition Meteorological Message (STANAG 4140 ed.2:2001)			For CCEB interoperability this standard is only applicable for NATO lead operations
	NATO Meteorological Codes			For CCEB interoperability this

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
	Manual (STANAG 6015 ed.4:2005)			standard is only applicable for NATO lead operations
	Adoption of a Standard Gridded Data Meteorological Message (STANAG 6022 ed.2:2010)			For CCEB interoperability this standard is only applicable for NATO lead operations
	Binary Universal Form for the Representation of meteorological data (BUFR) (WMO FM 94:2002)			
Symbol Mgmt				
Tracking				
		NFFI, STANAG 5527 (study)		Until the develoment of STANAG 5527 is more stable, document AC/322(SC/5) N(2006)0025 should be used. For CCEB interoperability this standard is not applicable. Used in Profile: AMN
Synchronisation				
Distribution				
Notification				

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
Aggregation				
Collaborate and Plan				
Plan Workspace				
Plan Analysis				
Plan Briefing				
Plan Replay				
Plan Synchronisation				
Plan Collaboration				
	Military Messaging (STANAG 4406 Ed.2:2006)		ACP120 replaced by ACP145	This includes PCT (protected content type). PCT may be used for protection of data objects in systems. For CCEB interoperability the mandatory standard is ACP145 (Gateway-to-Gateway Messaging Protocols)
Simulation				
Collaboration analysis				
Sense and Respond				
Tasking				
Plan Deviation Monitor				
JCOP				

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
Logistics Svcs				
	RFID Application Interface, ISO 15961:2004			
	RFID Data Encoding Rules, ISO 15962:2004			
	RFID - Freight containers, ISO 17363:2007			
	RFID - Returnable transport items, ISO 17364:2009			
	RFID - Transport units, ISO 17365:2009			
	RFID - Product packaging, ISO 17366:2009			
	RFID - Product tagging, ISO 17367:2009			
Supply Chain Svcs				
		OAGIS 9.4.1:2009, OAGi		
		PLCS, ISO 10303-239:2005		
		S1000D issue 4:2008, ASD-AIA-ATA		
	S2000M issue 4:2005, ASD-AIA-ATA			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	NATO Policy for Systems Life Cycle Mgmt (SLCM), C-M(2005)0108			SLCM is primarily based on AAP 48 and ISO/IEC 15288

3.4.2. List of Information Integration Standards

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
Core Enterprise Services				
		WS-Policy v1.5:2007 (OASIS)		Used in Profile: CES
Discovery				
Service Discovery Services				
	Universal Description, Discovery and Integration (UDDI) v2.0, W3C	UDDI v3.0, W3C		UDDI 2.0 provides a platform-independent way of describing- and disovering service. For CCEB interoperability UDDI 3.0 is mandatory. Used in Profiles: AMN, CES (v.3.0.2), tactESB (v2.03)
		UDDI API Spec v.2, OASIS:2002		Used in Profile: tactESB
	Electronic Business Extensible			ebXML is a suite of specifications

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Markup Language (ebXML) ISO/TS 15000-1:2004, -2:2004, -3:2004, -4:2004, -5:2005			for standardizing XML based business messages to facilitate trading between organisation. Used in Profiles: AMN (v3.0), CES (v3.0)
		ebXML Messaging Service v. 2:2002 (OASIS)		
	ebRIM v3.0, OASIS			ebXML Registry Information Model Used in Profile: AMN
		WS-Discovery v.1.1:2009, OASIS		*Used in Profile: tactESB*
		TIDE Service Discovery, v.2.2.0:2008 (ACT)		*Used in Profile: AMN*
	Resource Description Framework (RDF):2004 (W3C)			Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable.
		SPARQL 1.1 Query Language:2012 (W3C)		Part of TIDE specification at ACT. Used in Profile: AMN

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
				For CCEB interoperability this standard is not applicable.
		DNS Service Disvovery (DNS-SD):2010 (ACT TIDE)		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable.
Information Discovery Services				
		WS-Metadata Exchange:2010, W3C		Used in Profile: CES
		Web Ontology Language (OWL):2009, W3C		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable.
		ISAF Minimum Metadata Implementation Policy (NATO:2010)		*Used in profile: AMN*
Repository				
	NC3 Repository			Common repository for standard data elements and their related tool for the NATO Corporate Data Model for Data Administration. See also XML.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
				As this is currently not a formal standard, this entry is under further consideration within the NC3B. For CCEB interoperability this standard is partially applicable Used in Profile: AMN
Metadata Registry Services				
		NATO Metadata Registry and Repository (NMRR) (NC3A TN-1313:2008)		For CCEB interoperability this standard is not applicable.
Enterprise Directory Services				
	Common Directory Services and Procedures (ACP 133D:2009)		ACP 133B	Contains a common directoryschema.
	Common Directory Services and Procedures Supplement (ACP 133 Suppl.1:2009)			
	LDAP v3 (NATO LDAP Profile)			LDAP is an IETF protocol and close to a functional subset of DAP. Many Webbrowsers can act

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				as LDAP clients, which is highly desirable. Used in Profile: AMN, CES
		LDAP: String Representation of Distinguished Names:2006 (IETF)		Used in Profile: CES
	LDIF (IETF RFC 2849:2000)			LDIF defines a flexible and almost universally accepted means of exchanging directory information via flat files.
			DSP (ITU-T X.500:2008)	DSP defines X.500 server to server communication, including chaining. For CCEB interoperability this standard is not applicable
			DSIP (ITU-T X.500:2008)	DISP defines X.500 based information shadowing/replication. For CCEB interoperability this standard is not applicable

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
			DOP (ITU-T X.500:2008)	Contains operational management. For CCEB interoperability this standard is not applicable
Mediation				
	SQL 3 (ISO/IEC 9075(-1 to -14):2008)		Full Level and ISO/IEC 9075:1999 canceled, new Version ISO/IEC 9075(-1 to -14):2008, Parts 1, 2 and 11 encompass the minimum requirements of the language. Other parts define extensions.	Used in Profile: AMN
	ODMG 3.0:2000 (ODMG)			
	ODBC 3.8 (MS)			
	JAVA DBC version 4.1:2006 (JDBC)		JDBC separated from ODBC	
	Distributed RDA (DRDA), v.5 (The Open Group)			
	SQL CLI (ISO/IEC 9075-3:2008)			
		C2 Information Exchange Data		*Used in Profile: AMN*

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		Model (C2IEDM) and Data Exchange Mechanism (DEM)		
	DEM Data Replication Mechanism from MIP baseline 3:2009	DEM Data Replication Mechanism from MIP baseline 4		Used in Profile: AMN
			NATO Corporate Data Model v2 (ADatP-32)	For CCEB interoperability this standard is partially applicable
		ASTERIX, ed.1 (ADatP-35:2010)		This profile is based on ADatP-35 and a corresponding series of EUROCONTROL specifications For CCEB interoperability this profile is only applicable for NATO lead operations.
	Spatial Schema ISO 19107:2003, DGI-WG/TSMAD profiles of ISO 19107			ISO 19107 provides conceptual schemas for describing and manipulating the spatial characteristics of geographic features. The DGI-WG/TSMAD profiles are intended to define

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				sub-schemas of ISO 19107 to be used for defining data interchange formats. For CCEB interoperability this standard is emerging
	Rules for application schema ISO 19109:2005			ISO 19109 defines rules for creating and documenting application schemas, including the principles for the definition of features. Required for Geo to ensure consistency of use in the definition and use of the geographic features. For CCEB interoperability this standard is emerging
	Methodology for feature cataloguing ISO 19110:2005			ISO 19110 defines the methodology for cataloguing feature types and specifies how the classification of feature types is organized into a feature catalogue

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				and presented to the user of a set of geographic data. For CCEB interoperability this standard is emerging
	Spatial Referencing by geographic identifiers ISO 19112:2003			ISO 19112 defines the conceptual schema for spatial references based on geographic identifiers. This standard enables gazetteers to be constructed in a consistent manner. For CCEB interoperability this standard is emerging
	Simple Feature Access, ISO 19125-1:2004 and ISO 19125-2:2004			ISO 19125-1 establishes a common architecture for geographic information (simple feature profile of ISO 19107) and defines terms to use within the architecture. It also standardizes names and geometric definitions for Types for Geometry.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				ISO 19125-2 specifies and SQL schema that support storage, retrieval, query and update of simple geospatial feature collections via the SQL Call Level Interface (SQL/CLI) and establishes and architecture for the implementation of feature tables. For CCEB interoperability this standard is emerging
	Joint C3 Information Exchange Data Model (JC3IEDM, STANAG 5525 ed.1:2007) for the Land environment	Joint C3 Information Exchange Data Model (JC3IEDM, STANAG 5525 ed.1:2007) for the Joint, Maritime and Air environments	C2IEDM replaced by JC3IEDM	C2IEDM replaced by JC3IEDM. For CCEB JC3IEDM is mandatory for all environments. Used in profile: AMN
	WebCGM (Web Computer Graphics Metafile), W3C REC 20011217, 2001		CGM (ISO/IEC 8632:1999) not for new systems	Primarily intended for vector-based images.
	SVG 1.2:2005 (W3C)			The preferred format to visual-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				ize maps in the Web browser.
	Mobile SVG Profiles: SVG Tiny and SVG Basic, W3C REC 20030114, 2003			SVG profiles for cellphones and PDAs
	Tagged Image File Format for image technology (TIFF) (ISO 12639:1998)			
		Vector Markup Language (VML), W3C Note 19980513, 1998 (W3C)		
		NVG - NATO Vector Graphics Protocol v.1.5:2010 (ACT)		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable. Used in Profle: AMN
	Geographical Tagged Image Format (GeoTIFF)			*Used in Profile: AMN*
	Controlled Imagery Base (CIB, STANAG 7099 ed.2:2004),			
	JPEG 2000 (ISO/IEC 15444-1:2004, ISO/IEC			JPEG 2000 is the standard used to store raster data (imagery,

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	15444-2:2004, ISO/IEC 15444-3:2007, including Amd 2:2003, ISO/IEC 15444-4:2004, ISO/IEC 15444-5:2003, ISO/IEC 15444-6:2003,)			scanned maps, matrix data) and provides the ability to include spatial referencing information within the standard. For CCEB interoperability ISO/IEC 15444-2 Cor. 3 is not applicable.
		JPEG LS (ISO/IEC 14495:2003)		Loss-less and near loss-less compression of continuous tone still images.
		Multiresolution seamless Image Database (MrSid Res. 2)		*Used in Profile: AMN*
		Enhanced Compressed Wavelet (ECW 3.3)		*Used in Profile: AMN*
	Compressed ARC Digitized Raster Graphics (CADRG), STANAG 7098 ed.2:2004)			*Used in Profile: AMN*
		Raster product format (RPF) (NIMA):2010		*Used in Profile: AMN*
			GIF (version 89a) not for new systems	Graphics Interchange Format is intended for the on-line trans-mis-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				sion and interchange of raster graphic data.
	PNG 1.0 (RFC 2083:1997)			Portable Network Graphics PNG is in-tended for the com-pressed storage of raster images. PNG provides a patent-free replacement for GIF.
	Fax G.3, ITU-T T.4:2003			
	Fax Transmission, ITU-T T.30:2005	Fax Relay for IP Networks, ITU-T T.38:2010		
	TDF (STANAG 5000 ed.3:2006)			For CCEB interoperability the SCIP standard is mandatory
	ADatP-3(A), CONFORMETS (STANAG 5500, ed. 7:2010)			Used in Profile: AMN
	APP-11(C) Change 1, NATO Message Catalogue (STANAG 7149 ed.5:2010)	APP-11(C) Change 2		APP-11 (STANAG 7149) as the single source for NATO Military Messages for command and control of NATO forces at all levels of the Chain of Command down to and including individual units.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				For CCEB interoperability the standard is MIL-STD 6040 and OTH-T GOLD standards Used in Profile: AMN
		Variable Message Format (DoD Mil-Std 6017B:2009)		
	Interoperability of Low-Level Ground-based Air Defence Surveillance, Command and Control Systems (STANAG 4312 Part I, ed.2:2009)			
	EDIFACT (ISO 9735:2002)			EDIFACT can be used to transfer business documents such as purchase orders, invoices, and electronic funds transfer information. ebXML is a UN standard
			GML v3.2 (ISO 19136:2007)	This OpenGIS Consortium recommendation standard may be used as the transfer format between the FA

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				providing the published operational data (e.g. COP) and the Core Map Application Server. For CCEB interoperability GML 3.1 is emerging Used in Profile: AMN
		GML Simple Feature Profile v2.0 (OGC:2010)		*Used in Profile: AMN*
	OpenGIS City Geography Markup Language (CityGML) v1.0 (OGC:2008)			Added in NISP v.6 through RFCP 5-46.
		Filter Encoding v2.0 (OGC:2010)		*Used in Profile: AMN*
		ESRI Shapefile Specification (ESRI:2008)		*Used in Profile: AMN*
	DLMS/DFAD1, Mil-PRF-89005:1994 (NGA)			DLMS/DFAD1 must be used until DIGEST/VMAP 1 covers the whole world. For CCEB interoperability this standard is not applicable
	World Geodetic System (WGS) 84			WGS specifies the set of

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				parameters that define mathematically the shape of the earth
	Geographic Information - Metadata - ISO 19115:2003			This provides the most comprehensive metadata specification for digital geographic data. This shall be used for the geo metadata which forms the foundation of the Core Geo Catalogue. It is likely that a NATO profile of this standard will have to be produced based on the DGIWG profile. For CCEB interoperability this standard is emerging Used in Profile: AMN
	WECDIS (STANAG 4564 ed.2:2007)			Standard for Warship Electronic Chart Display and Information Systems.
	SEDRIS (ISO/IEC 18023-1:2006)			Environmental data representation and inter-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				change specification
	EDCS (ISO/IEC 18025:2005)			Environmental data coding specification
	SRM (ISO/IEC 18026:2009)			Spatial reference model
	Geodetic Projections, STANAG 2211 ed.6:2001			
	Common Warfighting Symbology (Mil-Std 2525B)			For CCEB interoperability the mandatory standard is MIL-STD 2525B COMMON WARFIGHTING SYMBOLOGY and the emerging standard is MIL-STD 2525C Used in Profile: AMN
	Joint Symbology (APP-6(C)/ STANAG 2019 ed.6:2011)			For CCEB interoperability this standard is not applicable. Used in Profile: AMN
	Telecommunications Symbology (STANAG 5042 ed1:1978)			
		Portrayal ISO/ DIS 19117:2005		Currently in Draft. International Standard

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				specifies the interface to standard symbol sets, not the symbols themselves.
			Symbols on Land Maps, Aeronautical Charts and special Naval Charts (STANAG 3675 ed.2:2000)	For CCEB interoperability this standard is applicable and fading.
	IHO S-100, 2000		IHO S-57	
	Web Map Service (WMS) Implementation Specification v.1.3:2006 (OGC 06-042)			Used as a means of distributing compiled mapping data between applications. Used in Profile: AMN
		OpenGIS Styled Layer Descriptor Profile of the Web Map Service (SLD 1.1.0) (OGC 05-078r4)		*Used in Profile: AMN*
	Web Feature Service (WFS) v.2.0:2009 (OGC 09-025r1)			Used as a means of distributing geo feature (vector) data between applications. For CCEB interoperability this standard is emerging
	Web Coverage Service (WCS)			Used as a means of distributing geo cover-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	v.2.0:2010 (OGC 09-110r3)			ages (raster) data between applications. For CCEB interoperability this standard is emerging Used in Profile: AMN
		Web Coverage Service Implementation Specification v1.1.2 (OGC)		*Used in Profile: AMN (v1.1.1)*
	KeyholeMarkup Language (KML) v.2.2:2008 (OGC 07-147r2)			Used in Profile: AMN
		GML in JPEG 2000 for Geographic Imagery (GMLJP2) v.1.0.0 (OGC 05-047r3):2006		This evolving OGC standard describes minimally required GML definition for georeferencing images and gives guidelines for augmenting that definition to address the additional encoding of metadata, features, annotations, styles, coordinate reference systems, and units of measure for

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				data encoded in JP2K
		OGC GIS Web Terrain Service RFC v.05:2004		Used as a means to perform Web Service based Terrain analysis and communicate terrain data to clients
		Catalogue Service for the Web (CSW) v.2.0.2 (OGC)		Used as a means of discovering geo metadata. Used in Profile: AMN
		CSW-ebRIM Registry Service, Part 1: ebRIM profile for CSW v.1.0.1 (OGC)		*Used in Profile: AMN*
		OGC - ISO 19115:2003/ ISO 19119:2005 Application Profile for CSW 2.0		Describes the organisation and implementation of Catalogue Services based on the ISO 19115 / ISO 19119 Application Profile
		Web Registry Service v.0.0.2:2001 (OGC Ref. 01-024r1)		Used as a means of publishing and finding geo services. As this standard is declared deprecated by OGC, the further inclusion of it in NISP is un-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				der consideration within the NC3B.
			Computer Graphics Interface (CGI ISO/IEC 9636:1991)	For CCEB interoperability this standard is not applicable
	OpenGL v4.0:2010			For CCEB interoperability this standard is not applicable
	CDIF (EIA/IS-106 to 118:1994)			CDIF (CASE (Computer Aided Software Engineering) Data Interchange Format). An EIA (Electronic Industry of America) standard for exchanging data between CASE Tools.
	Unified Modeling Language (UML) v2.2:2009 (OMG)			For CCEB interoperability this standard is not applicable
		Unified Profile for DoDAF and MODAF (UPDM v.2):2008 (OMG)		For CCEB interoperability this standard is not applicable.
	Codes for the representation of Currencies and Funds (ISO 4217:2008)			
	Letters for Geographic Entities,			For CCEB interoperability the country codes

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	STANAG 1059, ed.8:2004			standard is ISO 3166 trigraphs except for military messaging - see CCEB COMAG Policy On Security Labelling Used in Profile: AMN (ed.9)
	ECMA Script Language Specification (ECMA 262) ed.3:2009			Scripting required for enhanced Web pages For CCEB interoperability this standard is not applicable
	ECMA Script XML Specification (ECMA 357) ed.3:2009			This sstandard adds native XML datatypes to the ECMA Script language.
	Zip			Implementations of zip (e.g. Winzip) also includes gzip (RFC 1952:1996) and tar/compress
			7-bit Coded Character-set for Info Exchange (ASCII) (ISO/IEC 646:1991)	
			8-bit Single-Byte Coded Graphic Char Sets (ISO/IEC	

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			8859-1-6,8-10:1999; 7:2003)	
	Universal Multiple Octet Coded Char Set (UCS) - Part 1 (ISO/IEC 10646:2003)			
	NATO Standard Bar Code Symbology (STANAG 4329 ed.4:2010)			STANAG 4329 is a cover STANAG of ISO 16388:1999 - Bar code symbology specifications - Code 39.
	Bar code symbology specification - Code 128 (ISO/IEC 15417:2007), Bar code print quality test specification -Linear symbols (ISO/IEC 15416:2000)			
	Representation of Dates and Times (ISO 8601:2004)			
	Date and Time Formats (W3C NOTE-datetime:1998)			Used in Profile: AMN
	MIME (IETF RFC 2045:1996 updated by 2184:1997, 2231:1997, 5335:2008; 2046:1996 up-	S/MIME ESS (IETF RFC 3850:2004, 3851:2004)		Base64 is included in RFC 2045:1996 Used in Profile: CES

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
	dated by 3676:2004, 3798:2004, 5147:2008; 2047:1996 updated by 2184:1997, 2231:1997, 5338:2008; 4288:2005, 4289:2005; 2049:1996)			
		MIME Encapsulation of Aggregate Documents, such as HTML (MHTML):1999 (IETF)		Used in Profile: CES
Composition Services				
Translation Services				
Interaction				
	Gidded Binary (GRIB) (WMO:1994)			Gridded Binary - WMO - Standard format for grid fields; WMO Manual Code Nr. 306
	Simple Knowledge Organization System Reference (SKOS) (W3C:2002)			For the description of vocabularies and Term Concept Maps of sematic web services.
Messaging Services				

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Military Messaging (STANAG 4406 Ed.2:2006)		Use of PCT within STANAG 4406 is fading	Used for Formal Messaging. STANAG 4406 contains the upper layer protocol profile down to the requested Transport Service. For CCEB interoperability the mandatory standard is ACP123A .
	Enhanced Security Services (ESS) for S/MIME, STANAG 4631 Ed.1:2008			STANAG 4631 contains an additional S/MIME profile for MMHS (in addition to PCT) For CCEB interoperability the mandatory standard is ACP123A .
			X.400:1993 deleted for informal messaging, as no concrete requirement from MMHSWG	
			Interoperability of telebriefing systems (STANAG 5059) deleted	
			Interoperability standards for telebriefing systems	

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			(STANAG 4339) deleted	
	SMTP (IETF RFCs 1870:1995, 1985:1996, 2034:1996, 2920:2000, 3207:2002, 3461:2003 updated by 3798:2004, 3885:2004, 4954:2007, 5321:2008)	eSMTP (IETF RFC 3030:2000)		Used for interpersonal messaging (email) Used in Profile: AMN
		S/MIME (IETF RFC 5751:2010)		
	POP3 (IETF RFC 1939:1996 updated by 1957:1996, 2449:1998)			For CCEB interoperability this standard is not applicable
	IMAP4 (IETF RFC 3501:2003 updated by 4466:2006, 4469:2006, 4551:2006, 5032:2007, 5182:2008, 5738:2010)			For CCEB interoperability this standard is not applicable
	ACP 145(A) - Interim Implementation Guide for ACP 123/ STANAG 4406 Messaging Services Between			Provides gateway between ACP 123A messaging services. For CCEB interoperability this standard is mandatory.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
	Nations - dated September 2008			
Publish/Subscribe Services				
Transaction Services				
Collaboration Services				
		XMPP (IETF RFC 3920:2004 - 3923:2004)		For CCEB interoperability this standard is mandatory Base profile includes as extensions XEP-0184 and XEP-0202 Used in Profile: AMN, CES
	Packet-based Multimedia Comms System (ITU-T H.323:2009) G.722.1C 14kHz audio codec (ITU-T G.722.1 Annex C:2012)			Used in Profile: AMN
		Session Initialisation Protocol (SIP) (IETF RFC 3261:2002, updated by 3265:2002, 3853:2004, 4320:2006, 4916:2007, 5393:2008,		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		5621:2009, 5626:2009, 5630:2009, 5922:2010)		
	Multinational Videoconferencing Services (ACP 220:2008)			
	Narrow-band visual telephone systems and terminal equipmment (ITU-T H.320:2004)			
	Media Gateway Control Protocol v3(ITU-T H.248.1:2005)			Protocol for managing the multimedia gateways between circuit switched and packet switched networks.
	ITU Multi-point still image and Annotation Conference Protocol Spec (ITU-T T.120:2007), T.126:2007 (Reference to T.122 - T.125)			
	Data Protocols for Multimedia Conferencing (ITU-T T.120:2007, T.128:2008)			
		Synchronized Multimedia Integration Lan-		Language for multimedia

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		guage (SMIL 3.0):2008 (W3C)		products based on XML.
Infrastructure				
		WS-Federation (OASIS)		Used in Profile: CES
		Distributed Computing Environment (DCE) v1.1:1997 (OSF)		
		ONC RPC v.2 (IETF RFC 1831:1995)		
		DCE RPC v1.1:1997 (The Open Group)		
		Remote Procedure Call (MS-RPC:2003) (MS)		As part of MS Windows 2000 Interfaces
	X Window X11R7.5:2009, (X.Org) (see UI Svc)			
		DCE DFS v1.1:1997 (The Open Group)		
		X/Open Network File System (XNFS) v.3W:1998 (The Open Group)		Includes RFC 1094:1989 (NFS 89) and RFC 1813:1995 (NFS95)
		Server Message Block (MS-SMB) v20100711:2010 (MS)		As part of MS Windows 2000
		DCE DTS v1.1:1995 (The Open Group)		DCE DTS uses TPI (Time Provider Interface)

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				to access other distributed time services (such as NTP as mentioned under Comms Service).
	CORBA/IIOP 2.2:2009 (OMG)			
		RMI-IIOP 1.5.0:2005 (SUN)		
			MS-DCOM v.12.0:2010 (MS)	As part of MS Windows 2000 Interfaces; DCOM only in local environment, not for outside.
			Distributed Interactive Simulation (DIS)(IEEE 1278.1a:1998)	
	Modeling and Simulation High Level Architecture (HLA) (IEEE 1516:2000)			For CCEB interoperability this standard is mandatory
Application Services				
	FTP (IETF STD 9:1985,IETF RFC 0959:1985 updated by RFC 2228:1997, 2640:1999, 2773:2000, 3659:2007)			
		FTP Extensions for IPv6 and		

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		NATs (IETF RFC 2428:1998)		
	RTP (IETF RFC 3550:2003)	SRTP (IETF RFC 3711:2004)RTCP Attributes in SDP(IETF RFC 3605:2003)		
	Telnet (IETF STD 8:1983, IETF RFC 0854:1983 updated by RFC 5198:2008, 0855:1983)			
	Network News Transfer Protocol NNTP (IETF RFC 3977:2006)			
	Network Time Protocol (NTP) (RFC 1305:1992)			
	Simple Network Time Protocol (SNTP) (RFC 2030:1996)			
			MPEG-1 (ISO/IEC 11172:1996)	
	MPEG-2 (ISO/IEC 13818:2000)			
	MPEG-4 (ISO/IEC 14496:2004)			Encoding standard for video conferencing
	Compact Disc File System (CDFS) (ISO 9660:1988)			For physical media distribution (CD)

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	UDF 1.0.1 (ISO/IEC 13346:1995)	UDF 2.0.1		UDF (Universal Disk Format)
	Pulse Code Modulation (PCM) (ISO/IEC 11172-3:1993, ITU-T G.711:1988)			PCM used for audio in ISDN Systems
	7 kbit audio-coding in 64 kbit/s (ITU-T G.722:1993)			
	Differential PCM (ITU-T G.726:1990)			
	CS-ACELP (ITU-T G.729:1993)			
	Internet Low Bitrate Coding (iLBC) (IETF RFC 3951:2004)			
	H.263 (ITU-T H.263:2005) H.264 (ITU-T H.264:2012)			ITU-T H.263 (Video coding for low bit rate communication); ITU-T H.264 (The Advanced Video Coding Standard)
			Delta-Modulation DM, EUROCOM D/0	
	GSM-Modulation (GSM 06.10, GSM 06.20 v.8.1.1:1999)			Used for mobile phones

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			Linear Predictive Coding-10 (STANAG 4198 ed.1:1984)	
	Code Excited Linear Prediction coding (CELP) (FS 1016:1991)			CELP is used military aircraft voice communications in narrow band UHF networks. CELP has higher throughput than LPC-10, but a lower range.
	Mixed Excitation Linear Predictive coding (MELPe) (STANAG 4591 ed.1:2008)			MELPe is used for HF voice communications in narrow band systems.
			STANAG 4421 deleted as it is cancelled by NATO	
	Parameters and Coding Standards for 800 bps. Digital Speech Encoder/Decoder (STANAG 4479 ed.1:2002)			For CCEB interoperability this standard is not applicable
	SIMPLE (STANAG 5602 ed.3:2010)			SIMPLE provides specifications to interconnect ground rigs of all types for TDL interoperability testing
	Nato Secondary Imagery			NSIF establishes the format for ex-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Format (NSIF), STANAG 4545 ed.1:1998 Nato Secondary Imagery Format (NSIF), STANAG 4545 ed 2 (RD)			change of electronic secondary imagery. Used in Profile: AMN
	BIIF (ISO 12087-5:1998)			
	NSILI (STANAG 4559 ed.3:2010)			NSILI provides interoperability between NATO nations reconnaissance databases and product libraries Used in Profile: AMN
	NIIRS (STANAG 7194 ed.1:2009)	NIIRS - AIntP-7 (STANAG 7194 ed.2 (Draft))		NIIRS provides evaluation of imagery quality and use of a consistent measure for such evaluations
	NADS (STANAG 4575 ed.3:2009)			NADS defines an interface for advanced digital storage systems.
	GMTIF (STANAG 4607 ed.3:2010)			GMTIF defines a ground moving target indicator format. Used in Profile: AMN

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	DMIS (STANAG 4609 ed.3:2009)			DMIS defines a digital motion imagery standard. For CCEB interoperability this standard is not applicable. Used in Profile: AMN
	NPIF (STANAG 7023 ed.4:2009)			NPIF establishes a standard data format and a standard transport architecture for the transfer of reconnaissance and surveillance imagery and associated auxiliary
	AR-TRI (STANAG 7024 ed.2:2001)			AR-TRI establishes the physical format for the exchange of magnetic tape cartridges
	Exchange of Imagery (STANAG 3764 ed.6:2008)			
	Implementing JPEG 2000 in NITFS/BIIF/ NSIF (ISO 10918-4:1999)			This profile defines the limits of the international standard that can be used within NITF 2.1.
	Link-11 (STANAG 5511			For further guidance refer to the Bi-SC Data

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	ed.7:2008, M-Series)			Link Migration Strategy, November 2000. For CCEB interoperability the standard is MIL-STD 6011C
	Link-16 (STANAG 5516 ed.4:2008, J-Series)	Link-16 (STANAG 5516 ed.5:2009 RD, J-Series)		For CCEB interoperability the mandatory standard is MIL-STD 6016C Change 1 and the emerging standard is MIL-STD 6016D Used in Profile: AMN
	Link-22 (STANAG 5522 ed.2:2008, J-Series)	Link-22 (STANAG 5522 ed.3:2009 RD, J-Series)		Used in Profile: AMN
		Technical characteristics of the Link 22 TDL system (STANAG 4610 ed.1 (Draft))		
			Link-14 (STANAG 5514 ed.2:2002)	The Link-14 is a legacy system that most NATO nations have no intention to implement in new platforms other than interfacing data link buffers and have ceased to use or

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				maintain. Therefore considered fading
	PDF-Format 1.7 (ISO 32000:2005)		Formets deleted in NCSP v.6	Portable document presentation format, realised in Adobe product version 7. Used in Minerva system at NATO HQ For CCEB interoperability the primary standard is Adobe Postscript (level I and II) /Encapsulated Postscript (EPS) , and the secondary standard is Adobe PDF Used in Profile: AMN
	PDF/A (ISO 19005-2:2011)			Electronic document file format for long-term preservation.
	Rich Text Format (RTF) v.1.9.1:2007 (MS)			Basic document interchange format
	ASCII Text, ISO 646:1991			For constrained environments
	UTF-8 (IETF RFC 3629:2003)			Universal Text Format
	Document Object Model (DOM)		Document Object Model (DOM) Level 2 (MS)	Basic Document Object Model .

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	Level 3:2004 (MS)			
	Office XP formats:2003 (MS)		Office 2000 formats: Office XP	Office200-formats Not to be used for new systems. Pertains to the interchange formats of MS Word, Excel and PowerPoint, irrespective of the actual MS Office version or general office automation package being used.
	OpenDocument (ODF) ISO/IEC 26300:2006			Formerly published as OASIS standard.
		Office Open XML, ed.1 (ECMA-376)		*Used in Profile: AMN*
	Office Open XML, ISO/IEC 29500-3:2012			XML variant of Microsoft Office. Used in Profile: AMN
	HTML 4.01 (RFC 2854:2000)			Used in Profile: AMN
		Real Simple Syndication (RSS 2.0) (WS-I:2010)		*Used in Profile: AMN*
		GeoRSS (GeoRSS 1.0):2007 (OGC)		*Used in Profile: AMN*

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	Atom Syndication Format (IETF RFC 4287)			Used in Profile: AMN
	XHTML 1.0:2002 (W3C)	XForms 1.0:2003 (W3C)		XHTML is specified in XML Used in Profile: AMN
	SGML (ISO 8879:1986)			For high value complex documents
Storage Services				
Web Services				
	HTTP v. 1.1 (IETF RFC 2616:1999 updated by RFC 2817:2000), URL (RFC 4248:2005, 4266:2005), URI (RFC 3986:2005)			Used in Profiles: AMN, CES, tactESB
		Content-ID and Message-ID URLs (IETF RFC 2392:1998)		Used in Profile: CES
		HTTP State Change Mgmt. (IETF RFC 2965:2000)		Used in Profiles: CES, tactESB
		AtomPub (IETF RFC 5023:2007)		
	HTTPS (IETF RFC 2818:2000)			Used in Profile: CES
	HTTP Extensions for Web Distributed Authoring and Ver-			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	sioning (WebDAV) (IETF RFC 4918:2007)			
		Web Services Business Process Execution Language (WSBPEL) v.2:2007, OASIS		
		Web Services Federation (WSFED):2010, OASIS		*Used in Profile: AMN*
		Web Service Choreography Interface (WSCI) v.1:2002		
		Business Process Model and Notation (BPMN) v.2.0:2010		
		Open Services Infrastructure (OpenSiS) v.1.9.5.6, OpenSIS		
	Java Enterprise Edition Specification (JAVA EE v.7:2012), (JCP:2012)			
	Java Standard Edition 6 (JAVA SE v.6:2006), (JCP:2002)			
		Java Remote Method Invoc-		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		ation (JRMI), (JCP)ed.1.5.0:2004		
		Java API for XML Processing (JAXP) v.1.3, (JCP:2004)		
		Java Naming and Directory Interface (JNDI) ed. 1.2, (SUN:1999)		
		DSML v2.0:2002, OASIS		DSML provides a Dircetory Access via a Web interface
	Dublin Core Metadata Element Set (DCES) (ISO 15836:2009)			*Used in Profile: AMN*
		Binding of Metadata to Data Objects (NC3A TN 1455)		*Used in Profile: AMN, CES*
		NATO TIDE Information Discovery (Request-Response), v.2.3:2009 (ACT)		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable. Used in Profile: AMN
		NATO TIDE Service Discovery (Subscribe-Publish), v.2.2.0:2008 (ACT)		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	WSDL v1.1:2001, W3C	WSDL v2.0:2007 Part 1: Core Language, W3C		Used in Profiles: AMN, CES, tactESB
	JNLP v6.0:2011, JCP			
	JAVA Server Pages JSP v2.1:2009, JCP			
	JAVA Servlets v3.0:2009, JCP			
	XML 1.0 3rd ed:2004, W3C	XML 1.1 2nd ed:2006, W3C		Where semantic tags are required, the NC3 Repository serves as an XML registry (see Data Management). Used in Profiles: CES, tactESB
	XLink 1.0:2001, W3C	XLink 1.1:2012, W3C		XLink is used to point to resources from XML documents.
	XPointer 1.0:2001, W3C			XPointer is used to identify XML fragment inside any given XML documents.
		XQuery 1.0:2003, W3C		Used in Profile: CES
		Relax NG (ISO/IEC 19757-2:2008)		Relax NG may be a replacement for XML schema languages. Used in Profile: CES

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	XML Base:2001, W3C			
	XMI ed.1:2001 (ISO/IEC 19503:2005)			XMI can be used for any metadata whose metamodel can be expressed in Meta-Object Facility (MOF).
	XML Infoset:2001, W3C			
	XSL Association:1999, W3C			
	Namespaces in XML (xml-names-19990114:1999) W3C			Used in Profiles: AMN, CES, tact-ESB
	Extensible Stylesheet Language Transformation (XSLT) 1.0 (W3C:1999)	XSL Transformations (XSLT) Version 2.0 (W3C:2007)		Used in Profiles: AMN, CES
	Extensible Stylesheet Language (XSL) 1.0:2001	Extensible Stylesheet Language (XSL) 1.1:2006		
	Cascading Style Sheets (CSS) 2.1:2001			*Used in Profile: AMN*
	XML Schema, Part 1-2:2004			Used in Profiles: AMN, CES, tact-ESB
	Wireless Markup Language (WML) 2.0:2001			WML to be used with Wireless Application Protocol (WAP) for constrained environments

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		Efficient XML Interchange Format (EXI) v1.0		Efficient implementations of XML in the tactical environment
	XML Path Language (XPath) v2.0:2003, W3C			For CCEB interoperability this profile is mandatory. Used in Profile: CES
	WS-I Web Service Basic Profile, v1.1:2nd ed. 2006	WS-I Web Service Basic Profile, v1.2:3rd ed. 2007WS-I Web Service Basic Profile, v2.0 2010		For CCEB interoperability this profile is mandatory. Used in Profiles: AMN (v1.1), CES (v1.0), tactESB (v1.1)
	Simple Object Access Protocol v1.1 (SOAP), W3C	Simple Object Access Protocol v1.2 (SOAP), W3C		Could be used in support of the Geo Web Services. Used in Profiles: AMN (v1.1), CES (v1.1), tactESB (v1.2)
		WS-I Simple SOAP Binding Profile v1.0:2004		For CCEB interoperability this profile is mandatory. Used in Profile: tactESB
		WS-I Attachments Profile v1.0:2nd ed. 2006		For CCEB interoperability this

SERVICECATEGORY / CATEGORY / SUBCATEGORY	**MANDATORY STANDARDS**	**EMERGING NEAR TERM**	**FADING**	**Remarks**
				profile is mandatory. Used in Profile: CES
		WS-I Reliable Messaging v1.2:2009		Used in Profile: CES
		WS-Addressing v1.0:2010		Used in Profile: CES
		WS-Notification v1.3:2006		Used in Profile: CES
		Representational State Transfer (REST):2002, (ACM)		*Used in Profile: AMN*
Device Independent Console				
	X Window System 11 R7.5:2009		X Window System 11 R5	The R6.6 release addresses a portion of the backlog of bug reports since Release 6.5.1 patch 1, along with additional fixes from the Xfree86 community. R5 should not be used for future systems. For CCEB interoperability this standard is not applicable

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			Win 32 APIs	As part of MS Windows 2000 Interfaces For CCEB interoperability this standard is not applicable
	CDE 2.1:1997		CDE 1.0	Common Desktop Environment is the UNIX Windows Desktop equivalent. For CCEB interoperability this standard is not applicable
	Motif/CDE Style Guide Rev 2.1:1997		Motif Style Guide Rev 1.2	Toolkit specific style guides For CCEB interoperability this standard is not applicable
			MS Windows Interface Guidelines for Software Design	Toolkit specific style guides. As part of MS Windows 2000 Interfaces. For CCEB interoperability this standard is not applicable
	Motif 2.1:1997		Motif 1.2	For CCEB interoperability this

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				standard is not applicable
			US DoD HCI Style Guide Version 4.0 Dec 2000 not for use in new systems	For CCEB interoperability this standard is not applicable
			UK Army CIS Style Guide V 2.0 not for use in new systems	For CCEB interoperability this standard is not applicable
Content Mgmt				
		Semantics of Business Vocabulary and Business Rules, Vers. 1.0 (SBVR); OMG 2008		

3.4.3. List of Communications Standards

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
Network and Transport Services				
		End-to-End Network – Internet Protocol Framework (NETIP), STANAG 4731 (Draft)		
	DNS (IETF STD 13:1987, RFC 1034:1987 and RFC 1035:1987	DNSSEC (IETF RFC 4025 - 4033:2005)		Bind version 9 or later should be used.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	updated by RFC 1101:1989, 1183:1990, updated by 5395:2008; 1706:1994, 1876:1996, 1982:1996, 1995:1996, 1996:1996, 2136:1997, 2181:1997, updated by 5452:2009; 2308:1998, 2845:2000, 2931:2000, 3007:2000, 3226:2004, 3425:2002, 3597:2004, 3645:2003, 4033:2005, 4034:2005, 4035:2005, 4343:2006, 4470:2006, 4592:2006)			Used in Profile: AMN
		mDNS (IETF Draft draft-cheshire-dn-sext-multicastdns-06.txt)		Part of TIDE specification at ACT. For CCEB interoperability this standard is not applicable.
		IPSec Material in DNS (RFC 4025:2005)		
				NACOSA Operating Instructions

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				A-03-06 deals with the TCP/IP environment and A-03-07 deals with the OSI environment. Both are due for rewrite.
	Assigned Numbers (RFC 3232:2002)			
	IPv4 (STD 5, RFC 791:1981, 792:1981, 894:1984, 919:1984, 922:1984, 950:1985 updated by RFC 1112:1989, 2474:1998, 2507:1999, 2508:1999, 3168:2001, 3260:2002, 3376:2002, 4604:2006, 4884:2007)			Used in Profile: AMN
	IPv6 (RFC 1981:1996, 2375:1998, 2460:1998, 2464:1998, 2467:1998, 2470:1998, 2491:1999, 2492:1999, 2497:1999, 2526:1999,			Note: Category of RFC 2375:1998 is ´Informal´ Used in Profile: AMN

SERVICECAT-EGORY / CAT-EGORY / SUB-CATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	2529:1999, 2590:1999, 2710:1999 up-dated by 3590:2003, 2711:1999, 2894:2000, 3056:2001, 3111:2001, 3122:2001, 3146:2001, 3306:2002, 3307:2002, 3483:2003, 3510:2003, 3544:2003, 3587:2003, 3595:2003, 3697:2004, 3736:2004, 3810:2004, 3879:2004, 3956:2004, 4001:2005, 4007:2005, 4213:2005, 4291:2006, 4311:2005, 4338:2006, 4489:2006, 4443:2006, 4489:2006, 4604:2006, 4861:2007, 4862:2007, 4884:2007, 4941:2007, 5095:2007, 5494:2009)			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	IGMP v.3 (RFC 3376:2002 updated by 4604:2006)			RFC 3367:2002 obsoleted 2236:1997 updates RFC 1112:1989 and is widely implemented, RFC 3376:2002 obsoleted RFC 2236:1997
	Host requirements (STD 3, IETF RFC 1122:1989 updated by 2474:1998, 2181:1997, 3168:2001, 3260:2002, 4033:2005, 4034:2005, 4035:2005, 4343:2006, 4379:2006, 4470:2009, 5452:2009, 5462:2009)			
			Bootstrap Protocol, BOOTP (RFC 951:1985 updated by RFC 1542:1993, 2132:1997, 3442:2002, 3942:2004, 4361:2006, 4833:2007, 5494:2009)	Will be overtaken by the richer DHCP. BOOTP is still available in older implementations and is expected to phase out.

SERVICECAT-EGORY / CAT-EGORY / SUB-CATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	IP Encapsulation (RFC 2003:1996)			
			Clarifications and Extensions for the Bootstrap Protocol (RFC 1542:1993)	
		DHCP for IPv6 (RFC 3315:2003 updated by 4361:2006, 5494:2009)	DHCP Options and BOOTP Vendor Extensions not to be used in new systems	
		Dual Stack IPv6 mobility support (RFC 5555:2009)		
		IPv6 Prefix Options for DHCPv6 (RFC 3633:2003)		
		DNS Configuration Options for DHCPv6 (RFC 3646:2003)		
		NIS-Options for DHCPv6 (RFC 3898:2004)		
	Dynamic Host Configuration Protocol, DHCP (RFC 2131:1997 updated by RFC 3396:2002, 4361:2006, 5494:2009)			
		Internet Protocol Quality of Service (IP QoS),		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		STANAG 4711 (Draft)		
	Differentiated Services Field (IETF RFC 2474:1998 updated by 3168:2001, 3260:2002)			DiffServ redefines use of former TOS field; first, but not sufficient RFC to differentiate traffic classes. RFC for DiffServ still missing. Applicable to both IPv4 and IPv6
	Resource ReSerVation Protocol (RSVP) (IETF RFC 2205:1997)			
	Requirements for IPv4 routers (RFC 1812:1995 updated by 2644:1999)			
	Open Shortest Path First (OSPFv2) RFC 2328:1998)	OSPF for IPv6 (RFC 5340:2008)		Suitable for LANs as well as WANs (including tactical networks) with sufficient bandwidth
	IS to IS intra-domain routeing information exchange protocol (ISO/IEC 10589:2002)			
	Router Internet Protocol (RIP v2) (IETF STD 56/RFC	RIPng for IPv6 (RFC 2080:1997)		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	2453:1998 updated by 4822:2007)			
	Border Gateway Protocol (BGP4) (RFC 4271:2006)	Multiprotocol Extensions for BGP-4 (RFC 4760:2007); Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing (RFC 2545:1999)		
		BGMP (RFC 3913:2004)		
	Application of BGP-4 (RFC 1772:1995)			
	Protocol Independent Multicast Sparse Mode(PIM-SM) (RFC 4601:2006, updated by 5059:2008)			PIM-SM is implemented by the router market leaders.
		Protocol Independent Multicasting Dense Mode(PIM-DM) (RFC 3973:2005)		PIM-DM is included as a second concept for tactical networks
	Generic Routing Encapsulation (GRE) (RFC 4023:2005, updated by 5332:2008)			GRE is included as a general routing encapsulation mechanism
	Traditional IP Network Address			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Translator (RFC 3022:2001)			
		Stateless IP/ ICMP Translation Algorithm (SIIT) (RFC 2765:2000		
		Generic Packet Tunneling in IPv6 (RFC 2473:1998)		This RFC is a generic tunnel mechanism, which can be applied for several protocols.
	Router Internet Protocol (RIP v2) MIB extension (RFC 1724:1994)			To be used in static networks. See also System Management.
	Classless Inter Domain Routing (CIDR) (RFC 4632:2006)			CIDR is only valid for IPv4
	Mobile IPv4 (RFC 3344:2002 updated by 4721:2007)	Mobile IPv6 (RFC 3775:2004)		
		Mobile IPv6 Fast Handovers (RFC 5568:2009)		
		IPSec and Mobile IPv6 (RFC 3776:2004 updated by 4877:2007)		
		Policy-based Network Management - General (RFC 1104:1989, 2753:2000,		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		3198:2001, 3334:2002)		
		Policy-based Network Management - DiffServ (RFC 2963:2000, 2998:2000, 3086:2001, 3260:2002, 3287:2002, 3289:2002, 3290:2002, 3308:2002, 3496:2003)		
		Policy-based Network Management - IntServ (RFC 2205:1997 updated by 2750:2000, 3936:2004, 4495:2006, 2206 - 2210:1997, 2380:1998, 2382:1998, 2430:1998, 2490:1999, 2745 - 2746:2000, 2747:2000 updated by 3097:2001, 2749:2000, 2750:2000, 2755:2000, 2814:2000, 2872:2000, 2961:2001, updated by 5063:2007;		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		2996:2000, 3097:2001, 3175:2001, updated by 5350:2008; 3181:2001, 3182:2001, 3209:2001 updated by 3936:2004, 4874:2007; 3210:2001, 3468:2003, 3473:2003 updated by 4003:2005; 3474:2003, 3476:2003, 3477:2003 4201:2005, 4783:2006, 4873:2007, 4874:2007, 5250:2008, 5420:2009		
	Point to Point Protocol (PPP) Internet Protocol Control Protocol (IPCP) (RFC 1332:1992 updated by 3241:2002, 4815:2007)			To allow packet switched services over circuit switched interconnections.
	Layer 2 Tunneling Protocol (L2TP) (RFC 3308:2002)			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Link Control Protocol (LCP) extensions (RFC 1570:1994 updated by 2484:1999)			Addition to LLC1 (see Link Layer).
	Point to Point Protocol (PPP) (STD 51, RFC 1661:1994 updated by 2153:1997; 1662:1994, updated by 5342:2008)	IPv6 over PPP (RFC 5072:2007, 5172:2008)		
	PPP Challenge Handshake Authentication Protocol (CHAP) (RFC 1994:1996 updated by 2484:1999)			Used in routers
	PPP Multilink (MP) (RFC 1990:1996)			Allows for aggregation of bandwidth via multiple simultaneous data link connections
	Virtual Router Redundancy Protocol (VRRP), IETF RFC 3768:2004			
	Winsock 2 (Revision 2.2)			
			Transport Service (ISO	

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			8072:1996)deleted in NCSP v.6	
	TCP (IETF STD 7:1981, RFC 793:1981 updated by RFC 1122:1989, 3168:2001)			Used in Profiles: AMN, tactESB
	UDP (IETF STD 6:1980, RFC 0768:1980)			Used in Profile: tactESB
	OSI transport svc over TCP/IP (RFC 2126:1997)			Includes the ISO Transport Protocol
	Space communications protocol specification (SCPS) - Transport protocol (SCPS-TP) (ISO 15893:2010)			
Mixed DISA standards				
Data Link and Connection Service				
External Networks				
			X.25 (1996, Cor.1:1998)	
	MPLS (IETF RFC 3031: 2001, 3032:2001)			
	Tactical Communications, STANAGs			For CCEB interoperability this

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	4637ed1:2009, STANAG 4638ed1:2009, 4639ed1:2009, 4640ed1:2009, 4643ed1:2009 4644ed1:2009, 4646ed1:2009, 4647ed1:2009			standard is not applicable
	ISDN: ITU-T G, I Series			ISDN Telephony
		UMTS (3GPP)		
		GPRS (3GPP)		
			ITU-T E, P, Q, V Series	
	Digital Video Broadcasting (DVB) (ETSI:2009)			
			ITU-T V.90:1998	
			ITU-T V.42:2002 Corrigendum 1:2003	
			User Network Interface - UNI v4.0 (af-sig-0061.000)	
			Private Network - Network Interface - PNNI v1 (af-pnni-0055.000)	
			LAN Emulation over ATM - LANE v2.0 (af-lane-0084.000, af-lane-0112.000)	For CCEB interoperability this standard is not applicable.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Standards for Data Forwarding between Tactical Data Systems employing Link-11/11B and Link-16 (STANAG 5616 ed.5:2011)	Standards for Data Forwarding between Tactical Data Systems employing Link-11/11B and Link-16 (STANAG 5616 ed.6 (RD))		Gateway between Link-11 and Link-16. For CCEB interoperability the mandatory standard is MIL-STD 6020
	Link 1 STANAG 5501 ed.5:2011	Link 1 STANAG 5501 ed.6 RD:2010		
	Link 11 STANAG 5511 ed.7:2008			Communications part for Link-11 For CCEB interoperability the standard is MIL-STD 6011C Used in Profile: AMN
	STANAG 4175 ed.4:2009	STANAG 4175 ed.5 (RD)		Communications part for Link-16 Used in Profile: AMN
	MIDS SSS-M-10001			Multifunctional Information Distribution System - System Segment Specification
	STANAG 7085 ed.3:2009 (IDL for Imaging Systems)			STANAG 7085 provides the interoperability standards for 3 classes of imagery DL used for

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				primary imagery data transmission.
	STANAG 4586 ed.3:2012	STANAG 4586 ed.4		STANAG 4586 facilitates communication between a UCS and different UAVs and their payloads as well as multiple C4I users.
Tactical Area Comms				
	Maritime Tactical Wide Area Networking (ACP 200)			For CCEB interoperability the mandatory standard is ACP 200 :Maritime Tactical Wide Area Networking
	Routing and Directory for tactical Systems, STANAG 4214 ed.2:2005			
	International Network Numbering for Communications Systems in Use in NATO, STANAG 4705 ed.1 (RD)			
		Gateway Multichannel Cable Link (Optical), STANAG 4290 ed.1 (RD)		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Enhanced Digital Strategic Tactical Gateway (EDSTG) (STANAG 4578 ed. 2:2009)		STANAG 4249 replaced by the more fundamental STANAG 4206. STANAG 4206 not to be used for new systems.	STANAG is currently under review for a new edition. For CCEB interoperability this standard is not applicable.
	NATO Multichannel tactical digital Gateway (STANAG 4206: Ed.3:1999)			For CCEB interoperability this standard is not applicable
	NATO Multichannel tactical Gateway-Multiplex Group Framing Standards (STANAG 4207: Ed.3:2000)			
	The NATO Military Communications Directory System, STANAG 5046 ed.3	The NATO Military Communications Directory System, STANAG 5046 ed.4 (RD)		
	Interconnection of IPv4 Networks at Mission Secret and Unclassified Security Levels, STANAG 5067 ed.1:2007 (RD)	Interconnection of IPv4 Networks at Mission Secret and Unclassified Security Levels, STANAG 5067 ed.2 (Draft)		
LAN Comms				
	Media Access Control (MAC) Bridges (IEEE	Multiple Spanning Trees (IEEE 802.1S:2004)		

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	802.1D:2004)Rapid Reconfiguration of Spanning Tree (IEEE 802.1W:2004)			
	Virtual Bridged Local Area Networks (VLAN) (IEEE 802.1q:2005)			
	Link Layer Discovery Protocol (IEEE 802.1AB:2009)			
Transmission				
	FDDI, ISO 9314:1989			For CCEB interoperability this standard is not applicable.
	STANAG 4444 ed.1:1999 RD (Slow hop ECCM)STANAG 4444 ed.2:2010 RD (Slow hop ECCM)			HF standard for Link-22. For CCEB interoperability this STANAG is mandatory
	JREAP, STANAG 5518 (RD)			
	ISO/IEC 8802-3:2000 (CSMA/CD)			
				For CCEB interoperability the mandatory standard is Interoperability and Performance Stand-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				ard for SATCOM (MIL-STD 188-164).
				For CCEB interoperability the mandatory standard is MIL-STD-188-181B.
				For CCEB interoperability the mandatory standard is Interoperability Standard for 5-Khz UHF DAMA Terminal Waveform MIL-STD-188-182A.
				For CCEB interoperability the mandatory standard is DoD Interface Standard, Interoperability of UHF MILSATCOM DAMA Control System MIL-STD-188-185.
				For CCEB interoperability the mandatory standard is Interoperability and Performance Standards for C-Band, X-Band, and Ku-Band SHF Satellite Communications Earth

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				Terminals, 13 Jan 1995 MIL-STD-188-164.
				For CCEB interoperability the mandatory standard is Interoperability and Performance Standards for SHF Satellite Communications PSK Modems (Frequency Division Multiple Access (FDMA) Operations), 13 January 1995, with Notice of Change 1, 9 September 1998, MIL-STD-188-165.
	ACP 190 (B)			
	ACP 190 (B) NATO Suppl 1A			Spectrum Supportability Request/Comment is a two-way commitment between the (host)nation owing the system and each nation hosting the system: - it is a prerequisite for the procuring nation/agency to perate SDEs in a host nation.

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				- host nations granting support to a SDE is expected to assign frequencies when requested. Failure to follow this process will have very negative long-term impacts: - an ever growing risk of interference between own systems. - the ever-increasing pressure from the commercial sector: having an accurate view of military use of spectrum is an essential precondition to be able to defend it against civil encroachment. For CCEB interoperability this standard is not applicable.
	ACP 190 (B) NATO Suppl 2			For CCEB interoperability this standard is not applicable

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	SMADEF XML Rel.3.0.0			For CCEB interoperability Rel.1.2.3 is mandatory
				For CCEB interoperability the mandatory standard is Equipment Technical Design Standards for Common Long Haul/Tactical Radio Communications in the LF Band and Lower Frequency Bands MIL STD 188-140A
				For CCEB interoperability the mandatory standard is Digital Line-of-Sight (LOS) Microwave Radio Equipment, 7 May 1987 MIL STD 188-145
	MIDS terminals STANAG 4175 ed. 4:2009	MIDS terminals STANAG 4175 ed. 5 (RD)		
			Single serial line interface (TIA-232-E:1991)	
			Multi-point serial line (TIA-422-B:2005)	

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Serial binary data exchange at DTE and DCE (TIA-530-A)			
	Generic specification for optical wave-guide fibers (EIA 4920000: 1997)			
VLF				
	VLF and LF Broadcast OOK Systems, STANAG 5030ed.4:1995	Extended range single and multi-channel VLF system, STANAG 4724 /Draft)		
HF				
			Conditions for interoperability of 2400 BPS / HF (STANAG 4197 ed.1:1984)	(QSTAG 1108)
	Technical standards for single channel HF radio equipment, STANAG 4203 ed.3:2007			For CCEB interoperability the mandatory standard is MIL STD 188-141A
	Characteristics of 1200/2400/ 3600 bps single tone modulators/demodulators for HF Radio links (STANAG 4285 ed.1:1989)			For CCEB interoperability the mandatory standard is MIL-STD-188-110A
	Non-Hopping Serial TONE HF			

SERVICECAT-EGORY / CAT-EGORY / SUB-CATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Radio, STANAG 4415 ed.1:1999			
		HF Radios STANAG 4444 ed.2 (RD)		
	Minimum Standards for Naval Shore-to-Ship Broadcast Systems, STANAG 4481 ed.1			
	Characteristics of single tone modulators/demodulators for maritime HF radio links with 1240 Hz bandwidth, STANAG 4529 ed.1			
	Automatic Radio Control System for HF Links STANAG 4538 ed.1:2009	Automatic Radio Control System for HF Links STANAG 4538 ed.2 (Draft)		
	Non-hopping HF Communications Waveforms STANAG 4539 ed.1:2006			
	Minimum Standards for Naval low Frequency (LF) Shore-to-Ship Surface Broadcast Systems (STANAG 5065 ed.1:1999)			

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Profile for HF radio data communications (STANAG 5066 ed.3:2010)			
VHF				
	Technical standards for single channel VHF radio equipment STANAG 4204 ed.3:2008			For CCEB interoperability the mandatory standard is MIL STD 188-242
	Communication between Single Channel and Frequency Hopping Radios in VHF, STANAG 4292 ed.2:1987			
			Non-secure Voice Interoperability for VHF Radios, STANAG 4448 ed.1:2006	
			Secure Voice and Data Interface for VHF Radios, STANAG 4449 ed.1:2006	
UHF				
	Technical standards for single channel UHF radio equipment STANAG 4205 ed.3:2005			For CCEB interoperability the mandatory standard is MIL STD 188-243

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Have Quick STANAG 4246 ed.3:2009			For CCEB interoperability this standard is not applicable
	STANAG 4372 ed.3:2008 (Saturn)			UHF standard for Link-22, but can also carry Link-11 and Link-16 messages.
	Multi-Hop IP Networking with legacy UHF radios: Mobile adhoc Relay Line of Sight Networking (MARLIN), STANAG 4691 ed.1 (RD)			
UHF SATCOM				
		Digital Interoperability between UHF Satellite Communications Terminals - Integrated Waveform (IWF), STANAG 4681 ed.1 (RD)		
	Interoperability Standard for 25 kHz UHF/ TDMA/DAMA terminal Waveform STANAG 4231 ed.5:2011			STANAG 4231 ed.5 is identical with MILSTD-188-183C. For CCEB interoperability the mandatory standard is MIL-STD-188-183D

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
				For CCEB interoperability the mandatory standard is Interoperability and Performance Standard for the Data Control Waveform MIL-STD-188-184
SHF SATCOM				
	Super High Frequency (SHF) Military Satellite (MILSATCOM) jam-resistant modem (STANAG 4376 ed.1:1998)			For CCEB interoperability this standard is not applicable
	Overall Super High Frequency (SHF) Military Satellite COMmunications (MILSATCOM) interoperability standards (STANAG 4484 ed.2:2003)	Overall Super High Frequency (SHF) Military Satellite COMmunications (MILSATCOM) interoperability standards (STANAG 4484 ed.3 (RD))		For CCEB interoperability this standard is not applicable
	SHF MILSATCOM Non-EPM modem for services conforming to class-A of STANAG 4484 (STANAG 4485 ed.1:2002)	SHF MILSATCOM Non-EPM modem for services conforming to class-A of STANAG 4484 (STANAG 4485 ed.2 (RD))		For CCEB interoperability this standard is not applicable

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	Super High Frequency (SHF) Military Satellite COMmunications (MILSATCOM) Frequency Division Multiple Access (FDMA) Non-EPM modem for services conforming to class-B of STANAG 4484 (STANAG 4486 ed.2:2002)	Super High Frequency (SHF) Military Satellite COMmunications (MILSATCOM) Frequency Division Multiple Access (FDMA) Non-EPM modem for services conforming to class-B of STANAG 4484 (STANAG 4486 ed.3:2008)		For CCEB interoperability this standard is not applicable
	Super High Frequency (SHF) Medium Data Rate (MDR) Military Satellite COMmunications (MILSATCOM) jam-resistant modem interoperability standards (STANAG 4606 ed.1:2009)	Super High Frequency (SHF) Medium Data Rate (MDR) Military Satellite COMmunications (MILSATCOM) jam-resistant modem interoperability standards (STANAG 4606 ed.3 (RD))		For CCEB interoperability this standard is not applicable
		Interoperability standard for Satellite Broadcast Services (SBS) (Draft) (STANAG 4622 ed.1 RD2)		For CCEB interoperability this standard is not applicable
EHF SATCOM				
	Digital interoperability between EHF Tactical Satellite Commu-			For CCEB interoperability the mandatory stand-

SERVICECATEGORY / CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
	nications Terminals (STANAG 4233 ed.1:1998)			ard is MIL-STD-1582D
	EHF MIL SATCOM interoperability standards for medium data rate services STANAG 4522 ed.1:2006			For CCEB interoperability the mandatory standard is MIL-STD-188-136
QoS				
			DoD Guide to selecting computerbased multimedia standards, technologies, products and practices deleted in NCSP v.6	

3.5. INFORMATION ASSURANCE

3.5.1. List of Standards

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			Community Security Requirements Statement abstract, v1.1 (NATO:2010)		*Used in profile: AMN*
		Common Criteria (ISO/IEC 15408-1:2009, -2 to-3:2008)			Procedural document dealing with the evaluation criteria for IT security.

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
					Guidance on the use of Com-mon Criteria within NATO is provided with AC/322-D(2010)0043.
		Physical char-acteristics (ISO/IEC 7810:2003)			
		Integrated circuit(s) with electrical con-tacts (ISO/IEC 7816:2006)			Base profile, consisting of parts 1-5)
		Interface between the card aware ap-plications and cards, PC/SC Specs. v.2.0.1.9:2005			
		Card-resistance al-lications, JA-VACARDkit v.2.2.2:2006			
		Contactless cards (ISO/IEC 14443:2008)			Base profile, consisting of parts 1 - 3.
SMI Service					
		Web-Services Security Pro-file (WSS), v1.0 (OASIS)			Used in Profile: AMN

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			WS Security Policy, v1.3:2009 (OASIS)		Used in Profile: CES
		Security Assertion Markup Language, SAML v2.0 (OASIS)			For CCEB interoperability the Security Ascertion Markup Language (SAML) v1.1 is mandatory and SAML 2.0 is emerging Used in Profile: CES (v2.0)
		XKMS 2.0 (W3C):2005			Used in Profiles: AMN, tactESB
					See General Security Key Management and Distribution. For CCEB interoperability the mandatory standard is ACP145(A) (Messaging Services Between Nations) and X.500 (based on CMI authentication framework)
Confidentiality					

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		S/MIME with Encrypted Security Service (ESS) (IETF RFCs 3850:2004, 3851:2004)		ACP120 replaced by ACP145	Messaging System independent encapsulation syntax supporting signature and confidentiality functions based on DSA. For CCEB interoperability the standard is S/MIME Version 3 ESS, application layer data confidentiality or link level encryption
			ITU-T X.411:1999		
			SCIP Key Management Plan, SCIP-120 rev.1.0:2010 (IICWG)		
			SCIP X.509 Key Management Plan, SCIP-121 rev.0.8:2012 (IICWG)		
			SCIP Signalling Plan, SCIP-210 rev.3.5:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			SCIP Muli-timedia Op-tion-Specific MERs for SCIP Devices, SCIP-213 rev.1.0:2012 (IICWG)		
			Generic Pack-et Data Option, SCIP-213.1 rev.1.0:2010 (IICWG)		
			Network Spe-cific MERs for SCIP Devices, SCIP-214 rev.1.2:2011 (IICWG)		For CCEB in-teroperability the SCIP stand-ard is mandat-ory
			SCIP over the PSTN, SCIP-214.1 rev.1.0:2008 (IICWG)		For CCEB in-teroperability the SCIP stand-ard is mandat-ory
			SCIP over RTP, SCIP-214.2 rev.1.0:2010 (IICWG)		For CCEB in-teroperability the SCIP stand-ard is mandat-ory
			U.S. SCIP/ IP Implement-ation Standard and MER Pub-lication, SCIP-215 rev.2.2:2011 (IICWG)		For CCEB in-teroperability the SCIP stand-ard is mandat-ory

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			Minimum Essential Requirements (MER) for V.150.1 Gateways Publication, SCIP-216 rev.2.2:2011 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Mimimum Implementation Profile (MIP), SCIP-221 rev.3.0:2011 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Cryptography Specification for SCIP, SCIP-231 rev.1.3:2008 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			SCIP Cryptography Specification - Main Module, SCIP-233 rev.1.1:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Universal Call Setup Encryption (CSE) Key Material Format and Fill Specification, SCIP-233.106 rev.1.1:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			MERCATOR Call Setup Encryption (CSE) Key Material Format and Fill Specification , SCIP-233.110 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			MERCATOR Call Setup Encryption (CSE) Specification, SCIP-233.202 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			ECDH Key Agreement and TEK Derivation, SCIP-233 rev.1.1:2011 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			MERCATOR ECDH Key Agreement and TEK Derivation Specification, SCIP-233.308 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Interoperable Terminal Priority (TP) Community of Interest (COI) Specification,		For CCEB interoperability the SCIP standard is mandatory

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			SCIP-233.350 rev.1.0:2010 (IICWG)		
			Application State Vector Processing Specification, SCIP-233.401 rev.1.2:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Point-to-Point Cryptographic Verification w/ Signature, SCIP-233.444 rev.1.0:2011 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			MERCATOR Point-to-Point Cryptographic Verification w/ Signature Specification , SCIP-233.445 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Secure MELP(e) Voice, SCIP-233.501 rev.1.1:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Secure Almost Full Bandwidth (AFB) Data, SCIP-233.518		For CCEB interoperability the SCIP standard is mandatory

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			rev.1.0:2010 (IICWG)		
			Secure Full Bandwidth (FB) Data, SCIP-233.519 rev.1.0:2010 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Secure Packet Data, SCIP-233.531 rev.1.0:2010 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Secure Messaging Processing Specification, SCIP-233.547 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			Galois/ Counter Mode (GCM) Data Integrity Specification, SCIP-233.562 rev.0.1:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			MERCATOR Encryption Algorithm Specification, SCIP-233.604 rev.1.0:2012 (IICWG)		For CCEB interoperability the SCIP standard is mandatory
			NATO XML Labelling version 1.0 (Ref:-		*Used in Profiles: AMN, CES, tactESB*

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
			NC3A Technical Note 1455 "NATO Profile for the 'Binding of Metadata to Data Objects' - version 1.0"; and - NC3A Technical Note 1456, "NATO Profile for the 'XML Confidentiality Label Syntax' - version 1.0".)		
		SOAP Message Security 1.1:2004 (OASIS)			Used in Profile: CES
			Username Token Profile, v1.1:2004 (OASIS)		Used in Profile: CES
			X.509 Certificate Token Profile, v1.1:2004 (OASIS)		Used in Profiles: CES, tactESB
			NATO PKI (NPKI) Certificate Policy, rev.2 (NATO:2008)		*Used in Profile: AMN*
			Kerberos Token Profile 1.1:2006 (OASIS)		Used in Profile: CES

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		SAML Token Profile 1.1:2006 (OASIS)			Used in Profile: CES
			SOAP Messages with Attachments (SwA) Profile 1.1:2006 (OASIS)		Used in Profile: CES
		WS-Security Utility 1.0:2001 (OASIS)			Used in Profile: CES
			WS-Trust 1.4:2007 (OASIS)		Used in Profile: CES
		Basic Security Profile Version 1.1:2010 (WS-I)			Used in Profile: AMN
Encryption					
		TLS v1.2 (IETF RFC 5246:2008)		SSL excluded in NCSP v.6	Used as a transport layer security protocol. Used in Profiles: AMN (v1.1), CES, tactESB
		SSH v.2 (IETF RFC 4250-4256:2006)			
			XML Encryption (W3C):2008		Used in Profile: tactESB

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		Key Wrap Advanced Encryption Standard 128 (AES 128, NIST FIPS 197:2002)	Key Wrap Advanced Encryption Standard 256 (AES 256, NIST FIPS 197)		PKI components and applications should utilise AES for key wrap functions. AES 256 should be utilized post 2008 for Root CA and Sub CA PKI components together with SHA-384 and 512. End entities can still utilize AES 128 together with SHA-256. For CCEB interoperability AES 128 is emerging.
Integrity					
		IP ESP (RFC 4303:2005)			Encapsulating Security Payload (ESP) may support integrity and authentication depending on the use of algorithms
			NINE ISpec v1.0.3 (NATO)		
		Digital Signature Algorithm 1024	Elliptic Curve Digital Signature Algorithm	Digital Signature Algorithm	Authentication and integrity algorithm for

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
		(DSA-1024, NIST FIPS 186-2 with Change Notice 1, Oct 2001)	(ECDSA 384, NIST FIPS 186-2 with Change Notice 1, Oct 2001)	(original version) not for new systems	End Entities as mandated by the interoper-ability protocol PCT for imple-menting digit-al signatures for a NATO Public Key Infrastruc-ture (PKI) in the NATO mes-saging system. ECDSA 384 is planned for post 2008. Guid-ance is provided in AC/322-D(2004)0035. For CCEB in-teroperability the Digital Signature Al-gorithm (DSA) NIST FIPS 186-2 is man-datory. DSA FIPS 186-2 can be used in NATO for veri-fication pur-poses only.
		RSA 2048 (PKCS#1 v2.1 RSA Crypto-graphy Stand-ard, RSA Laboratories, June 2002)	Elliptic Curve Digital Signa-ture Algorithm (ECDSA 384, NIST FIPS 186-2 with Change Notice 1, Oct 2001)		Authentication and integrity al-gorithm for Sub CA and oth-er PKI com-ponents (such as Key Re-covery Agents)

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
					as mandated by the interoper-ability protocol PCT for imple-menting digit-al signatures for a NATO Public Key Infrastruc-ture (PKI) in the NATO mes-saging system. ECDSA 384 is planned for post 2008. Guid-ance is provided in AC/322-D(2004)0035. For CCEB in-teroperability the Digital Signature Al-gorithm (DSA) NIST FIPS 186-2 is man-datory.
		Secure Hash Algorithm 256 (SHA-256, NIST FIPS 180-2 with Change Notice 1, Feb 2004)	Secure Hash Algorithm 384 (SHA-384, NIST FIPS 180-2 with Change Notice 1, Feb 2004)	Secure Hash Al-gorithm (SHA-1), NIST FIPS 180-1 re-placed by SHA-256	Hash algorithm to accom-pany the DSA and RSA for use in NMS. SHA-384 is planned for post 2008. Guid-ance is provided in AC/322-D(2004)0035. For CCEB in-teroperability

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
					the standard is SHA-1, NIST FIPS 180-1 is mandatory. SHA-1 can be used in NATO for verification purposes only.
		XML En-cryption Syn-tax and Pro-cessing, W3C:2002			Used in Profile: CES
Authentication					
		Radius, IETF RFC 2865:2006 up-dated by RFC 2868:2000, 3575:2003, 5080:2007	Radius and IPv6, IETF RFC 3162:2001		
			Kerberos v.5, IETF RFC 1510:1993		*Used in Profile: AMN*
			The Kerberos v5 Simple Au-thentication and Secur-ity Layer (SASL) Mech-anism, IETF RFC 4752:2006		Used in Profile: CES
			Single sign on (SSO, the Open Group)		

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
		Public-key and attribute certificate frameworks, X.509 v3:2005 (ITU-T)			Used in Profiles: AMN, CES, tactESB
			X.509 Public Key Infrastructure Certificate and CRL Profile (IETF RFC 5280:2008)		
		Identification of Issuers (ISO 7812:2007)			Base profile consisting of parts 1 - 2.
		XML Signature (W3C):2008			
		XACML v2.0:2008 (OASIS)	XACML v3.0:2010 (OASIS)		Used in Profiles: AMN, CES, tactESB
			DOD EBTS 1.2 (DoD: 2000)		*Used in Profile: AMN*
			DOD EBTS 2.0 (DoD: 2000)		*Used in Profile: AMN*
			Data Format for the Interchange of Fingerprint, Facial, and Scar Mark and Tattoo (SMT) Information (ANSI: 2008)		*Used in Profile: AMN*

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
			Biometric data interchange formats -- Part 2 (ISO 19794-2:2007)		*Used in Profile: AMN*
			Biometric data interchange formats -- Part 5: Face Im-age Data 8ISO 19794-5)		*Used in Profile: AMN*
			Biometric data interchange formats -- Part 6: Iris Im-age Data (ISO 19794-6)		*Used in Profile: AMN*
Detection					
Transsec					

3.6. SERVICE MANAGEMENT AND CONTROL

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
Mgmt Info Pub-lisher					
Mgmt Info Sub-scriber					
Mgmt Info Col-lector					
Mgmt Info Pro-vider					
Asset Mgmt					
User Mgmt					

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
System Mgmt					
			WS-Management v1.0 (DMTF)		Used in Profile: CES
		ITIL (ISO/IEC 20000:2012)			Used in Profile: AMN
		COBIT 5: A Business Framework for the Gov-ernance and Management of Enterprise IT (ISACA: 2012)			Used in Profile: AMN
			Configuration Management Database (CMDB) Fed-eration Spe-cification (DMTF DSP0252: 2009)		Used in Profile: AMN
		SNMPv3 Ap-plications (IETF RFC 3413:2002)		SNMPv1 (IETF Std 15) not for new sys-tems	SNMPv3 is considered emerging be-cause of current lack of agree-ment on the concept of op-erations for dis-tributed man-agement For CCEB in-teroperability this standard is not applicable

SUBAREA / SERVICE CATEGORY	CATEGORY / SUBCATEGORY	MANDATORY STANDARDS	EMERGING NEAR TERM	FADING	Remarks
					Used in Profile: AMN
		Message Processing and Dispatching for the SNMP (RFC 3412:2002 updated by 5590:2009)			For CCEB interoperability this standard is not applicable
		User-based Security Model (USM) for SNMPv3 (RFC 3414:2002 updated by 5590:2009)			For CCEB interoperability this standard is not applicable
		View-based Access Control Model (VACM) for the SNMP (RFC 3415:2002)			For CCEB interoperability this standard is not applicable
		Structure of Mgt Info (IETF Std 16:1990, IETF RFC 1155:1990 and 1212:1991)			For CCEB interoperability this standard is not applicable
		Architecture for SNMP Mgt Frameworks (RFC 3411:2002 updated by			For CCEB interoperability this standard is not applicable

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
		5343:2008, 5590:2009)			
		MIB II (IETF Std 17:1991, RFC 1213:1991 up-dated by 4293:2006, 4022:2005, 4113:2005)			For CCEB in-teroperability this standard is not applicable
			IPv6 MIB (IETF RFC 4293:2006)		For CCEB in-teroperability this standard is not applicable
			ICMPv6 MIB (IETF RFC 4293:2006)		For CCEB in-teroperability this standard is not applicable
			Multicast Group Mem-bership Dis-covery MIB (IETF RFC 5519:2009)		For CCEB in-teroperability this standard is not applicable
			IPv6 MIB for TCP (IETF RFC 4022:2005)		For CCEB in-teroperability this standard is not applicable
			IPv6 MIB for UDP (IETF RFC 4113:2005)		For CCEB in-teroperability this standard is not applicable
		Host Re-sources MIB (IETF RFC 2790:2000)			For CCEB in-teroperability this standard is not applicable
		Defs of Mgt Objects for			For CCEB in-teroperability

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
		the Ether-net-like In-terface types (IETF RFC 2666:1999, 3635:2003, 3638:2003)			this standard is not applicable
		RMON MIB v. 1 (RFC 2819:2000)	RMON 2 MIB (RFC 4502:2006)		For CCEB in-teroperability this standard is not applicable
		OSPF MIB v.2 (RFC 4750:1996)			For CCEB in-teroperability this standard is not applicable
		RIP-2 MIB (RFC 1724:1994)			For CCEB in-teroperability this standard is not applicable
		802.1p (IEEE:2004)			IEEE 802.1p (Quality of Ser-vice)
					In addition same stand-ards as within LAN Manage-ment for SN-MP can be used Quad C used for man-agement of co-alition WANs
			Common In-formation Model (CIM) (DMTF:1999)	CMIS (ISO 9595:1998) deleted in NISP v.1	For CCEB in-teroperability this standard is not applicable

SUBAREA / SERVICE CATEGORY	CAT-EGORY / SUBCAT-EGORY	MANDAT-ORY STAND-ARDS	EMERGING NEAR TERM	FADING	Remarks
				CMIP (ISO/IEC 9596-1:1998) deleted in NISP v.1	Primarily used for Telecom Management
				CMIP PICS (ISO/IEC 9596-2:1993) deleted in NISP v.1	
				GDMO (ISO/IEC 10165-4:1996) deleted in NISP v.1	

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4. PROFILES

4.1. INTRODUCTION

025. The purpose of this chapter is to specify the NISP near term profiles. The document organises these profiles under the following considerations:

- Profiles derived from NATO Reference Architectures
- Profiles derived from NATO Operations
- Profiles derived from NATO member nations

026. The above list will be enhanced dynamically, based on updated profile defintions being developed in relevant NATO bodies.

027. The standards being used in these profiles may differ in version from those being liested in chapter 3. This is based on the time for the development of these standards and may be modified in newer versions of these profiles.

028. Standards, which are listed in NISP Vol. 2 and are belonging to one or more profiles, as listed in chap. 4 of this document or in NISP Vol. 4, are marked in the Remarks column as follows:

029. Used in Profile(s): standard1 (, standard2, ...)

030. Standards, which are not included by a valid RFCP in NISP, Vol.2, but are only included in a profile, are marked in the Remarks column in *italics* as follows:

031. Used in Profile(s):*standard1 (, standard2, ...)*

4.1.1. Profiles derived from NATO Operations

032. This chapter contains profiles from current or future planned NATO operations. Currently, the following operations are recognised:

- Afghan Mission Network (AMN)

4.1.2. Profiles derived from NATO member nations

033. This chapter contains profiles from member nations being proposed for interoperability purposes in NATO and between NATO nations.

4.2. PROFILE SPECIFICATIONS

034. This section summarizes the profiles, listed in volume 4:

4.2.1. NRF Generic Interface Profile

035. The purpose of this profile is to support NRF rotation specific profile development.

4.2.2. Tactical ESB - Profile

036. The aim of this specification is to describe a profile for a tactical Enterprise Service Bus (tact ESB) to be used in a coalition, highly mobile and distributed environment. The profile focuses specifically on requirements from military usage and goes beyond the ESB specification, available in civil implementations/products.

037. The profile is a generic specification; following the principle construction elements, it allows for national implementations a derivation from the proposed one, not losing the interoperability aspects.

038. Details of this profile are contained in: IT-AmtBw_A5_RuDi-High_Level_Concept_400.pdf (DEU)

4.2.3. AMN - Profile

039. The purpose of this specification is to define an Interoperability Standards Profile to support the Afghanistan Mission Network (AMN) and transition from today's legacy systems to NNEC by defining a basic level of system interoperability in order to enhance the exchange of information within and across the AMN. To support the goal of widespread interoperability the AMN Interoperability Profile defines a minimum profile of services and standards for Technical Interfaces, Data Interchange Standards and Application Profile Standards that are sufficient to provide a useful level of interoperability.

A. TECHNOLOGIES

040. This annex describes the technologies that are projected to be available today or in the near term period which will enable the transformation towards the NII.

A.1. DATA STRATEGY

A.1.1. Data Strategy

041. Reference: NNEC DATA STRATEGY - AC/322(SC/1)N(2008)0034(INV) 18 DEC 2008

A.1.2. Data Management

042. Data management will apply an integrated, federated, and scalable data framework to link disparate information sources and provide robust knowledge manage- ment to permit conclusions based on contextual relationships.

A.1.3. JC3IEDM

043. The JC3IEDM is a merger of both the C2IEDM (C2 IEDM, developed by the Multitlateral Interoperability Programme (MIP)) and the Reference Data Model of the NATO Corporate Data Model, which was developed by a predecessor of the DMSWG. The JC3IEDM is published under cover of STANAG 5525.

044. The Data Management Authority in NATO publishes the JC3IEDM and Directive and Guidance documents for Data Management in NATO. It will also register and manage both the Standard Data Elements and the Information Exchange Requirements (IER) used in the development process of data assets.

045. The main tool for Data Management in an NCW-environment is the NATO Metadata Registry and Repository. A version of the NMRR is currently posted under the DoD XML Registry.

A.1.4. NATO Discovery Metadata Specification (NDMS)

046. The NATO Discovery Metadata Specification defines discovery metadata elements for resources posted to NATO shared spaces. “Discovery” is the ability to locate data assets through a consistent and flexible search method. The NDMS specifies a set of information fields that are to be used to describe any data or service asset that is made known to NATO. It serves as a reference for developers, system architects, and engineers by identifying a minimum set of metadata elements in support of Discovery Services. Whilst discovery of data assets is the primary use of the NDMS it is also important to note that widespread use of the metadata elements will also improve documents record management in general. The NDMS will be employed consistently throughout the organization but it is not intended or necessary for it to displace other specifications that offer different semantics.

047. To support data asset discovery, NATO has developed the NDMS as the common set of descriptive metadata elements that are to be associated with each data asset that is made visible to the enterprise discovery capability. Metadata is often defined as being “data that describes and defines other data”. Data assets available in the enterprise must be described with metadata, using the elements defined in this document to permit discovery through the enterprise discovery capability. The NDMS defines a minimum set of elements that must be used to describe data assets made visible to the enterprise. Users and system agents acting on their behalf that search the enterprise will discover data assets that have been tagged and entered into catalogues or repositories that respond to search queries specified in terms of NDMS entries as depicted in the NDMS Usage Conceptual Diagram in Figure A.1.

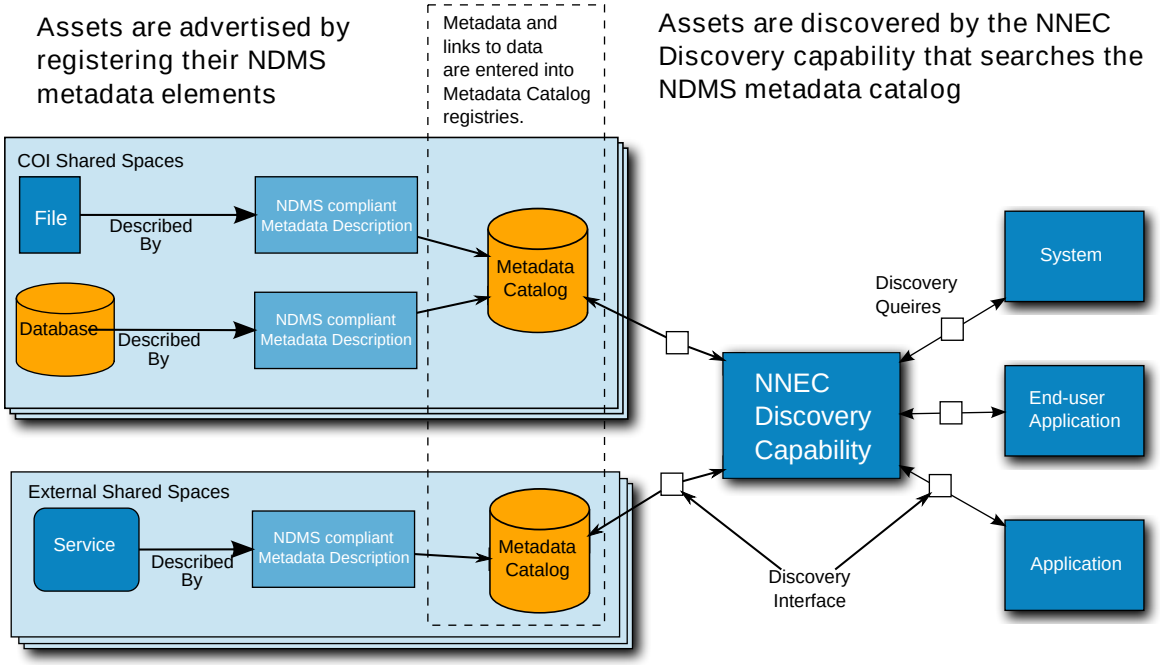

Figure A.1. NDMS Usage Conceptual Diagram

048. The elements specified in the NDMS are designed to be platform, language, and implementation independent. This allows system developers to generate and retain discovery metadata using any implementation approaches, including using COTS products. As future enterprise discovery interface specifications are defined, programs should have the appropriate discovery metadata available for their data assets and will only be required to format this metadata in accordance with the interface specifications.

A.1.5. Extensible Markup Language (XML)

049. The Extensible Markup Language (XML) is a simple, very flexible text format, much like HTML, used to structure, store and to send information. XML was designed to describe data and to focus on what data is. XML is also playing an increasingly important role in the exchange of a wide variety of data on the Web and elsewhere.

050. Role of XML in the Web Services model is lies within communication. When one application talks to another to perform a web service, the application doing the talking must package the message it is sending in a format that is understandable by the listening application. XML is the format of the message content in this communication process.

051. The Extensible Markup Language tags provide information about a document's components. The Uniform Resource Identifiers contained in the XML tags expand the concept of Uniform Resource Locators (URLs) by adding IDs for objects, concepts and values that are not dependent on location.

A.2. INFORMATION MODELLING

052. The ability to share information is a key factor for military success. As such, NATO and National Information Systems have to provide the means for information exchange in all mission types. The basic resource for all information systems is data, which, through the right interpretation, becomes information, and knowledge in turn. As NNEC is considered the core theme for C3 systems within NATO transformation, a fundamental requirement is to work in the most effective manner through semantic interoperability at the data level for NATO/national C3 systems. The expanding missions of NATO involve consultation based on the sharing of information. Alliance members and partners are engaged in collective decision-making, with each nation retaining sovereignty and responsibility for its own decisions and taking action only on the basis of unanimity. In this environment, it is critically important that the Alliance members and partners have access to all shared information at the same time and that both the consultation process and the decisions taken are adequately documented. Information modelling and information management initiatives must be formalized throughout the NATO Enterprise to leverage the collective assets of NATO and national systems in support of information operations.

053. Information management is the handling of information acquired by one or many disparate sources in a way that optimizes access by all who have a share in that information or a right to that information. Information modelling establishes a conceptual schema that defines how the managed elements in an information environment are represented as a common set of objects and relationships between them. This allows multiple parties to exchange management information about these managed elements. Additionally, it provides means to actively control and manage these elements. By using a common model of information, management software can be written once and work with many implementations of the common model without complex and costly conversion operations or loss of information.

054. Appropriate Information management will enable:

- Awareness -- Products identified by metadata (keywords) and cataloged with a common schema providing a simple yet integrated query search for the right information (product);
- Access -- with information tags to define privileges; and,
- Delivery -- Assured delivery of the information product over the right network and to the right location.

055. This integrated approach to information modelling leverages the concepts of Net Centricity throughout all information resource providers and consumers in a coalition operation. Key components of this strategy include a dissemination capability, with associated management services, that directs end-to-end information flows throughout the NII in accordance with command policy. The NISP will contibute to the core technical model for systems designers to develop new platforms capable of the intensive compilation, cataloguing, caching, distribution, and retrieval of data necessary to provide the life cycle information management and necessary information sharing across NATO members.

A.3. NETWORK INFRASTRUCTURE

A.3.1. Background

056. With the NATO Network Enabled Capability Feasibility Study (NNEC FS) a new concept of ensuring service interoperability was introduced that complements and reuses the architectural views. This concept dubbed the Interoperability Performance Parameters (IPP), inspired by the US developed concept of Key Performance Parameters (KPP), forces the system architects and designers to specify a wider context of their capabilities sufficient to allow secure service interoperability in a Federation of Systems (FOS). The interfaces at which interoperability between separate infrastructure capabilities is to be managed are called the Service Inter Operability Points (SIOP).

057. The principle is that an individual capability needs to work seamlessly with and within a FOS. The infrastructure services in a FOS and the international interoperability interfaces are described in the context of the total C4ISR systems architecture, often referred to as the Overarching Architecture (OAA).

058. This section describes the NATO General-Purpose Segment Communication System (NGCS) Reference Architecture (RA). NGCS is part of the NII, representing the NATO owned capability. It provides the communication services and associated management and security services. Also it describes the timeframe for NGCS up to 2014, first implementations are in progress.

059. The major change to classical network infrastructures is the coherence and interoperability of infrastructure capabilities brought by different coalition partners that needs to be achieved. In the NNEC FS the concept of a Maturity Model was introduced to describe, qualify and quantify the different levels of infrastructure capability. Increasing levels of maturity are characterised by enhanced sets of services, performances, and support, including advances in the associated Doctrine, Organisation, Training, Materials, Personnel, Leadership, Facilities (DOTMLPF) spectrum.

060. Interoperability of separate infrastructure capabilities is managed by the earlier mentioned concept of IPP. The IPP allows a more comprehensive description and specification of those parameters that are essential for providing scalable end-to-end services over combined infrastructure capabilities.

A.3.2. NGCS 2007 Target Architecture

061. A reference model of the baseline network infrastructure for NGCS RA is depicted in Figure A.2. This architecture is described in the NGCS RA ed1. At the time of writing the NSIE and the NATO IP Cryptographic Equipment / Secure Access Router (NICE/SAR) had not been fielded, but the implementation projects were in progress. The Bandwidth Manager Function (BMF) had been fielded.

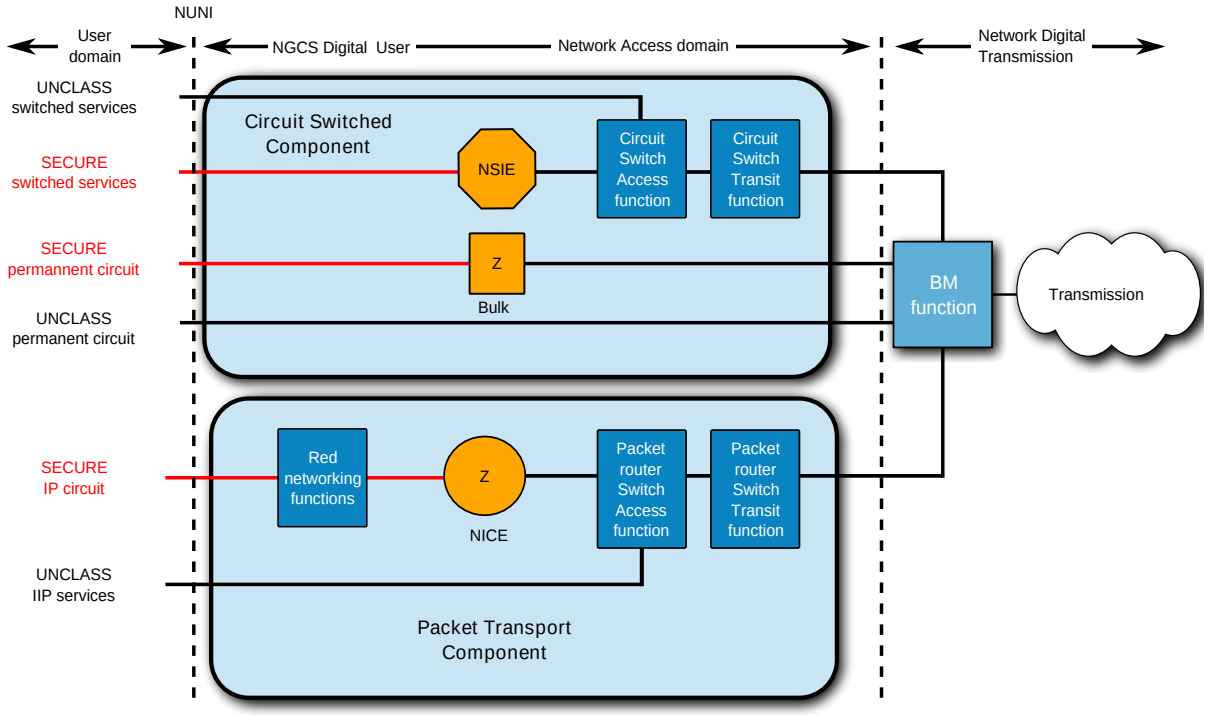

Figure A.2. NGCS Digital User-Network Access Reference Configuration

A.3.3. Communications & Networking

A.3.3.1. Internet Protocol Version 4 (IPv4)

062. Internet Protocol Version 4 (IPv4) is currently the dominant network layer protocol used in the communication between networked devices. IPv4 is a data-oriented protocol to be used on a packet switched inter-network (e.g., Ethernet). It is a best effort protocol in that it doesn't guarantee delivery. It doesn't make any guarantees on the correctness of the data; it may result in duplicated packets and/or packets out-of-order. All of these things are addressed by an upper layer protocol (e.g. UDP).

A.3.4. Construction of a robust IP-network infrastructure

063. Operational relevant service availability should be one of the main design criteria and operational evaluation criteria for the NGCS. Despite the migration of users onto a single network

and the introduction of significant additional complexity, e.g. QoS, the service availability has to be improved. Service availability and performance are exponents of infrastructure, organization, human aspects and others. The assessment of operational service readiness and performance is a structural activity required in the NGCS product life-cycle management. It should give input to transformational processes and for the development of Target Architectures (TA) that underpin infrastructure investment projects.

A.3.4.1. NGCS Overview

064. The NATO General Purpose Communications System (NGCS) has a Circuit Switched Component (CSC) and a Packet Transport Component (PTC). The services offered are presented at the NGCS User Network Interface (NUNI). The NGCS user-network access domain incorporates functions for user access of circuit switched functions and packet transport functions. The circuit switched component provides on-demand switched access and also access to semi-permanent circuits. Both can be provided either in secure or non-secure modes. The packet transport component provides for both secure and non-secure IP access services.

065. A secure service offered by the network at the NUNI provides for interconnection within a single security domain. If telecommunication services are required for a second security domain, this is implemented by installation of another cryptographic device - e.g. NATO Secure ISDN Equipment (NSIE) offering bulk encryption or NATO IP Cryptographic Equipment (NICE) (with the associated RED networking functions). In order to provide greater throughput, more than one instance of this might exist for a single security domain.

066. In mid-term, a complete migration to a fully IP based network is planned for the NGCS.

A.3.4.2. Definition and implementation of a QoS architecture

067. In the public standardization bodies, e.g. IETF, ITU, ETSI, ANSI, many initiatives are ongoing regarding the specification of a global QoS architecture in support of network convergence. Likewise many government organizations are doing the same.

068. The operation and control of QoS enabled IP-services requires many new Operation and Support Systems as well as a thorough reassessment of the management organization.

069. The complexity and the novelty of IP QoS warrant a step-by-step introduction. The entities affected by the introduction are:

- The end-user;
- The applications;
- The infrastructure;
- The OSS/BSS;
- The policies;

- The third party providers, e.g. SP, NDN;

070. The introduction should follow the developments in the commercial sector, and each successive introduction step in NATO should be done when the technology is stable and mature. Nevertheless NATO may want to implement additional functionality like additional CoS to implement MLPP, but this always be based on an underlying commercial standard based QoS architecture. Eventually the QoS architecture must take account of the requirements in military tactical radio networks and future QoS enabled MANETs. It is envisaged however that commercial standards for wireless MANETs will be developed among others by the ZigBee Alliance

071. The model of spiral development should be applied. Each step is first tested in the laboratory (applications, infrastructure and OSS/BSS), evaluated against user requirements, operational issues, architectural principles, before it is gradually rolled out in the operational network.

072. Business cases for network convergence are becoming increasingly viable. As more and more services are uniquely available on IP and standardization for IP based service support is becoming mature, it becomes more cost effective to migrate an existing infrastructure based on TDM and IP bearers to a single IP-bearer service system. However, network convergence does not come for free. Following items and activities are required:

- Specification of a comprehensive set of Classes of Service (CoS) for the ultimate network, which can be initially collapsed to a basic set and further expanded with each implementation step.
- Definition of application mapping to telecommunications services (the CoS).
- Specification of CoS handling in the network
- NATO policy with the objective to have uniform QoS handling in the multinational network.
- Supporting management and control systems (NGOSS compliant) that need to be integrated in the total SLM complex.
- Proof of concept testing.

A.3.4.3. The migration of applications onto an IP-bearer

073. All the applications that are often traditionally carried on the CSC, i.e. telephony, switched VTC, leased line (for real-time data, for bandwidth pipe) need to be adapted so that they can also perform on an IP-bearer. Most of the applications require an QoS enabled IP infrastructure. In addition the connection oriented application services require call signalling, DNS, directory (for the gatekeeper) and resource reservation functionality. This infrastructure should be provided as a common core functionality for all application services requiring it. Target architectures for VoIP (SVoIP and VoSIP) and VTCoIP therefore need to be coordinated. For interoperability purposes NATO needs to standardize the signalling at the respective Service Interoperability Points.

A.3.4.4. Transition to IPv6

074. IPv6 is an enabler for establishing coalition wide connectivity in a network enabled NII. The transition strategy of the NATO CIS to IPv6 is described in [TN1088] [1]from which the top-level roadmap is repeated here in Figure A.3.

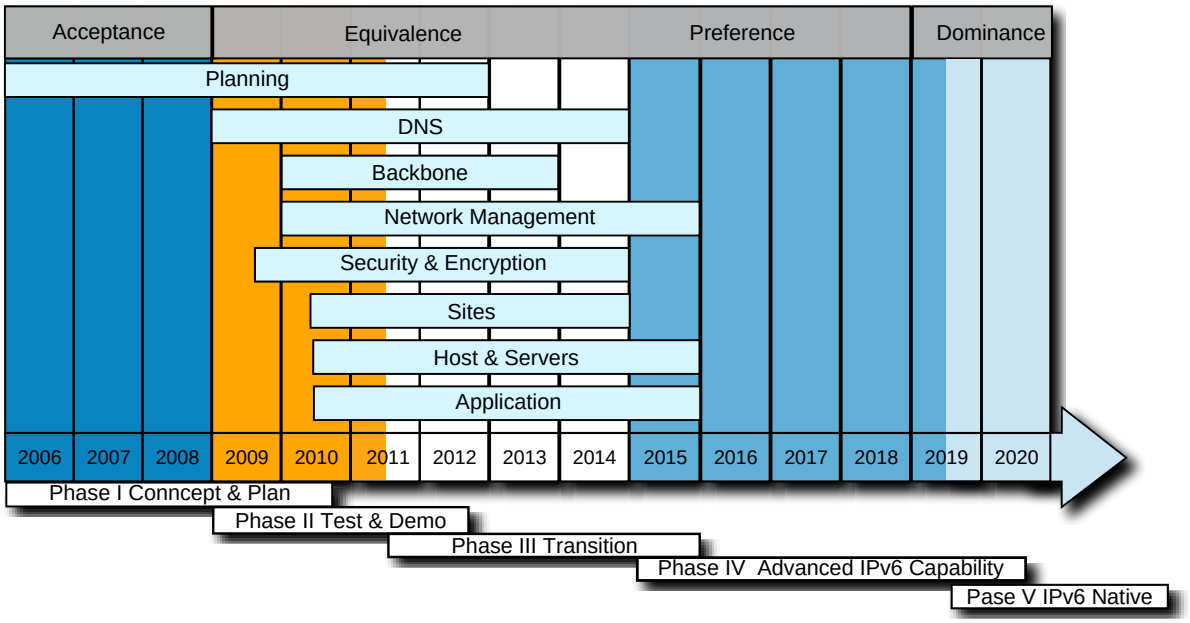

Figure A.3. Roadmap to IPv6

[1]Derived from Technical Note 1088: NATO IPv6 Transition Plan, Preliminary Version, NC3A, June 2006

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Symbols

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