ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Μόνιμη Αντιπροσωπεία της Ελλάδος
στο ΝΑΤΟ

Αρμόδιος:	Ασμχος (ΜΕ) Δημήτριος Κανταρτζόγλου	Βρυξέλλες,	25 Φεβρουαρίου 2021
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ΚΟΙΝ.:   ΥΠΕΞ/Δ' Γεν. Δ/ντη
ΥΠΕΞ/Δ2 Δ/νση
ΓΕΕΘΑ/Γ2   (μ. ΓΕΕΘΑ)
Υπουργείο Ανάπτυξης
/Γενική Γραμματεία Εμπορίου   (μ.η.)
Πλ.Κάνιγγος
Υπουργείο Ανάπτυξης
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/Δνση Ε Επαγγελματικής Δραστηριότητας,   (μ.η.)
Νίκης 4

ΘΕΜΑ: 3η Τροποποίηση Πρόσκλησης Υποβολής Προσφορών IFB-CO-14873-INTELFS2, Διαγωνιστικής Διαδικασίας Έργου: «Intelligence Functional Services (INTEL-FS) - Spiral 2 and BMD functions in INTEL-FS»

1.   Διαβιβάζεται, συνημμένως, 3η Τροποποίηση Πρόσκλησης Υποβολής Προσφορών (Invitation for Bids/IFB), για διαγωνισμό εν θέματι έργου, εκ μέρους NCIA, ως φιλοξενούντος έθνους.

2.   Καταληκτική ημερομηνία υποβολής προσφορών παραμένει η Τρίτη, 6η Απριλίου 2021, 12:00 τ.ώ.

3.   Ενδιαφερόμενες εταιρίες αναζητήσουν πληροφορίες μέσω καθοριζομένου σημείου επαφής (Point of Contact/POC, βλ. παρ. 7 τροποποιήσεως).

4.   Παρακαλούμε για τις ενέργειές σας.

ΛΑΜΠΡΙΔΗΣ

Συν. Σελ: 233

ΑΚΡΙΒΕΣ ΑΝΤΙΓΡΑΦΟ
Ο υπάλληλος της Μ.Α. ΝΑΤΟ
Σταύρος Τσάκωνας
ΕΠ&ΠΛ.Α΄

Acquisition Directorate

Boulevard Léopold III
B-1110 Brussels, Belgium

NCIA/ACQ/2021/6587
22 February 2021

To: All Nominated Prospective Bidders List and Distribution List

Subject: Invitation For Bid IFB-CO-14783-INTELFS2 Amendment 3

Intelligence Functional Services (INTEL-FS) - Spiral 2 and BMD functions in INTEL-FS

References: A. AC/4-D/2261(1996 Edition), Procedures for International Competitive Bidding
B. AC/4-D(2008)0002-REV2, International Competitive Bidding Using Best Value Evaluation Methodology, dated 15 July 2015
C. IFB-CO-14783-INTELFS2 NCIA/ACQ/2020/6369, dated 22 December 2020
D. IFB-CO-14783-INTELFS2 NCIA/ACQ/2021/6475, dated 29 January 2021
E. IFB-CO-14783-INTELFS2 NCIA/ACQ/2021/6574, dated 11 February 2021

Dear Prospective Bidders,

1.   The purpose of this Amendment 3 is to:

   a.   Publish Release 3 of IFB Bidders' questions and NCI Agency responses, to include the questions raised during the Bidders Conference;

   b.   Issue revised IFB documents (Book I and Book II).

2.   Clarification Requests and their respective responses that were released in IFB Amendments 1 and 2 have been greyed out for your convenience.

3.   Some answers to Bidders' questions have necessitated changes to the IFB bidding documents.

4.   Revised bidding documents provided with this IFB Amendment 3 are listed as Attachment 2 and replace the previous versions in their entirety. Potential Bidders are strongly advised to carefully review these revised bidding documents.

5.   With the exception of the revisions included in these documents, all other IFB documents remain unchanged from their original version as issued on 22 December 2020, unless updated in Amendment 1, issued on 29 January 2021, or Amendment 2, issued on 11 February 2021.

6.   Prospective Bidders are advised that the 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.

NATO Communications
and Information Agency

Agence OTAN d'information
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NCIA/ACQ/2021/6587

7. The Contracting Officer responsible for this solicitation is Dan Gaertner, and all correspondence regarding this IFB should be sent via email to IFB-CO-14873-INTELFS2@ncia.nato.int.

FOR THE DIRECTOR OF ACQUISITION:

Daniel Gaertner
Digitally signed by Daniel Gaertner
Date: 2021.02.22 16:12:51 +01'00'

Daniel K. Gaertner
Senior Contracting Officer

Attachments:

1) Responses to Clarification Requests, Release Number 3

2) Revised IFB Documents :
   2.1 File # 02: Book I – Bidding Instructions
   2.2 File # 09: Book II – Part IV, SOW I2UA
   2.3 File # 12: Book II – Part IV, SOW I2BE

Distribution List for IFB-CO-14783-INTELFS2 Amendment 3

NATO Delegations (Attn: Infrastructure Adviser):
Albania
Belgium
Bulgaria
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Croatia
Czech Republic
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United Kingdom
United States

NATO HQ
NATO Office of Resources, Management and Implementation Branch – Attn: Deputy Branch Chief

Director, NATO HQ C3 Staff, Attn: Executive Co-ordinator

SACTREPEUR, Attn: Infrastructure Assistant

SHAPE, Attn: J3 & J2

Strategic Commands
HQ SACT Attn: R&D Contracting Office

ACO Liaison Office

All NATEXs

Attachment 1: Responses to Clarification Requests, Release Number 3

Index no. NCI Agency	IFB Ref.	Bidder's Question	NCIA Answer
CR1	N/A	Is it possible to download into the web site INTELFS-1 Spiral 1 SRS, User Manuel, SDD, etc. or any suitable project document to be able to understand the scope/coverage of the Spiral 1.	The *INTEL-FS_User_Manual* , the *INTEL-FS_Administrator_Manual* , and the *INTEL-FS_-_System_Design_Specification_-_62789015_424_-_V0.14* are available under the IFB Portal/Supporting Documents
CR2	N/A	Should be key personnel employee of the bidder or is it possible to be a sub-contractor employee?	It is acceptable for Key Personnel to be employees of either the prime contractor or subcontractors. However, for any Key Personnel that are subcontractor employees, the bid shall (as specified in SOW section 2.5.2.1) clearly explain their responsibilities and their authority within the prime contractor's organization.
CR3	N/A	Do all possible sub-contractor's employees need to possess NATO-SECRET status also?	Yes, all resumes/CVs submitted with the bid for the PMO and Technical Team (SOW 2.1.1 and 3.1) must demonstrate a NATO SECRET clearance.
CR4	N/A	What is the expected number of deployments/servers? Some of the 3rd party COTS could be licenced per CPU, how should it be reflected in price?	The solution shall be running on the SOA Platform as a PaaS and ITM as IaaS. There should not be any license constraints linked to servers.
CR5	N/A	Are the licenses of operating systems on the server-side in the scope of the BID?	The solution must run on the SOA Platform (the PaaS) so as long as the OS is supported by the SOA Platform there will be no need to include OS costs in the bid.
CR6	N/A	Who and how will be the final authority for an interface between UE and BE especially in the case that both projects will be implemented by different bidders?	An initial API will be provided by NCIA that will be an automatic forward transformation from the information model, and will be baselined as a configuration item for the initial version of the API. This initial API will be provided to both I2UA and I2BE Contractor at Contract Award. The BE contractor will in the contract period be responsible for the evolution, improvement, and maintenance of the API, but NCIA will be the approving authority for changes to the API.
CR7	N/A	According to [FBE-201]: AEDP-17 defines CORBA and WS interface for CSD. Which one should be used for NATO CSD IPL integration?	For the information going from INTEL-FS to the NATO CSD neither of the AEDP-17 interfaces will be used. The NATO CSD implements a REST API dedicated for INTEL-FS to use to share information with coalition through the NATO CSD (see NATO CSD documentation on the IFB portal). For import of data from the NATO CSD IPL to INTEL-FS, the Contractor is free to chose which interface in the NATO CSD to use.
CR8	N/A	Which edition and baseline of STANAG 4559 NSILI (CSD) implement NATO CSD IPL?	The NATO CSD is contracted to be implemented in accordance with STANAG 4559 Edition A Version 1, March 2018.
CR9	N/A	Is it possible to reuse some existing algorithm or even existing implementation e.g. for The Terrain & Mobility Analysis [FBE-159]	NCIA is is not in the possession of any such algorithms/ implementation. However, the Bi-SC AIS CoreGIS system, which is implemented on the ESRI ArcgGIS platform, may have built-in functions that can be used for implementing these functions. The resulting solution shall as stated in the SRS [FBE-160] be implemented, and the solution should be hosted on the CoreGIS (i.e. in the ESRI ArcGIS platform). It will be the bidder's responsibility to evaluate what existing support in ESRI ArcGIS that can be used for these services.
CR10	N/A	Which operating system is used on the backend side?	See answer to CR5

CR11	N/A	Is FMN compliancy expected in the scope of the project? If yes, which Spiral and which services?	The integration services to be implemented are defined by Backend SRS. FMN compliance is not a direct requirement in the contract (the SRS defines the contractual deliverables).
CR12	N/A	Is GeoView component responsible for rendering APP-6 symbols according to given code, both point and line symbols?	Yes.
CR13	N/A	Is [INTEL-FS2-InformationModel] doc for SOW I2UA, SRS I2UA, SOW I2BE and SRS I2BE fully covered by doc 14a et 14b of IFB package?	The document 14a and 14b is a documentation extract from the IBM Rational Software Architect (RSA) implementation of the information model using the IBM BIRT tool to auto-generate a PDF view of the model. The full IBM RSA information model (in UML) will be provided to the Contractor at Contract Award.
CR14	N/A	1. [IPIWG] doc as file is empty 2. [MARIX] doc as link seems to not be accessible 3. [OASIS Odata OAS 1.0, 2016] doc as there is no file neither link associated	1. The [IPIWG] documentation is downloadable as a Zip file from the IFB portal. The zipped file when downloaded can be extracted into a folder which contains 7 XML scheme documents. There are no PDF documentation of IPIWG. 2. The [MARIX] URL works, but to access the site you will need to have a user account for the NATO ACT TIDE portal. An account can be requested using this URL: https://tide.act.nato.int/request 3. The documentation identified under [OASIS Odata OAS 1.0, 2016] can be found on the internet using a Google search (e.g. at http://docs.oasis-open.org/odata/odata-openapi/v1.0/odata-openapi-v1.0.html)
CR15	General	If the same contractor wins both bids, will the execution of the two pojects be totally independent? i.e. Different Purchaser personnel, Different Contractor key personnel, separate kick-off and WP meetings etc.	Purchaser's personnel does not have to be different. However, the bid needs to demonstrate that the Contractor's Team is sufficiently resourced according to a resource plan that realistically can deliver the project in accordance with the contracted schedule. All meetings under project execution (Kick-Off, WP meetings etc.) will have to be run separately.
CR16	Book II - Part IV - SOW I2BE - 3.1	What is meant by "documented expert knowledge" mentioned in the Personnel Qualifications? Is a certificate expected which covers the topics mentioned? There may not be any certificatations for some of the topics in the qualifications.	The CV must detail the work experience for the required skill. I.e. to describe when were the skills required, what was the context of how the skill was acquired (what work was done), what was the level of involvement and duration of the person in the work in the skill area.
CR17	General	What is planned "Effective Date of Contract" approximately?	It is estimated that EDC will be Q4 2021.
CR18	N/A	How and when will the Purchaser provide INTEL-FS Spiral 1 source code and relevant documents? Will there be a handover from the Contractor of INTEL-FS Spiral 1 project?	The INTEL-FS Spiral 1 source code will be made available to the contractor through the NSF at contract award.
CR19	Book I-Bidding Sheets I2BE	Does the distribution of price to the requirements affect the price bid evaluation or technical bid evaluation? Is it used as an indication of the level of understanding of the Bidder for the requirements?	The technical bid evaluation is done without any knowledge of any price information. As part of the price evaluation, if the distribution of price to requirements appears to be intentionally unbalanced, NCIA may ask the contractor to clarify.
CR20	General	Is there any limitation or preference of the Purchaser for the programming language for development of BE?	See backend SRS section 2.1.2 for SOA & IdM Platform compliancy. .Net and/ or Java are both supported by the SOA & IdM Platform
CR21	Book I-Bidding Instructions - 3.7 & 4.5.2.2.14. & 3.6.4.2.	Is Draft Delivery Plan for all WPs is the part of the Part-I Engineering Package or Part-II Management Package. In the table 3.7 it seems to be Management Pacakge, but in the other sections, it is in the Engineering Package.	It is part of the Enginering package. The table in Section 3.7 of the Bidding Instructions is corrected by IFB Amendment 1.

CR22	Book II-Part IV-SOW I2UA Annex A SRS	How will the non-functional requirements (i.e. Response time, Capacity) be verified for only UA without taking the BE into consideration? (I2UA SRS: NFR-2, NFR-3, NFR-4)	The BE NFRs are defined by the BE SRS and those can be verified through testing against the BE API. That means the BE performance will be known, and the UA performance can then be assessed (relative to the BE performance).
CR23	N/A	In Bidding Instructions, Draft Delivery Plan is included in Management Section of Volume-3 but is recommended to be moved to Engineering Section.	That was an error; the Delivery Plan is part of the Enginering package. The table in Section 3.7 of the Bidding Instructions is corrected by IFB Amendment 1.
CR24	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 5.4.1	Req ID: NFR-15 & NFR-16 Q// how verification analyze can be performed? There will be no "idealized" network conditions for latencies as stated in [127] and [128].	The purpose of *Inherent* is to take all factors that are not related to the quality of the delivered SW out of the equation for calculating availability. The deployed solution will then be observed under operation and the *Inherent* availability can be assessed.
CR25	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 5.4.2	Req ID: NFR-17 Q// is term "without loss of data" relates to persistent data only? Or also includes transient or session data at time of failure as well?	Persistent data only. The SRS in Amendment 1 clarifies this.
CR26	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 4.1.15	Req ID: FBE-294 & FBE-295 Q// ICD for assets of AirC2IS is required to be able to make a cost estimation on requirements	The AirC2IS ICD is available in the Referenced Documents folder on the IFB portal (see file AirC2IS_SDS_Annex_04_ICD)

CR27	N/A	In WP1.1, 1.2 and 1.3 sheets of SSS I2UA (and Bidding Sheets I2UA) and WP2.1 sheet of SSS I2BE (and Bidding Sheets I2BE), the price is required to be broken down into the given requirements (capabilities). In addition to the capability development, there are other activities (requirements) to be performed in this project. Some examples are listed below. We consider distributing the prices of those activities into the SSS requirements proportionally. If some of those SSS requirements are needed to be deleted throughout the execution of the project, the total price from the below activities will decrease by an amount which is equal to the price portion distributed to the deleted SSS requirements. We assess that the total effort/price of the below activities should not change linearly according to SSS requirements changes. Please advise how to formulate this subject in the price calculations. • Contractor support to Purchaser IV&V as given in I2UA SOW [84] and I2BE SOW [80] • Contractor attendance to UAT as given in I2UA SOW [SOWG-223] and I2BE SOW [SOWG-223] • Contractor attendance to Deliverable Acceptance Review I2UA SOW [SOWG-224] and I2BE SOW [SOWG-224] • Contractor support to Purchaser's accreditation activities as given in I2UA SOW [SOWG-227], [SOWG-228] and [SOWG-230], and I2BE SOW [SOWG-227], [SOWG-228] and [SOWG-230] • Contractor support site installation as given in I2UA SOW [SOWG-378] and [SOWG-379], and I2BE SOW [SOWG-376] and [SOWG-377] • Training material development and training delivery to Purchaser and /or End User Personnel as given in I2UA SOW Section 2.3.5 and I2BE SOW Section 2.3.5	* IV&V: Contractor should maximize the use of test automation as indicated in the SOW (BDD and ATDD) with integration with IV&V test recording system. IV&V resources will participate in the SOW defined events. The Contractor will have to respond to enquiries from IV&V. * UAT: As each increment results in a deliverable that can be submitted in a UAT, i.e. the expected number of UATs are known. * Deliverable Acceptance Review: Same as for UAT, the expected number of DARs are known. * Support to RFC: The RFC process will be mostly handled by NCIA. If the Contractor delivers SW (by increments) that is easily installed, has no major defects, and is documented in accordance with the Contract, then the Contractor's involvement with the RFC process will be low. The assistance will be required in the case when there are problems (e.g. with installation and with SW issues) * The training requirement is for the purchaser's O&M team, and training material needs to be delivered for each increment. No end user training is required, beyond what is defined for the Learnability Tests The bidder needs to estimate the costs of the non-developmental activites and factor them into the cost of individual impementation requirements. It is not anticipated that any potential deletion of requirements would significantly impact the non-developmental activities.
CR28	Book I – Bidding Instructions Annex B-C-D	Can you provide bidders with an editable document templates for all of these annexes B1-16 + C + D ?	Appendix B through D from the Bidding Instructions has been uploaded to the IFB portal in the Supporting Documents folder
CR29	N/A	What measures do you have in place to prevent the builder of SPIRAL 1 to benefit from its current incumbent provider position and ensure transparency of competition ?	There is no Contractor currently working on INTEL-FS Spiral 1. Since the handover and end of the warranty, INTEL-FS Spiral been maintained by NCIA. All bids will be evaluated against the criteria stated in the IFB, and will only be made available for review to the NCIA evaluators. The source code of INTEL-FS Spiral 1 will be provided to the contractor at contract award.

CR30	N/A	By reading the documentation and analyzing the functional requirements and user stories, we understand that our software is able to fulfill an important amount of these requirements and to integrate with specialized third parties for the parts that are not covered. Since our user interfaces are based on Angular and HTML5, would it be acceptable for NATO to be proposed highly configurable COTS (commercial off the shelf software, out of the box) products instead of bespoke development? By using software that is covering both AU and BE in an integrated manner, implementation risks are lowered, time to market shortens and maintenance is more efficient.	There is no restriction preventing a contractor from proposing highly configurable COTS, as long as all of the requirements are fulfilled. However, please note that: 1. It is important the back-end is separated from the front-end, and that the only interaction between the two happens through the BE API. 2. The bids for the back-end and front-end must be submitted separately from one another, with no caveats that NCIA must accept both bids together. A bid that deviates from these two points will be considered non-compliant.
CR31	N/A	Is NATO providing the infrastructure to meet the non-functional requirements (performance, recovery time, up time, concurrency, etc.) ?	The Purchaser will provide the infrastructure to meet the NFR. However when not ideal, the NFR measurements/ assessment will remove/ subtract the impact of the NATO infrastructure.
CR32	N/A	If T2 (above) answer is yes, is NATO open to receive our recommendations regarding the types, sizing, etc. of the hardware, operating system and possible virtualization layers?	This is a pure SW acquisition project that will rely on NATO PaaS and IaaS. The proposed solution will have to work with existing NATO PaaS and IaaS.
CR33	N/A	Can NATO indicate which of the requirements are already met in Spiral 1 and current technology used for it ?	The functionality that exists in Spiral 1 can be seen from the INTEL-FS Spiral 1 User Manual and Administrator Manual that is available under 'Supporting Documents' on the IFB portal. Also, the IFB Information model (document 14a and 14b) documents the information model for what has been implemented in Spiral 1 (see section on NATO::_Conventions and Migration::_INTEL-FS Spiral 1 Reference). However, as Spiral 1 does not meet the implementation requirements as defined by this IFB (neither for frontend, nor backend), the potential for code reuse from Spiral 1 in Spiral 2 will be limited. An "exception" to the limited SW reuse is identified in the I2UA SRS paragraph [49]: "*Note: NCI Agency is already in possession of a software (SW) tool, and its source code, that has implemented functionality in Angular 9 that interfaces with a REST abstraction layer in INTEL-FS Spiral 1 as depicted Figure 1-1. This UI software (that is also compliant with [HMI-C4ISR]) fulfils many of the acceptance criteria of several of the user stories below including [US-18], [US 21], [US 23], [US 24], [US 25], [US 26], and [US 27]. This source code will be available with the INTEL-FS Spiral 1 software* ".
CR34		Are the mentioned technologies fixed or contractor can provide technology recommendations e.g. Angular, Neo4J has been mentioned as the framework?	NCIA is striving towards SW reuse and componentization across applications and functional area services (FAS). In this effort Angular should be the UI framework chosen by most new FASes, and Angular will be the preferred framework INTEL-FS. The IFB specifies backend functional and nunfunctional requirements like advance graph queries (with fast response times) and link analysis / social nework analysis and a solution including a graph database should be able to fulfil those requirements. The choice of a graph databse (e.g. Neo4J) is not fixed and the Contractor can propose a different databases with graph support, or a different solution architecture that can fulfill the functional and non-functional requirements of the IFB. Note: Angular and Neo4J are both already used with the INTEL-FS SW.

CR35		NSF is recommended as the foundation toolchain (DevOps based) for custom software development lifecycle. Does this toolchain need to be leveraged both for Application and Backend Service development and deployment as a standard?	Yes
CR36		Please confirm the deployment preference for both I2UA (Application) and I2BE (Backend) systems viz. on-premises / private secured cloud	As stated in the I2BE SRS, the backend services shall run on the SOA & IdM Platform. The I2UA shall be able to run in a browser on any computer connected to the NATO network.
CR37		Per our understanding, there will be an transient / intermediate release for new application pointing to old backend and then a following release for new application with new backend services: a. Are the migration timelines flexible and what is the business impact in case of delays? b. There is a mention of existing REST Abstraction /API services layer (section 1.3 of I2UA SRS) which can be leveraged to support the transient state (I2UA Phase 1). Please provide the REST API, business logic and system architecture documentation.	a. The roll-out for the new backend that involves migration, will be done incrementally for a limited number of users at the time. The legacy capability will need to be available until the new capability is deemed robust and stable. The impact to the business must be minimal/ zero. b. This is still work in progress with an expected deployment to production in Q2 this year, the abstraction layer API is not stable and available yet. INTEL-FS Spiral 1 architecture information is provided through the INTEL-FS Spiral 1 System Design Specification that has been uploaded to the IFB portal under Supporting Documents.
CR38		We can see that some parties on the bidders list have been involved in INTEL-FS Spiral 1 and/or in the design of Spiral 2. Will these parties be excluded from bidding? If not, in what way will NATO guarantee a level-playing field?	No bidders will be excluded from bidding. The INTEL-FS Spiral 2 solution will architecturally be very different from Spiral 1. No Industry has been involved in the design of Spiral 2; the design of the Spiral 2 solution is solely done by NCIA.
CR39		Could you please provide the details (documentation reference) covering INTEL-FS Spiral 1 application system architecture and technology landscape	The INTEL-FS Spiral 1 System Design Specification has been uploaded to the IFB portal (file name: *INTEL-FS_-_System_Design_Specification_-_62789015_424_-_V0.14*)
CR40		How many business domains, processes, services and workflows are in scope of the target state application landscape?	The number of services can be enumerated from the IFB I2BE SRS in the sections listing the Functional Services and the Integration Services. It should be noted that some of the services are intended to perform migrations from Spiral 1 - these are idetified as "xxxx Migration Service". There are four principal processes/ workflows: Dissemination, Colation, Request and Task. In terms of Business Domains (and depending on the interpretation of "Business Domain") the target application state will provide support to the standard Intelligence Procedures found in the Allied Joint Doctrine AJP-2.1. At the highest level, these include all phases of the Intelligence Cycle; Intelligence Requirements Management; Collection Management; Intelligence Support to Targetting; The JISR Cycle; Support to Ballistic Missile Joint Intelligence Preparation of the Operating Environment; Support to Electronic Order of Battle Management; Support to IED Incident Mangement. All of these higher level procedures are supported by some or more of the services defined in the I2BE SRS.
CR41	VC-ICD 1-3	Section 3 of VC-ICD 1-3 document provides an overview of Geo-View Visualization Components (GIS, File Import/Export, NMAPI for user applications, Media services, GeoView online help, Symbology service). Please provide the approx. number of visualization component services and users for the new application platform?	NCIA foresees one VC to be used with each instantiation of the Web Client (i.e. the different UI applications as defined in the I2UA SRS will share the one instantiation of the VC). The main reason for that is that each instance of the VC will require a high amount of memory. The number of users will be several thousand.
CR42		14 loosely coupled applications are mentioned in scope. Are there any dependencies in terms of data and domain services across these applications?	There should be no need for any intra-client dependencies between these User Applications beyond the sharing of a single VC.

CR43	INTEL-FS User Manual	In the INTEL-FS User Manual (INTEL-FS 1.5.0 build cb0514b) there is a mention of IIE (Intelligence Information Entity) management workflows supported by the front end application. How many business subject areas/Intelligence Information Entity domains are in scope?	From the INTEL-FS Spiral 2 information model, in documents 14A and 14B, it can be seen that there are 172 Intelligence Information Entities in the Spiral 2 *Domain of Discourse* . There are four principal processes/ workflows: Dissemination, Colation, Request and Task. All IIEs are subject to the Dissemination Worfklow. *ProductIIEs* in conjunction with *BattlespaceIIEs* are subject to the Colation workflow. Within the IRMCM staff function, RFIs and ISRRs are the subjects of *Request* workflows; CollectionTasks and ExploitationTasks are the subject of *Task* workflows.
CR44	I2UA SRS document	Section 2.1.1 – I2UA SRS document : "[INTEL-FS2-InformationModel] implicitly includes the information managed by Spiral 1 because it extends from the principal components of Spiral 1." Please provide the Intelligence Information Entity data model documentation as per INTEL-FS2-InformationModel	IFB Documents 14A and 14B contain a complete specification of the INTEL-FS Spiral 2 Information Model. These documents both contain a section *_Conventions and Migration::INTEL-FS Spiral Reference* which shows the principal information aspects of Spiral 1: Battlespace Object Management (including support to Counter-IED); Intelligence Requiements Managment (including RFIs and Indicators); Intelligence Support to Targetting and ISR Product catalogue Management.
CR45		Could we have more information on GeoView? • On what software is this build? • If needed can an alternative be proposed or is GeoView the basis that should be used? • is GeoView an "as is" and the basis that should be used?	Information on the usage of GeoView is provided through the ICD that has been provided in the Reference Document section on the IFB portal (see document *VC ICD 1-3*). The 2D parts of the VC (which is what will be used in INTEL-FS) is implemented in OpenLayers. An alternative GeoView solution is not an option. The VC GeoView is a standardized component that will be used in multiple FASes to lower overall CAPEX and OPEX to NATO. The aim is to use the GeoView "as is", no feature gap has yet been identified in the VC.
CR46		The overall project is split in 2 contracts that can be under the leadership of 2 separate companies. Who is responsible of the overall integration and the entire function?	As defined in the I2BE SRS, the Backend Contractor is responsible for delivering backend services that support the User Stories through the API. An initial API will be provided by NCIA as a configuration item, it will be maintained and improved by the backend contractor. NCIA will be the approving authority for changes to the API (see also answer to CR6)
CR47		Can you define what is an "Apparent Successful Bidder" . Is there an additional step to go from the status of "Apparent Successful bidder" to " successful bidder"	The term "apparent" successful bidder is used, as the contract award will not be made until: a) the debrief period for unsuccessful bidders has been completed; and b) a successful pre-award meeting has been held with apparent successful bidder. The purpose of the pre-award meeting is to ensure a complete understanding of the technical requirements, schedule and contract terms and conditions, and to clarify any minor ambiguities that remain following the evaluation phase.
CR48		Can you disclose the Spiral 1 ICD document.	The Spiral 1 ICD has been uploaded to the IFB portal under Supporting Documents.
CR49		Where do the Acceptances take ? Can it be done virtually?	As stated in SOW section 2.4.5.2.6 on the Delivery Acceptance Review *"If agreed between Purchaser and Contractor, the meeting could be done as a video-conference meeting"* .

CR50	Book I Bid Instruction Section 1.2.2	Could you provide clarification or the concept, with examples, in regards to Book I Bid Instruction Section 1.2.2 "… on a fixed Price Incentive Fee (FPIF) basis" as to what would constitute the eligible targets to receive the Incentive?	The incentive fee is described in Book II, Part II, Contract Special Provisions, Section 6. There are two incentive milestone dates for each contract (CSP, Section 6.3). If all Applications/Services have passed the Initial Acceptance by this milestone date, the earned incentive will be 5% of the value of the Applications/Services for which all Requirements have been accepted.
CR51	Book I Bid Instruction Section 1.2.3	Could you define what you consider as an "Agile Methodology" in Book I Bid Instruction Section 1.2.3 and provide amplification as to what a contractor can expect during the contract period. For example how would changes in design and/or delivery using this "Agile Methodology" from the as bid FFP baseline be funded?	What some might consider as "fully agile" - a high level scope with significant room for ongoing changes - will not be implemented on INTEL FS 2. The elements of Agile methodology that apply to these contracts are defined by the DSDM principles in the SOW. Primarily, this involves frequent deliveries and acceptances, based around sprints and increments; frequent payments; and the ability to reprioritize requirements. The scope is fixed; any minor changes that are required later in the project could be partially managed by removing some of the lower priority requirements if they're no longer necessary.
CR52		With your FPIF and Agile delivery methodology, what are the Key Metrics that NATO will be using in order to measure that the Contractor has met the requirements and met the Acceptance Criteria?	The delivery acceptance requirements are defined through the SOW and SRS, see also answer to CR above.
CR53		Are the User Stories going to be sufficient for a contractor to use for Acceptance Criteria?	The acceptance criteria are defined in the SOW. User Stories are not by themselves sufficient. General functional requirements, specific functional requirements, and non-functional requirements as specified in the applicable SRS are also included in the deliverable acceptance criteria.
CR54	I2BE SRS	[GBE-6] of section 2.1.2.1 of I2BE SRS document states "All I2BE services (taken to mean the full set of Phase I, Phase II and integration services specified herein) shall be hosted upon the SOA & IdM Platform, and re- use and/ or integrate with the SOA & IdM Platform services". [15] of section 1.7 of I2BE SRS document: "..the bulk of the Spiral 2 effort concerns itself with technology refresh, migration and 're-platforming' (see [18]) of existing back end, full stack capabilities to the SOA & IdM Platform". Fig 8 – Interoperability Landscape in section 5.1 of NU_SOAIDM_Wave1and4_ICD_v8.0 document provides a logical interoperability view of SOA & IdM platform. • Please provide the details (documentation reference) of SOA and IdM platform covering: end to end physical system architecture (with supporting technologies) and ETL (Extract, Transform and Load) framework services to populate Intelligence	The documentation of the SOA and IdM Platform that is currently available has been provided on the IFB portal in the Referenced Documents section.
CR55	IFS1-ICD	Section 2 of IFS1-ICD document provides an overview of the implemented INTEL-FS Spiral 1 system. The scope covers intelligence requirements management and processing, information collection and processing and intelligence dissemination. Is the scope same for target INTEL-FS (New) backend system or there will be new functionalities/enhancements?	The scope of INTEL-FS Spiral 2 is defined through the IFB SOWs and annexes. INTEL-FS Spiral 2 will have more functionality and will have increased interoperability and integration with other Bi-SC AIS FASes.

CR56	IFS1-ICD	Section 3 of IFS1-ICD document provides an overview of INTEL-FS External Interfaces (inbound and outbound). a. How many of these interfaces are in the impact analysis scope of re-platforming? b. Are there any re-usable components (utilities, API definitions etc.) which can be leveraged for re-platforming?	Bidders should expect all interfaces to be affected by the re-platforming. The WSDL files for the SOAP services defined in Chapter 5 of the ICD should be reusable; these WSDL files will be applicable for the deliverable defined in section 4.2.4 in the Backend SRS.
CR57	IFS1-ICD	Section 4 & 5 of IFS1-ICD document provides the overview and definitions of INTEL-FS services. a. How many of these services are in the impact analysis scope of re-platforming? b. Are there any re-usable components (utilities, information data models etc.) which can be leveraged for re-platforming?	See answer above. Additionally, note that the Spiral 2 information model incorporates the Spiral 1 information model.
CR58	I2BE SRS	[14] of section 1.7 of I2BE SRS document: "The significant part of the Initial Information Model [INTEL-FS2-IM] is based on existing production systems (IRM, CM, BSO, Products, EOB, etc.) that these I2BE services will be replacing". Please provide the details (documentation reference) of Initial Information Model as per [INTEL-FS2-IM].	The Information Model is provided in document 14a_ and 14b_ of the IFB: - *14a_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Battlespace Partition* - *14b_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Staff Partition*)
CR59	N/A	Please provide the details (documentation reference) for Spiral 1 INTEL-FS backend data sources (description, quantity etc.) and data collection interface types (Event based, API based etc.). How many Spiral 1 data sources and interfaces are in scope of target INTEL-FS backend platform (New)?	The main data sources for INTEL-FS Spiral 1 are the CCC, MIDB, JTS, and organically created data. The CCC source/ interface is in the scope of Spiral 2 (see BE SRS section 4.1.1 and 4.2.1). The MIDB source is also in scope of Spiral 2 (see BE SRS 4.1.14). JTS (now N-JTS) will continue to be a source for INTEL-FS Spiral 2 (see BE SRS section 4.1.13)
CR60	N/A	How much data history (volume and period) needs to be migrated from Spiral 1 to the new backend platform?	There will be data from approximately 3 million information entities collected over many years that will have to be migrated. Note that the Spiral 2 information model builds upon, and incorporates, all of the Spiral 1 information model; this should ease the migration effort.
CR61	Book I-Bidding Sheets I2BE Annex B-13.	If the contractor will submit bid for both of the BE and UA, can proposed Key Personnel be the same personnel for both of the bid IFB-CO-14873-INTEL-FS2-BE and IFB-CO-14873-INTEL-FS2-UA? Or Should contractor propose different key Personnel (PM, QAM, CM, TL, TD, etc.) for both of the bid?	Contractor Key Personnel do not have to be different for each contract. However, the bid needs to demonstrate that the Contractor's Team is sufficiently resourced according to a resource plan that realistically can deliver the project in accordance with the contracted schedule. All meetings under project execution (Kick-Off, WP meetings etc.) will have to be run separately.
CR62	Book II – Part II – Contract Special Provisions - 4.4	Where are the priorities of the requirements (Must-have, Should-have or Could-have) given in the IFB? Will these priorities be decided during project execution by Purchaser?	The priorities will be provided to the Contractor as part of the pre-award discussions prior to Contract Award.

CR63	Book II – Part II – Contract Special Provisions - 7.5.3	In relation to the article 7.5.3 and 7.5.4 of the "Special provisions" could you please clarify whether the Contractor, may invoice at once the 100% of the value of the accepted Requirements but wait for the warranty payment of 10% of the total value of the accepted Requirements in four quarterly payments, or, Contractor is expected to invoice seperately each time? (e.g; 90% for acceptance, 10%*0,25 four times in the warranty period)"	The contractor will invoice 90% of the value of the accepted Requirements. The remaining 10% will be invoiced during the Warranty period. As an example, if the total value of the accepted Requirements from EDC to FSA = EUR 5,000,000, then 4,500,000 would be invoiced/paid following the Incremental acceptances; and 500,000 would be allocated to the warranty period. For this 500,000, four quarterly invoices of 125,000 would be submitted/paid during the 1-year warranty.
CR64	Book II - Part IV - SOW I2BE - 1.5 PFI	Will Contractor pay any price to the Purchaser for the NR laptop to be used for sharing of NR material?	The NR laptop will be lent to the Contractor as PFI; the Contractor does not need to pay for this.
CR65	Reserved		
CR66	Book II - Part IV - SOW I2UA	Which NATO site INTELFS2 will be deployed? How many locations? Which countries? Will be the deployment and system activation activities under the responsibility of the Contractor or Contractor will only support the Purchaser (on-site support and/or remote support)? To be able to make detailed schedule and plan the travel for these deployment activities, it's needed to know the location of sites.	INTEL-FS Spiral 2 will be deployed to the NATO IT Modernization (ITM) data centres. The NCIA INTEL-FS Support Staff will be responsible for the deployment; the Contractor will be required to support the NCIA Support Staff. For the initial deployment(s), on-site support (at NCIA premises in Belgium or the Netherlands) will be required, for subsequent deployment (pending how successful and easy the intial deployment was) remote support should suffice.
CR67	Book I-Bidding Instructions	Will Contractor deliver Test Plan/Master Test Plan in the Volume III Technical bid package?	Bidders shall provide details on the bidders approach to testing in the Solution Description Document, which is part of the Technical Volume (Volume III) (see also BI section 4.5.2.2.9 and 4.5.2.2.10).
CR68	Bidding Instructions	The document « 02_IFB-CO-14873-INTELFS2-Book I-Bidding Instructions" mentions that 2 distinct proposals and contracts must be considered by the bidders. Can you detail how NCIA will manage the consistency and the coordination between the two parts on the final system which are linked technically and in terms of functionalities ?	Consistency and coordination will be achieved through the Contract First Development/ Approach (i.e. the API).
CR69		For "COTS" included in the solutions (Front or Back) is the annual maintenance included in the option of level 2 and 3 of maintenance ?	The IFB, for both contracts, specifies a work package of optional 3rd and 4th level support an maintenance. Maintenance costs of COTS (i.e. 4th level) must be included in the cost of the optional 3rd and 4th level Support and Maintenance WP. Please note Section 22.3 of the Contract Special Provisions, *Software Licenses* . The Purchaser may exclude from the contract the purchase of software licenses which may be procured by the Purchaser through centralized contracts.
CR70	Bidding Instructions	In "02_IFB-CO-14873-INTELFS2-Book I-Bidding Instructions" it is mentioned that "The proposed solution describes a sound approach to eventual consistency in a distributed (multi-instance) environment configuration (i.e. in a high availability and robustness configuration)". Will NCIA intend to provide high level specifications for the infrastructure which will support the Intel FS Applications (Back end and Front End) (Network bandwidth, latency, recovery points...) between implementation sites ?	NCIA requires a solution that implements eventual consistency between instances of I2BE running in availability zones of a cloud-based solution. The Contractor is not responsible for any infrastructure components.

CR71	General Provisions	In "08_CO-14873-INTELFS2-Book-II-Part III General Provisions" it is mention that : "The Contractor shall ensure the design of the system includes sufficient redundancy and other Reliability, Maintainability, Availability and Testability measures to ensure the RAM requirements in this Contract are achieved and attained at an optimal Total Cost of Ownership (TCO), minimizing preventive maintenance, manpower requirement and usage of special-to-type tools and test equipment". Can NCIA specify the infrastructure KPI underlying those applications measurement (RTO/RPO, SLA, …) ?	The RAM assessments will be done on the software's inherent qualities focusing solely on the design-related failures. Effects of the infrastructure will be excluded/ subtracted from the RAM assessments.
CR72	SOW I2UA and SOW I2BE And Contract Special provisions	The program is composed of 2 separate contracts. One for I2UA one for I2BE . We understand that for I2UA we will have either to connect to legacy BE or emulate new functions or Interface with new I2BE for BE we will have to emulate Interfaces for each "system" and then Integrate and tests with new I2UA . We can then consider the development of two Independent Subsystems. Then who will be responsible for system Integration ?	Both the I2UA and I2BE contracts will be implemented using a Contract First Development (CFD) approach through the API. When both the I2UA and I2BE are complying with the API there is no system integration (the I2UA and I2BE are "pre-integrated" through the API).
CR73	Special Clauses §10	FSA acceptance of each sub system :Please confirm that only requirements of respective SSS documents will be used to conduct FSA on each sub system	NCIA confirms that only the Requirements listed in the I2UA Front-end SSS will be used to conduct FSA for the I2UA Front-end contract, and only the Requirements listed in the I2BE Back-end SSS will be used for the FSA for the I2BE Back-end contract.
CR74	Special Clauses §10	FSA : Please confirm that there is only one FSA (Not one for each Increment) and it corresponds to the system Acceptation (system meaning either UA either BE sub system)	There will be only one FSA for each contract, and the FSA for the I2UA is independent of the FSA of I2BE and vice versa.
CR75	Special Clauses §10	FSA What is the planned duration of the FSA	Unless there are unforeseen issues that haven't previously been resolved, the FSA should not require more than a day to conduct.
CR76	SOW I2UA SOWG 155	What happens if Covid remains and we cannot invite NCIA?	All the implementation work shall be conducted using the NATO Software Factory, and meetings can be done virtually/ remotely.
CR77	SOW I2UA [97] (2)	IV&V :"Run additional tests. These additional tests may use different data sets, and may include extended system-to-system integration tests; ". Those tests are not part of the Test Plan?	The IV&V tests are not part of the Contractor's Test Plan.
CR78	SOWG I2BE SOW-361	Technical personnel qualifications : NATO Secret Clearances. When we have the requirement [SOWG-70] The Contractor shall ensure that all software implementation activities in the NSF is kept at NATO UNCLASSIFIED level and when secure software engineering environment is at NATO RESTRICTED LEVEL . ¨Please clarify which profiles really need to be NATO SECRET Level and for which task?	All software will be implemented in the NSF at NATO UNCLASSIFIED level. NATO SECRET level will be required for any on-site work at any of NCIA's premises. Such work will include testing implemented software with operational data.
CR79		Location : SOW I2BE [60] :We understand that the development will have to be done on the DevSecOps Platform (the NSF) . NCIA providing remote connection facilities to Contractor(s) . Could you please provide more details	Details on the NSF is provided in the SOW in section 2.4.1. Access to the NSF is provided through a VPN connection.
CR80	SOW I2BE Reference documents :	Reference documents : CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – Information Model Book II -Part V, NCI Agency. We don't have this document in the ones provided with IFB	The files (*14a_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Battlespace Partition* and *14b_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Staff Partition*) were too big to send by email. The files are available to the bidders through the IFB portal.
CR81	SOW I2BE [28]	The Purchaser will provide the Contractor with the current INTEL-FS Spiral 1 software. Does it include Source code. When will it be provided ? Is it possible to have it during Bid phase?	The software, including source code, will be provided at Contract Award.

CR82	SOW I2BE [11] (4)	Sentence :"Integrating with the new backend solution into the new service-oriented architecture (SOA) as native hosted services;" Please clarify this sentence	In the updated SOW provided with this IFB Amendment, the sentence has been corrected to "*(4) Implement the new backend solution as services to be hosted on the service oriented architecture (SOA) and IdM Platform* " (only the integration services will have to be *native* hosted).
CR83	SOW I2BE [12]	The delivered SW at the end of each increment will have to have a quality at the level of being ready for deployment to production. The deployment of new software modules will be lead by the Purchaser with support from the Contractor. There might be multiple deployments to production of incrementally delivered functionality, e.g. deployment in support of the BMD tranche 25, and a final deployment prior to final system acceptance (FSA)" . The warranty starts after FSA . Does it means that Modules delivered at the end of one Increment are not supported? Or shall we include in the price the support of the first delivery until one ear after FSA ?	While incrementally delivered software to production will be supported operationally by NCIA staff, the Contractor will be responsible for correcting any software bugs found in the delivered software (see [SOWG-181] [SOWG-181] *The Sprint Work Plan shall include: ...(2) Tasks to implement bug-fixes in the case bugs has been discovered in software functionality previously delivered by the Contractor under this contract;. ..*"
CR84	IFB-CO-14873-INTELFS2 Book I - Bidding Instructions	IFB-CO-14873-INTELFS2 Book I - Bidding Instructions states: 1.5.3. The Contractor will be required to handle and store classified material to the level of "NATO RESTRICTED". and 1.5.4. The Contractor shall have the appropriate facility and personnel clearances at the date of Contract Signature. Should the Contractor be unable to perform the Contract due to the fact that the facility/security clearances have 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 under the Prospective Contract. but CO-14873-INTELFS2 Book II - Part II - Contract Special Provisions states: 16.10 The Contractor's facilities and personnel shall meet NATO security regulations to permit handling and storage of information classified up to and including NATO SECRET. so: which is it for the Contractor's facilities, NATO RESTRICTED or SECRET?	Contractor's facilities shall be able to handle material up to NATO RESTRICTED. Article 16, *Security,* of the Contract Special Provisions has been updated to reflect this correction by deleting paragraph 16.10. Paragraph 16.2 is correct in stating that *"the Contractor's premises shall be able to handle up to NATO Restricted."*
CR 85	Book I-Bidding Sheets I2BE	Should Contractor deliver any HW or HW Components to any NATO deployment site of INTELFS2? Or Will Contractor deliver only SW Applications with COTS? For COTS products, how many (running) license will be delivered to the Purchaser by Contractor?	The contractor will not deliver any HW or HW components. The contractor will deliver only SW. COTS components being part of the INTEL-FS solution should not have any run-time licenses. If run-time licenses are unavoidable, then the licenses will have to be tailored for a Cloud-based environment with users accessing INTEL-FS through Web-browser. The bidder should then assume 3 data centres serving 2000 concurrent users with horizontal scaling elasticity to fulfil the INTEL-FS non-functional requirements. For any Development Licenses; 10 developer licenses will suffice.
CR86	N/A	Please describe the operational perspective of the platform: who will be using it, where (HQ, field, etc.), and when is it planned to be operationally deployed?	The solution will be deployed to the ITM data centers. Users in a number of organizations will be connecting using the NATO Communication System (NCS).

CR87	N/A	What are the main gaps of Spiral 1 solution this solution willing to solve?	As described in the Bidders Conference presentation slide 14, the primary objectives of the project are the "re-platforming", adding new capabilities, and implementing a number of integration cases with other Bi-SC AIS capabilities.
CR88	N/A	In terms of design and development - Please explain your expectations from a vendor which provides an existing intelligence platform (COTS) with high customizability to user workflows and data models?	The solution must comply with the requirements as defined in the IFB, which include: * The full Information Model must be realized; * An Odata REST API for accessing the information entities must be delivered; * The Odata REST API is forward transformed from the information model (i.e. for any API changes these are first done in the model and then forward transformed to an API specification); * The workflow models as specifed in the information model is realized; in particular supporting a seemless mediation with the STANAG 4559 workflow services; * The information platfom is hosted on the SOA & IdM Platform; * There is full support for, and integration with, the IdM mechanism of the SOA & IdM Platform (to include dynamic policy based IAM through ABAC Decision Points, XACML,etc.).
CR89	N/A	Please provide some examples of the common sources to be integrated with the I2BE. Is there a central DB to integrate with?	The integration cases are defined in Chapter 4 in the Backend SRS.
CR90	N/A	Our intelligence platform's User Interface is being developed using REACT libraries and can be integrated with external components written in Angular framework. Can this be considered as an appropriate solution for the I2UA requirements, or would this fail the key requirements?	A solution that includes existing REACT libraries could be considered appropriate (although this obviously depends on the entire Technical Volume submitted). There is nothing specific about using REACT libraries that would render the bid technically non-compliant. For implementation of new UI functionality, Angular shall be used (see Front End SRS [GUA-15]).
CR91	CR6	it is stated (CR6) that the initial API provided by NCIA will be an automatic forward transformation from the information model. Considering that is is far from being enough to define the API that will be necessary to support all US and AC from the I2UA, how will the I2UA contractor be involved in the further development of the API, which seems to be performed solely by the I2BE contractor with approval by NCIA?	The Front-end contractor's Scope and Requirements Analysis (see [SOWG 170]) at the start of each Increment Startup will need to identify potential shortcomings in the API and the API's ability to provide the backend support for the delivery of the front-end deliverables. NCIA will assess the Front end Contractor's API input and if an API change is deemed necessary, engage with the Back end Contractor to facilitate the change. As the API is mainly an OData API (SQL on URL) over a stable information model only minor refinements of the API should be expected.

CR92	Bidding Instructions 3.7.1 Bidding instructions 3.3.3.3 CR1	According to "Responses to Clarification Requests #1" Draft Delivery Plan is part of the Engineering package. This aspect is clear. Bidding Instructions 3.7.1 indicates the Draft Delivery Plan and the Solution Description Document to be part of only one PDF document. Bidding instructions 3.3.3.3 about package Making indicates the Delivery Plan to be and independent document from SDD: - 14873-UA/BE-Company Name–Vol III–Tech1-SDD - 14873-UA/BE-Company Name–Vol III–Tech4-DelPlan From our point of view it would be more clear to keep both documents separately. Therefore, we recommend to update Bidding instructions 3.7.1 to indicate Engineering package to contain 2 documents for SDD and DelPlan.	Book I, Bidding Instructions, Section 3.7.1 in IFB Amendment 3 has been updated to reflect the requirement to provide the Solution Description Document and the Draft Delivery Plan as separate documents. Section 3.3.3.3 has also been modified to update the names of the individual files submitted as part of the bid.
CR93	Bidders Conference	With the evals being done simultaneously can responses (tech and financial) be submitted together or do they still need to be submitted separately?	Yes, the technical, administrative and price volumes should all be submitted together. Please review Section 3.3.1 of Book I, Bidding Instructions: "The bid shall be consolidated into one email…" Only in the event the size of the email exceeds the limit should multiple emails be submitted. Later in Section 3.3, the names of the individual files that make up the bid are provided. Please note that the size limit of the emails in Section 3.2.2 has been increased to 15 MB.
CR94	Bidders Conference	when does the Initial acceptance takes place in this scheme	The term "Initial Acceptance" means the delivery of all Must Have requirements for any given Deliverable. Those Requirements which must be accepted in order to achieve "Initial Acceptance" will be designated in the SSS prior to contract award.
CR95	Bidders Conference	Many front end apps are using .NET so using Angular imply complete re-write?	INTEL-FS Spiral 1 will be re-written as a result of the "re-platforming", so the assumption of a complete re-write is correct.

CR96	Bidders Conference	Do you think it is possible to be more specific about the support of the contractor for the IV&V and UAT?	The SOWs in IFB Amendment 3 have been updated with the additional information provided below. The support to IV&V includes: * Presenting test plans and test cases at Increment startup meeting * Present and report on test results at sprint review meetings * Support ad hoc discussions on test results (e.g. in case IV&V identifies potential bugs) * Support NCIA in getting additional installations (on the NSF) setup (the expectation here is that the SW is easily installable and that NCIA personnel will be able to do this without contractor support) * Provide answers to question the Change Manager may have to the software submitted into the RFC process The support to UAT includes: * Participating in person for the first UAT. This first event is expected to last between 3-5 days. For this first UAT the first "production environment" will be installed and personal presence will be required. * For subsequent UATs, as long as the released software can be installed and operated by NCIA personnel Contractor's support can be provided remotely. Such remote assistance includes: Phone-support for any technical issues and Ad Hoc video/teleconference meetings to discuss UAT findings.
CR97	Bidders Conference	Bidders are encouraged to re-use existing NATO solutions. To support this, the IFB states that COTS may be provided as Purchaser Funded Items. To satisfy Intel FS 2 geospatial requirements (ie: Terrain & Mobility Analysis Service, Geospatial and Features Service), could Core GIS COTS tools (Esri ArcGIS) be provided as PFI?	* The Terrain & Mobility Service shall be implemented as OGC Web Processing Services (WPS) (see [FBE-160] in BE SRS) and it should be implemented for being hosted within the NATO CoreGIS system (see BE SRS [82]). This means that the solution should be hosted on CoreGIS (i.e. ESRI ArcGIS) instances in the Bi-SC AIS/ ITM environment. The inclusion of the WPS service in Bi-SC AIS CoreGIS instances is not expected to require additional licenses for these services in the Core GIS. However if the Contractor sees the need for any additional products/licenses the Contractor shall identify and cost them in the bid. As stated in paragraph 22.1 of the Contract Special Provisions, the Agency reserves the right to provide these licenses as PFE later on in the project. * The Geospatial and Feature service are services for managing Intelligence Information Entities, they are not geo-spatial services (even if the name could suggest so)
CR98	Bidders Conference	What AJPs are relevant for considering the process from the User perspective conducting INTEL business? AJP 2?	AJP-2.1 INTELLIGENCE PROCEDURES AJP-2.7 ALLIED JOINT DOCTRINE FOR RECONNAISSANCE AND SURVEILLANCE STANAG 4559 AEDP-19 ISR Workflow Architecture

CR99	Bidders Conference	STANAGs that need to be consider?	This question was asked within the context of the Information Model. The INTEL-FS model refers to the STANAGs listed below. Please be advised that the INTEL-FS model does not require the entirety of these other models. The INTEL-FS model imports some concepts/ types from these models. STANAG 5643 Multilateral Interoperability Programme Information Model STANAG 4559 AEDP-17, 18 & 19 STANAG 6545 Common Electronic Order of Battle Exchange Format STANAG 4774/ 4778 Confidentiality Labelling STANAG 7149/ APP-11 NATO Message Catalogue
CR100	Bidders Conference	Are these technical doctrines harmonized with the process one (AJP, AIntPs)?	AJP-2.1 INTELLIGENCE PROCEDURES AJP-2.7 ALLIED JOINT DOCTRINE FOR RECONNAISSANCE AND SURVEILLANCE STANAG 4559 AEDP-19 ISR Workflow Architecture
CR101	Bidders Conference	Do you have total number of attributes for IntelFS 1? Is this in the order of 100,000+ attributes or more like 20,000+ attributes?	The Information Model for Spiral1 has approximately 300 classes and approximately 3000 attributes. It should be noted that this is across the set of Intelligence Information Entities and it is not the total number of classes in the application. The total number of classes in the application contains also all of the framework and implementation code.
CR102	Bidders Conference	JIPOE the new IPB (Intelligence preparation of the battlespace/-ground)?	The term "JIPOE" replaces the former term "IPB".
CR103	Bidders Conference	Could we assume IntelFS 1 applications are mostly standalone and do not have online interfaces among each other as well as other Bi command systems?	Web Service interfaces INTEL-FS Spiral 1 are being consumed by other Bi-SC AIS system like TOPFAS and NCOP.
CR104	Bidders Conference	From your presentation we understand that INTEL-FS Spiral1 UI provides good UX and only requires technology refresh and not full re-design. Is this statement correct?	The INTEL-FS Spiral 1 UI originated in the NITB UI around 2005-2007 and was designed to look like Microsoft Outlook. The UX understanding has evolved a lot since then, and the UI needs modernization so that it looks more like modern Web Applications, e.g. similar to modern Web sites like Amazon.com etc. This means that the a full redesign of the UI will be required.
CR105	Bidders Conference	Work description document includes availability target value and mentions MIL-STD-1388 as a reference document. In addition to these, MTBF and MTTR values of system units/components are demanded. All of these remind us of hardware units/LRUs; however, not the software configuration items -- either developed or COTS. The answer given for CR-32 says that "This is a pure SW acquisition Project." Therefore; is it true that no hardware analysis will be needed? Secondly, do you suggest/dictate any other NATO reference document/procedure to follow for this Project, for software reliability analysis?	No HW analysis will be needed. All of the LSA and RAMT related activities will be performed on the SW product as these activities are not limited to HW components. Additional NATO standards are not mandated, so the Contractor can use the industry best practices to build the reliability models for the SW components.
CR106	Bidders Conference	During the technical evaluation i've heard that the vendors' name is stripped from al pertinent documents. true?	This is not correct. It is not feasible to remove all vendor names (including company logos, header/footer information, etc.) in the received bid documentation, so this will not be done.

CR107	Bidders Conference	There is a mistake in the last slide #96 about the weight of technical subvolumes. In the slide it said: M = Management Weighted Score (50 %); E = Engineering Weighted Score (30 %); S = Supportability Weighted Score (20%);" Shouldn't it be Management = 30% and Engineering 50% instead? According to bidding instructions "4.2. Best Value Award Approach and Bid Evaluation Factors"	Yes, this was a mistake in the presentation. The updated version of the presentation uploaded to the IFB portal under Supporting Document has corrected this mistake.
CR108	N/A	What's expected time period between Contract Award and EDC of project?	The current schedule foresees approximately two months from the notification of the successful bidder until contract award. EDC is expected within two weeks of contract award.
CR109	N/A	What configuration of Atlassian Jira tool is provided by NSF? Is it expected that Jira will be used as Configuration Management tool?	For SW configuration control GitLab will be used. The CMDB solution is for the contractor to design. The NSH Jira configuration includes: * JIRA DataCentre * Plugins: Links Hierarchy, SumUp, Misc Workflow Extensions * Jira is currently integrated with TestRail – but Testrail will most likely be replaced by (or at least augmented with) Zephyr Scale (used to be called Test Management for JIRA) (and is delivered as JIRA plugin) * Integrated with NSF GitLab (so that git commits are linked to JIRA issues and the JIRA has links to the related git commits) * Project Teams will get project admin rights on their own projects. Workflows/item types etc can be customized, but may require support from the NSF team to implement these.
CR110	N/A	Is there a set of automated tests for the current solution? Is it expected to reuse it?	In terms of automated tests, unfortunately there exists very little that could be reused.
CR111	N/A	The design of automated tests is fully in the responsibility of the Contractor?	Yes, design and implementation of automated tests is a Contractor responsibility.
CR112	N/A	There is mentioned that Purchaser will provide source code of STANAG 4609 video conditioner in "12_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Amd 1". In which language is that video conditioner?	It is written in C# as a wrapper around other off-the-shelf libraries (e.g. FFMPEG).
CR113	N/A	What is the volume of the data migrated using ETL processes? All data processed when Spiral 1 was used?	There are around 3 million information entities in INTEL-FS Spiral 1. A significant amount of that data pre-dates the INTEL-FS Spiral 1, but was migrated into Spiral 1 when this Spiral 1 was deployed to production.
CR114	N/A	ETL processes are expected to run in specific increment or until Spiral 1 services are retired?	The Spiral 1 migration services needs to be able to handle a situation of new data appearing in Spiral 1 after initial migration has taken place, i.e. until Spiral 1 services are retired.
CR115	N/A	The document „09_CO-14873-INTELFS2-Book-II-Part IV SOW I2UA Amd 1" says in point [11] „To support the BMD ORBAT functionality the Contractor will have to implement some interim backend logic". This interim backend logic will be implemented in current Spiral 1 implementation?	The backend logic to support BM OPFOR ORBAT function for early delivery to BMD Tranche 23 does not necessarily have to be implemented in the Spiral 1 legacy code. If feasible, the BM OPFOR ORBAT functionality could be implemented outside of the Spiral 1 code. The important aspect of the work is to provide BM OPFOR ORBAT management functionality in the user interface.

CR116	N/A	We understand that current implementation is .NET based but why Technical Lead needs documented expert knowledge in C# and .NET when the scope is reimplementation in Angular?	The .Net/ C# expertise will be required in Phase 1 of work. The Technical Lead needs to be able to understand how the Spiral 1 SW works.
CR117	N/A	Are Service Specifications (SOWG-292 - SOWG-295) as a part of SDD relevant for UA which is a consumer of services and does not define services?	Service Specifications are not relevant for the UA work. As stated in [SOWG-290] "The SDD shall include annexes that documents implemented server-side services (if any), …" As the UA is not implementing server side services, no service specifications will need to be produced.
CR118	N/A	A major version of Angular framework is released in about one year period, so we can expect two or three major releases during project implementation. Is it expected that all applications will use the same version of Angular (actual in the project start), or they will be upgraded to actual version so at the end of the project all UAs will use the most actual version of Angular?	The non-functional requirements of the IFB does not mandate a common version of Angular, nor that it has to be the latest version by the end of the project.
CR119	N/A	Requirement FUA-20 says "in case … based on Windows operating system ". Should we consider other than Windows Operating systems? What is used instead of Active Directory in such case?	NATO Bi-SC AIS environment is a Windows environment and there is no need to consider any other operating systems.
CR120	N/A	There are several requirements (such as FUA-867, FUA 369, FUA-890, FUA-891) related to calculations of Launch Point error ellipse, salvotime etc. Will Purchaser provide formulas/algorithms for such calculations?	The launch point ellipses are not calculated within INTEL-FS, this information is received through the BM Firing Event Import Services (see BE SRS section 4.1.17). The salvotime calculation is very simple: the salvos are simple groupings of launch events based on a user definable salvo "time out value".

NATO Communications and Information Agency
Agence OTAN d'information et de communication

Invitation for Bids

IFB-CO-14873-INTELFS2
Intelligence Functional Services (INTEL-FS) - Spiral 2 and BMD functions in INTEL-FS

IFB-CO-14873-INTELFS2-UA
User Applications

IFB-CO-14873-INTELFS-BE
Backend Service and Integration

GENERAL INDEX

NATO Communications and Information Agency
Agence OTAN d'information et de communication

**IFB-CO-14873-INTELFS2
Amendment 3**

**Intelligence Functional Services (INTEL-FS) - Spiral 2
and BMD functions in INTEL-FS**

BOOK I

BIDDING INSTRUCTIONS

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Annex D   Clarification Request Form

SECTION 1   INTRODUCTION

1.1.   Purpose and Scope

1.1.1.   The NATO Communications and Information (NCI) Agency has been authorized to invite bids and award two contracts to upgrade the current Intelligence Functional Services (INTEL-FS) capabilities. One contract will be for the User Applications; the second contract will be for the Backend Services and Integration with other systems.

1.1.2.   All of the technical details and requirements of the project are explained in Book II, Part IV, Statement of Work (SOW) and the SOW annexes. There is a separate SOW, SOW Annex A and SOW Annex B for each prospective contract.

1.2.   Overview of the Prospective Contracts

1.2.1.   Book II of this IFB provides the Prospective Contracts that will require the selected Contractor to deliver the INTEL-FS capabilities. The Contractor shall perform all activities required in Book II Part IV (SOW and Annexes) and shall deliver the associated deliverables as per Book II Part I (Schedule of Supplies and Services (SSS)).

1.2.2.   The Contracts resulting from this IFB shall be awarded on a Fixed Price Incentive Fee (FPIF) basis.

1.2.3.   Both contracts will use elements of the Agile methodology, with multiple increments, each consisting of several sprints, and the opportunity for frequent acceptances of functional software.

1.2.4.   The Contract will be governed by Book II, Part II (Contract Special Provisions), and Part III (Contract General Provisions).

1.2.5.   Any terms and conditions that are specific to one of the contracts will be marked as either CO-14873-INTELFS2-UA for the User Applications contract, CO-14873-INTELFS2-BE for the Backend Services contract.

1.3.   Governing Rules, Eligibility, and Exclusion Provisions

1.3.1.   This solicitation is an International Invitation for Bid (IFB) and is issued in accordance with the procedures for International Competitive Bidding (ICB) set forth in NATO document AC/4-D/2261 (1996 Edition) and its Annex X, dated 24 July 2009, with the exception explained in Section 4.3.1.2 as authorized by the Investment Committee.

1.3.2.   Pursuant to these procedures, bidding is restricted to companies from participating NATO member countries (see Para 2.1.1.6) for which a Declaration of Eligibility has been issued by their respective national authorities.

1.4. Best Value Evaluation Method

1.4.1. The evaluation method to be used in the selection of the successful Bidder under this solicitation will follow the Best Value Procedures set forth in AC/4-D/2261, Annex X, dated 24 July 2009, and AC/4(2008)0002-REV2-ANNEX 1, dated 15 July 2015, or deviations to the procedure, as approved by the NATO Investment Committee.

1.4.2. The Bid evaluation criteria and the detailed evaluation procedures are described in SECTION 4

1.4.2.1. Some of the evaluation criteria for CO-14873-INTELFS2-UA and –BE are different from one another, given that the bids are evaluated against different skills and experiences, and against different technical requirements. Bidders are encouraged to closely review all of SECTION 4 to ensure a thorough understanding of how the bids for each prospective contract will be evaluated.

1.4.2.2. The evaluation of bids for CO-14873-INTELFS2-UA and –BE will be performed independently from one another.

1.4.2.3. Please note that the technical and price evaluations will be conducted in parallel by independent evaluation teams.

1.4.3. 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".

1.5. Security

1.5.1. This Invitation for Bid is NATO UNCLASSIFED.

1.5.2. Contractor personnel will be required to possess a security clearance of "NATO SΞCRET" (NS) for the performance of the Contract.

1.5.3. The Contractor will be required to handle and store classified material to the level of "NATO RESTRICTED".

1.5.4. The Contractor shall have the appropriate facility and personnel clearances at the date of Contract Signature. Should the Contractor be unable to perform the Contract due to the fact that the facility/security clearances have 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 under the Prospective Contract.

1.5.5. Contractor personnel working at NATO or National sites without such a clearance confirmed by the appropriate national security authority and

transmitted to the cognisant NATO or National 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.

1.5.6.   Bidders are advised that Contract signature will not be delayed in order to allow the processing of NS 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.   Bidders Conference

1.6.1.   Prospective Bidders are invited to a Bidders Conference that will be held on-line on Thursday, 11 February 2021. The technical and logistical details of connecting to the Conference will be provided at a later date.

1.6.2.   The purpose of the Bidders Conference is to brief the Prospective Bidders on the IFB. The Conference is planned to include a briefing on the bidding process and the bidding sheets, the Prospective Contract, and the technical aspects of the project. The agenda will be sent to attendees in advance.

1.6.3.   Those companies that wish to participate in the Bidders Conference must indicate their intention to attend not later than 7 days prior to the date of the Conference to the Point of Contact stated in paragraph 2.5.1.

1.6.4.   Bidders may submit questions in writing not later than 7 days prior to the date of the Conference to the email address in paragraph 2.5.1. The Purchaser will endeavour to respond to these questions during the Bidders Conference.

1.6.5.   For any additional questions that are asked at the Conference, the Purchaser may attempt to answer them at that time, but any answer that may appear to change terms, conditions and/or specifications of the IFB shall be considered to be formally included in the IFB only after a written amendment to the IFB is issued in writing by the Purchaser.

1.6.6.   Answers to all questions will be issued in writing to all Bidders as soon as practicable after the Conference, whether or not the Bidders attended the Conference. The formal written answers will be the official response of

the Agency, even if the written answer differs from the verbal response provided at the Conference.

1.6.7.   Notwithstanding the written answers provided by the NCI Agency after the Bidders Conference, the terms and conditions of the IFB remains unchanged unless a formal IFB amendment is issued by the NCI Agency.

1.7.   Documentation

1.7.1.   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.

SECTION 2   GENERAL BIDDING INFORMATION

2.1.   Definitions

2.1.1.   In addition to the definitions and acronyms set forth in the Contract Special Provisions (Part II) and Contract General Provisions (Part III) of the prospective Contract, the following terms and acronyms, as used in this Invitation for Bid 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 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, who 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.   "Participating Country": any of the following 29 NATO nations (in alphabetical order): ALBANIA, BELGIUM, BULGARIA, CANADA, CROATIA, CZECH REPUBLIC, DENMARK, ESTONIA, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MONTENEGRO, THE NETHERLANDS, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, TURKEY, THE UNITED KINGDOM and THE UNITED STATES.

2.1.1.7.   "Purchaser": NATO Communications and Information Agency (NCI Agency) or its legal successor.

2.1.1.8.   "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.   All Contractors, Subcontractors and manufacturers, at any tier, must be from Participating Countries.

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

2.2.3.   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.

2.2.4.   Unless otherwise authorised by the terms of the prospective Contract, the Intellectual Property Rights to all design documentation and related system operating software shall reside within 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. The closing date and time for submission of bids in response to this IFB is **12h00 / 12pm (Central European Time) on 6 April 2021**.

2.3.2. For bidders that submit a bid for both the User Applications (UA) and Back-end Services (BE) contracts, the bids shall be submitted separately. The bid openings and every aspect of the evaluations will be performed independently from one another.

2.3.3. Bids shall be delivered to the appropriate email address below, which will generate an automatic confirmation of receipt:

For bids for the User Application, Front-end contract:

IFB-CO-14873-INTELFS2-UA.Bids@ncia.nato.int

or

For bids for the Data Management, Back-end contract:

IFB-CO-14873-INTELFS2-BE.Bids@ncia.nato.int

2.3.4. Late Bids

2.3.4.1. 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. Such Bids will remain unopened unless the Purchaser can determine that the Bid in question meets the criteria for consideration as specified below.

2.3.4.2. *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 time. A late Bid shall only be considered for award under the following circumstances:

2.3.4.2.1. A Contract has not already been awarded pursuant to the Invitation for Bid, and;

2.3.4.2.2. The Bid was sent to the correct email address specified in Section 2.3.3 and the 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 <u>only</u> through its respective country's NATO Delegation or Embassy to the Purchaser Point of Contact indicated in Section 2.5.1 below. Any request for extension shall be submitted by the respective NATO Delegation or Embassy **no later than fourteen (14) calendar days** prior to the established Bid closing date. 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. Dan Gaertner, Senior Contracting Officer
Acquisition, NCI Agency
Questions/Clarifications:
        IFB-CO-14873-INTELFS2@ncia.nato.int
Bid Delivery :
        All bids shall be delivered by email as stated in paragraph 2.3.3.

2.6.   Request for IFB Clarifications

2.6.1.   Bidders, 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 using the Clarification Request (CR) Forms provided at Annex D of this Book I. Such questions shall be submitted by email to the point of contact specified in Section 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 not be permitted to revisit areas of the IFB for additional clarification except as noted in Section 2.6.4, below.

2.6.3.   Bidders shall keep the classification of their request NATO Unclassified to facilitate a quicker review and response. Such requests shall be emailed to the point of contact specified in paragraph 2.5.1 above.

2.6.4.   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 fourteen (14) calendar days before the established Bid Closing Date.

2.6.5.   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).

2.6.6.   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 Section 2.6.5.

2.6.7.   The Purchaser may provide for a re-wording of questions and requests for clarification where it considers the original language ambiguous, unclear, subject to different interpretation or revelatory of the Bidder's identity.

2.6.8.   Bidders are advised that subsequent questions and/or requests for clarification included in a Bid shall neither be answered nor considered for evaluation.

2.6.9.   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.

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 means of the issuance of a formal IFB amendment pursuant to AC/4-D/2261 and in accordance with paragraph 2.8.

2.6.11.   The Purchaser reserves the right to reject questions and 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).

2.6.12.   The published responses issued by the Purchaser shall be regarded as the authoritative interpretation of the Invitation for Bid. Any amendment to the language of the IFB included in the answers will be issued as an IFB Amendment and shall be incorporated by the Bidder in his offer.

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 Invitation for Bid 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 amend the IFB at any time prior to the Bid Closing Date. Any and all changes will be transmitted to all Bidders by an official amendment designated as such and signed by the Purchaser. This process may be part of the clarification procedures set forth in paragraph 2.6 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 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.

2.8.3. All such IFB amendments issued by the Purchaser shall be acknowledged by the Bidder in its Bid by completing the "Acknowledgement of Receipt of IFB Amendments" certificate at Annex B-2. Failure to acknowledge receipt of all amendments may be grounds to determine the Bid to be administratively 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 Bid Closing Date as detailed in paragraph 2.3.1. Such modifications will 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 detailed in paragraph 2.3.4, 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.

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 Bid 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 Certificate of Bid Validity set forth in Annex B-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 *NCIAFinanceTreasuryBankGuarantee@ncia.nato.int*. In either case, the Bidder shall also provide a copy of the Bid Guarantee in the Bid Administration Volume.

2.11.2.   The Bidder shall furnish with its Bid a guarantee in an amount equal to:

2.11.2.1.   For IFB-CO-14873-INTELFS2-UA, One Hundred and Thirty Thousand Euro (€130,000)

2.11.2.2.   For IFB-CO-14873-INTELFS2-BE, One Hundred and Seventy Thousand Euro (€170,000).

2.11.2.3.   For any bidders submitting a bid for both UA and BE, the bid guarantees shall total €300,000 and shall be submitted separately.

2.11.2.4.   The Bid Guarantee shall be substantially similar to 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, NATO Communications and Information 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/or in the proper form and/or for the appropriate duration by the Bid Closing Date may be cause for the Bid to be determined non-compliant.

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

2.11.6.1.   The Bidder has submitted a Bid and, after Bid Closing Date (including extensions thereto) and prior to the selection the compliant Bid determined to represent the best value, withdraws his Bid, or states that he does not consider his Bid valid or agree to be bound by his Bid, or

2.11.6.2.   The Bidder has submitted a compliant Bid determined by the Agency to represent the best value, but the Bidder declines to sign the Contract offered by the Agency, such Contract being consistent with the terms of the Invitation for Bid.

2.11.6.3.   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,

2.11.6.4.   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.

2.11.7.   Bid Guarantees will be returned to Bidders as follows:

2.11.7.1.   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);

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

2.11.7.3.   To the successful Bidder upon submission of the Performance Guarantee required by the Contract.

2.11.7.4.   pursuant to paragraph 2.10.4.2.

2.11.8.   "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 communicate answers to requests for clarification and amendments to this IFB to the prospective Bidders as soon as practicable.

2.13.2.   Bidders are advised that the Purchaser will rely exclusively on email 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 allowed.

2.14.   Supplemental Agreements

2.14.1.   Bidders are required, in accordance with the certificate at Annex B-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 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 Article 17, *Intellectual Property*, of the Contract Special Provisions set forth in Part III of Book II, and Clause 30, *Intellectual Property*, of the Contract General Provisions set forth in Part III of Book II. These Clauses set 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 the Certificates at Annex B-10 and Annex B-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 Clause 30 of the Contract General Provisions, or any other provision of 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 Article 17 of the Contract Special Provisions, Clause 30 of the Contract General Provisions or with the objectives and purposes of the Purchaser as stated in the Prospective Contract shall result in a determination of a 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 shall immediately notify the Bidder that the bid will be rejected unless the Bidder provides clear and convincing evidence:

2.16.1.1.   of the content of the bid as originally submitted, and;

2.16.1.2.   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 Administrative, Price or Technical evaluation, that the Bidder has submitted an unreadable electronic bid, the Bidder may be determined to have submitted a non-compliant bid.

SECTION 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 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. Bidders shall take note of paragraph 3.1.3 below in this regard.

3.1.3.   Bidders are informed that the quality, thoroughness and clarity of the Bid will affect the overall scoring of the bid. Although the Purchaser may request clarification of the bid, it is not required to do so and may make its determination on the content of the bid as written. Therefore, Bidders shall assume that inconsistencies, omissions, errors, lack of detail and other qualitative deficiencies in the submitted Bid will have a negative impact on the final Best Value score.

3.1.4.   Partial bids and/or bids containing conditional statements will be declared non-compliant. Please note that bidders are not obligated to bid on both the Front-end User Interface and the Back-end Data Management contracts. These will be separate contracts, and so bidding on only one of them is not considered partial bidding.

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.   The specific format for each volume is stated in paragraph 3.2.1.

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

3.1.8.   All notices and communications regarding this IFB shall be written and conducted in English. All documentation submitted as part of the bid shall be in English.

3.2. Bid Package Content

3.2.1. A complete bid submission shall consist of three volumes as shown in the following table.

Volume	Format and Quantity Details
I: Bid Administration	2 PDF files that include: 1. The completed, signed certificates found in Annex B, provided as a single PDF file. 2. A copy of the Bid Guarantee. Note: this shall also be delivered by email directly to: *NCIAFinanceTreasuryBankGuarantee@ncia.nato.int* ➢ All of the required contents are detailed in Section 3.4.
II: Price	1 MS Excel file that includes: 1. The completed Bidding Sheets template provided in Annex A-3 or Annex A-4. ➢ All of the required contents are detailed in Section 3.5.
III: Technical	1 Zip file, which includes 3 folders, organized as follows: 1. Part 1: Engineering 2. Part 2: Management 3. Part 3: Supportability ➢ All of the required contents are detailed in Section 3.6.

3.2.2. All emails submitted to the Purchaser shall be less than 15 MB in size.

3.3. Package Marking

3.3.1.   The bid shall be consolidated into one email and sent to the correct Bid Delivery email address stated in paragraph 2.3.3. The email shall have the following subject lines:

For bids for the User Application, Front-end contract:

- 14873-INTELFS-UA Front-end Bid for *Company Name*

For bids for the Data Management, Back-end contract:

- 14873-INTELFS-BE Back-end Bid for *Company Name*

3.3.2.   In the event the bid must be submitted in multiple emails to stay under the size limit stated in paragraph 3.2.2, the bidder shall add "Part 1 of 2", "Part 2 of 2" as necessary to the subject line of the email.

3.3.3.   The individual electronic files sent by email shall have the names listed below. Bidders shall replace "UA/BE" below with *either* UA *or* BE, as applicable.

3.3.3.1.   Volume I, Bid Administration:

- 14873-UA/BE-*Company Name*–Vol I–Admin

- 14873-UA/BE-*Company Name*–Vol I–Bid Guarantee

3.3.3.2.   Volume II, Price:

- 14873-UA/BE-*Company Name*–Vol II–Price

3.3.3.3.   Volume III, Technical:

- 14873-UA/BE-*Company Name*–Vol III–Tech1-DelPlan

- 14873-UA/BE-*Company Name*–Vol III–Tech2-SDD

- 14873-UA/BE-*Company Name*–Vol III–Tech3-PMP

- 14873-UA/BE-*Company Name*–Vol III–Tech4-IRR

- 14873-UA/BE-*Company Name*–Vol III–Tech5-BOE

- 14873-UA/BE-*Company Name*–Vol III–Tech6-Quals

- 14873-UA/BE-*Company Name*–Vol III–Tech7-CMP

- 14873-UA/BE-*Company Name*–Vol III–Tech8-ILS

- 14873-UA/BE-*Company Name*–Vol III–Tech9-QP

- 14873-UA/BE-*Company Name*–Vol III–Tech10-SupCase

- 14873-UA/BE-*Company Name*–Vol III–Tech11-Training

3.3.4.   "*Company Name*" – In the subject line of the email, and in the names of the individual files, the name of the bidder shall be abbreviated to no more than 10 characters. For example, if a company's name is "Computer and Technology Research Company", the company name could be shorted to *CTRC* in the email and file names.

3.4. Volume I: Bid Administration

3.4.1.   This volume is comprised of:

- All of the required certificates submitted as a consolidated PDF file;

- One electronic copy of the Bid Guarantee provided with the bid as well as directly to:

NCIAFinanceTreasuryBankGuarantee@ncia.nato.int

3.4.2.   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.

3.4.3.   The volume shall include the certificates set forth in the Annex 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:

3.4.3.1.   Annex B-1 (Certificate of Legal Name of Bidder)

3.4.3.2.   Annex B-2 (Acknowledgement of Receipt of IFB Amendments)

3.4.3.3.   Annex B-3 (Certificate of Independent Determination)

3.4.3.4.   Annex B-4 (Certificate of Bid Validity)

3.4.3.5.   Annex B-5 (Certificate of Exclusion of Taxes, Duties and Charges)

3.4.3.6.   Annex B-6 (Comprehension and Acceptance of Contract Special and General Provisions)

3.4.3.7.   Annex B-7 (Disclosure of Requirements for NCI Agency Execution of Supplemental Agreements) with the prospective text of such Agreements, as applicable.

3.4.3.8.   Annex B-8 (Certificate of Compliance AQAP 2110 or ISO 9001:2015 or Equivalent) with a copy of the relevant quality certification attached to it.

3.4.3.9.   Annex B-9 (List of Prospective Subcontractors)

3.4.3.10.   Annex B-10 (Bidder Background IPR)

3.4.3.11.   Annex B-11 (List of Subcontractor IPR)

3.4.3.12.   Annex B-12 (Certificate of Origin of Equipment, Services, and Intellectual Property)

3.4.3.13.   Annex B-13 (List of Proposed Key Personnel)

3.4.3.14.   Annex B-14 (Certificate of Price Ceiling)

3.4.3.15.   Annex B-15 (Disclosure of Involvement of Former NCI Agency Employment)

3.4.3.16.   Annex B-16 (Code of Conduct: Post Employment Measures)

               Please note this annex does not need to be signed; it is referenced in Annex B-15.

3.5. Volume II: Price

3.5.1.   This volume is comprised of the completed Bidding Sheets Excel file provided with this IFB:

- For the Front-end User Applications bid: 03-IFB-CO-14873-INTELFS2-UA Book I Bidding Sheets

    Or

- For the Back-end Services bid: "04-IFB-CO-14873-INTELFS2-BE Book I Bidding Sheets

3.5.2.   The Schedule of Supplies and Services Excel files will be completed by the Purchaser prior to contract award and does not need to be completed as part of the Bid.

3.5.3.   General Rules

3.5.3.1.   The total prices of each bid shall not exceed the ceilings stated below. Bids submitted in excess of this ceiling may be determined to be non-compliant and eliminated from further consideration. These ceilings do not include the maximum 5% incentive fee.

3.5.3.1.1.   For the User Applications bid (IFB-CO-14873-INTELFS2-UA) Bidders are advised that the total price shall not exceed a ceiling of EUR 17,510,454 for the entire contract – the development phase in CLINs 1–4 as well as the optional five years of O&M support in CLIN 5. This does not include the incentive fee.

3.5.3.1.2.   For the Backend Services bid (IFB-CO-14873-INTELFS2-BE) Bidders are advised that the total price shall not exceed a ceiling of EUR 23,178,132 for the entire contract – the development phase in CLINs1-5 as well as the optional five years of O&M support in CLIN 6. This does not include the incentive fee.

3.5.3.2.   Bidders shall prepare their Price Volume by completing the Bidding Sheets referenced in Section A-3 and/or Section A-4 in accordance with the instructions specified in Annex A.

3.5.3.3.   The structure of the Bidding Sheets shall not be changed, other than as indicated in these instructions, nor should any quantity or item description in the Bidding Sheets. The currency(ies) of each Contract Line Item and sub-item shall be shown. 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 and the System Requirement Specification (SRS).

3.5.3.4.   Bidders shall not change the amount of the 5% incentive. This is a mandatory part of the bid.

3.5.3.5. With the exception of any pre-populated Not-to-Exceed amounts, 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. This includes Firm Fixed Prices for all optional CLINs.

3.5.3.6. 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.

3.5.3.7. 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.

3.5.3.8. Bidders shall quote in their own national currency or in EURO. Bidders may also submit bids in multiple currencies including other NATO member states' currencies under the following conditions:

3.5.3.8.1. The currency is of a "Participating Country" in the project, and

3.5.3.8.2. The Bidder can demonstrate, either through sub-contract arrangements or in its proposed work methodology, that it will have equivalent expenses in that currency. All major subcontracts and their approximate anticipated value should be listed on a separate sheet and included with the Price Quotation.

3.5.3.9. The Purchaser, by virtue of his status under the terms of Article IX and X of the Ottawa Agreement, is exempt from all direct and indirect taxes (incl. VAT) and all customs duties on merchandise imported or exported.

3.5.3.10. 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.

3.5.3.11. Unless otherwise specified in the instructions for the preparation of Bidding Sheets in Annex A, all prices quoted in the proposal shall be on the basis that all deliverable items shall be delivered "Delivery Duty Paid (DDP)" in accordance with the International Chamber of Commerce INCOTERMS ® 2010.

3.5.3.12. The Bidder's attention is directed to the fact that the Price Volume 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.

3.6. Volume III: Technical

3.6.1.   This volume is submitted in one Zip file, which contains all of the various parts described in this section.

3.6.1.1.   Part 1: Engineering Proposal, as described in section 3.6.4.

3.6.1.2.   Part 2: Management Proposal, as described in section 3.6.5.

3.6.1.3.   Part 3: Supportability Proposal, as described in section 3.6.6.

3.6.2.   No information disclosing or contributing to disclose the bid price shall be made part of the Technical Volume. Failure to abide to this prescription shall result in the bid being declared non-compliant.

3.6.3.   "Arial" fonts in size 12 shall be used for normal text, and "Arial Narrow" fonts not smaller than size 10 for tables and graphics.

3.6.4.   PART 1: ENGINEERING SECTION

3.6.4.1.   The Engineering Proposal shall include:

3.6.4.2.   For each Work Package of the Contract (excluding the optional 3rd and 4th level SW Maintenance and Support WP) a Draft Delivery Plan that includes the Solution Description Document (SDD).

3.6.4.2.1.   The Bidder shall provide a draft Solution Description Document (SDD) in accordance with SOW section 2.5.3.2 that is enabling evaluation against criteria in section 4.5.2.1 (Note: Service Specifications are not requested).

3.6.4.2.2.   **For IFB-CO-14873-INTELFS2-UA only:** the Bidder shall in the draft SDD include User Interface (UI) wireframes or mock-ups for the BMD JIPOE Application, the Analysis Application, Collection Requirements Management Application, and the Collection & Exploitation Planning Application.

3.6.4.2.3.   **For IFB-CO-14873-INTELFS2-BE only**: the Bidder shall in the draft SDD describe the approach to be used for round-trip engineering to ensure consistency between the information model, the source code, and domain values.

3.6.5.   PART 2: MANAGEMENT SECTION

3.6.5.1.   The Management Proposal shall include:

3.6.5.2.   Bidder Qualifications

3.6.5.2.1.   The Bidder shall provide sufficient documentation on the Bidders Qualifications enabling evaluation against the criteria in section 4.5.3.4.

3.6.5.3.   Draft Project Management Plan (PMP)

3.6.5.3.1.   The Bidder shall provide a draft PMP in accordance with SOW Section 2.5.2.1 (please note that **all** information as defined by the SOW for the PMP shall be provided).

3.6.5.3.2.   The Bidder shall provide proof of the Bidder's premises being authorized and certified to handle information (physically and electronically) at the NATO Restricted level.

3.6.5.4.   Initial Risk Register

3.6.5.4.1.   The Bidder shall provide an initial Risk Register for the project in accordance with SOW Section 2.5.2.2, where identified risks shall be properly described and processed (i.e. all relevant/ feasible information for the risk shall be provided in the Risk Register).

3.6.5.5.   Basis of Estimate (BOE)

3.6.5.5.1.   The purpose of the BOE is to enable the Purchaser to accurately validate the Management Proposal outside the Price Evaluation Process.

3.6.5.5.2.   The Bidder shall provide a BOE for all Work Packages in the respective Contract (including BOE for the Optional 3rd and 4th level SW Maintenance and Support Work Package) that enables evaluation against the criteria in section 4.5.3.7.

3.6.5.5.3.   The BOE shall solely provide level of effort estimates.

3.6.5.5.4.   The BOE breakdown in accordance with the Bidding Sheet shall be all encompassing (include all efforts in delivering the deliverables). I.e. the effort estimates shall be directly correlated with the cost of the deliverables and once given the correlation factor it shall be possible to calculate the price of the deliverables.

3.6.5.5.5.   The BOE shall not reveal any pricing information; e.g. the BOE shall not include cost per function point, or unit labour rates, or the above-mentioned correlation factor, etc.

3.6.6.   PART 3: SUPPORTABILITY

3.6.6.1.   Draft Configuration Management Plan

3.6.6.1.1.   The Bidder shall provide a draft Configuration Management Plan (CMP) in accordance with SOW section 2.5.2.4 that enables evaluation against criteria in section 4.5.4.3.

3.6.6.2.   Draft and General Integrated Logistic Support (ILS) Plan

3.6.6.2.1.   The Bidder shall provide a draft ILS Plan in accordance with SOW section 2.3.2, including an initial Logistics Support Analysis (LSA), that enables evaluation against the criteria in section 4.5.4.4.

3.6.6.3.   Draft Support Case

3.6.6.3.1.   The Bidder shall provide a draft Support Case in accordance with SOW section 2.3.4.3 that enables evaluation against criteria in section 4.5.4.5.

3.6.6.4.   Draft Training Plan

3.6.6.4.1.   The Bidder shall provide a draft Training Plan in accordance with SOW section 2.3.5.1 that enables evaluation against criteria in section 4.5.4.6.

3.6.6.5.   Draft Quality Plan

3.6.6.5.1.   The Bidder shall provide a draft Quality Plan (QP) in accordance with SOW section 2.2 that enables evaluation against criteria in section 4.5.4.7.

3.7.   Bidder's Checklist

3.7.1.   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.

Volume 1: Bid Administration

	Item	Format
1	Annex B-1: Certificate of Legal Name of Bidder	One PDF file
2	Annex B-1: Acknowledgment of Receipt of IFB Amendments	
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 the NCI Agency Execution of Supplemental Agreements	
8	Annex B-8: Certificate of Compliance AQAP 2110 or ISO 9001:2015 or Equivalent	
9	Annex B-9: List of Prospective Sub-Contractors	
10	Annex B-10: Bidder Background IPR	
11	Annex B-11: List of Third Party IPR	
12	Annex B-12: Certificate of Origin of Equipment, Services, and Intellectual Property	
13	Annex B-13: List of Proposed Key Personnel	
14	Annex B-14: Certificate of Price Ceiling	
15	Annex B-15: Disclosure of Involvement of Former NCI Agency Employment	
16	Annex B-16: NCI Agency AD. 05.00, Code of Conduct: Post Employment Measures Information only. Not required to be submitted	
17	Annex C: Bid Guarantee	One copy as a PDF file; also submitted as required in 3.2.1

Volume 2: Price

	Item	Format
1	Completed Bidding Sheets, contained in: 03_IFB-CO-14873-INTELFS2-**UA** or 04_IFB-CO-14873-INTELFS2-**BE** Book I Annex A – Bidding Sheets.xlsx	One copy of the full and complete price volume shall be in MS Excel format, which can be manipulated (i.e. not an image)

Volume 3: Technical

	Item	Format
1	**Engineering Section**	
	a. Draft Delivery Plans for all Work Packages	One PDF file
	b. Solution Description Document (SDD) for all Work Packages	One PDF file
2	**Management Section**	
	a. Bidder Qualifications	One PDF file

	b. Draft Project Management Plan (PMP)	One PDF file
	c. Initial Risk Register	One MS Excel file
	d. Basis of Estimate (BOE)	One MS Excel file
3	**Supportability Section**	
	a. Draft Configuration Management Plan	One PDF file
	b. Draft and General Integrated Logistic Support (ILS) Plan	One PDF file
	c. Draft Support Case	One PDF file
	d. Draft Training Plan	One PDF file
	e. Draft Quality Plan	One PDF file

SECTION 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.   All bids will be evaluated solely using the formula, evaluation criteria and factors contained herein. Technical Proposals will be evaluated strictly against the technical criteria and not against other Technical Proposals submitted.

4.1.3.   The evaluation of bids and the determination as to the Best Value Score will be based only on that information furnished by the Bidder and contained in its Bid. The Purchaser shall not be responsible for locating or securing any information that is not identified in the Bid.

4.1.4.   The Bidder shall furnish with his Bid all information requested by the Purchaser in Book I, Section 3, Bid Preparation Instructions. Significant omissions and/or cursory submissions will result in a reduced Best Value Score and may result in a determination of non-compliance without recourse to further clarification. The information provided by the Bidder in its proposal shall be to a level of detail necessary for the Purchaser to fully comprehend exactly what the Bidder proposes to furnish as well as its approach and methodologies.

4.1.5.   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 his 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 his price quotation at any time.

4.1.6.   The Purchaser reserves the right, during the evaluation and selection process, to verify any statements made concerning experience, facilities, or existing designs or materials by making a physical inspection of the Bidder's facilities and capital assets. This includes the right to validate, by physical inspection, the facilities and assets of proposed subcontractors.

4.1.7.   The evaluation will be conducted in accordance with NATO Infrastructure Bidding Procedures as set forth in the document, and the Best Value evaluation procedures set forth in AC/4-D(2008)0002-REV2, "Procedures and Practices for Conducting NSIP International Competitive Bidding Using Best Value Methodology", with the exception described in paragraph 4.3.1.2. The bid evaluation methodology to be followed,

including the top-level evaluation criteria and their weighting factors, were agreed by the Host Nation.

4.2. Best Value Award Approach and Bid Evaluation Factors

4.2.1.   The Contract resulting from this IFB will be awarded to the Bidder whose conforming offer provides the Best Value to NATO, as evaluated by the Purchaser in compliance with the requirements of this IFB and according to the evaluation method specified in this section.

4.2.2.   The top level criteria are 60% Technical and 40% Price.

4.2.3.   Technical Scoring

4.2.3.1.   The 2nd level criteria for the technical evaluation are:

4.2.3.1.1.   Engineering (E): 50% weight, based on the criteria listed in order of descending importance (that is, most important listed first) in section 4.5.2.

4.2.3.1.2.   Management (M): 30% weight, based on the criteria listed in order of descending importance in section 4.5.3.

4.2.3.1.3.   Supportability (S): 20% weight, based on the criteria listed in order of descending importance in section 4.5.4.

4.2.3.2.   The Technical Score will be calculated using the following formula:

TS = (50%*Engineering Score) + (30%*Management Score) + (20%*Supportability Score)

4.2.4.   Price Scoring

4.2.4.1.   The Price Score (PS) will be calculated using the following formula:

PS = 100 * (1-(Bid Price / (2*Average Bid Price)))

4.2.4.2.   The "Bid Price" and the "Average Bid Price" will be calculated based on the sum of the proposed prices as defined in section 4.6.4.2.

4.2.4.3.   Only those bids evaluated as compliant in both the Administrative and Technical evaluations will be used in the calculation of the Price Score. Therefore, the price scores cannot be calculated until after the technical evaluations are complete.

4.2.4.4.   Bidders shall note that any Bid in excess of the stated ceiling price set forth in paragraph 3.5.3.1 may not be scored as the Bid may be determined to be non-compliant.

4.2.5.   Best Value Final Scoring

4.2.5.1.   The Best Value final score (FS) will be the sum of the weighted Technical Score (TS) and weighted Price Score (PS), according to the following formula:

$$FS = (TS*60\%) + (PS*40\%)$$

4.2.5.2.   The maximum possible Best Value Score is 100. The Bid with the highest Best Value Score will be recommended to be the Apparent Successful Bidder.

4.2.6.   A weighting scheme for sub-criteria values has been developed by Purchaser staff not associated with the Technical Evaluation. This weighting scheme has been sealed and is not known to any of the Purchaser staff beyond the originator and the Chairman of the Contracts Award Board, who are not evaluators within the framework of this IFB or in any manner or form are made privy of evaluation information throughout the course of the evaluation process. The weighting scheme remains sealed until Step 4 of the evaluation process, described in paragraph 4.7.

4.3.   Evaluation Procedure

4.3.1.   The evaluation will be done in a three-step process, as described below:

4.3.1.1.   Step 1: Administrative Compliance

4.3.1.1.1.   Bids received will be reviewed for compliance with the mandatory administrative requirements specified in paragraph 4.4. Bids not meeting all of the mandatory administrative requirements may be determined to be non-compliant and not considered for further evaluation.

4.3.1.2.   Step 2: Parallel Technical and Price Evaluations

4.3.1.2.1.   In Step 2, the Technical and Price evaluations will be performed in parallel. That is, independent teams of evaluators will evaluate the bids as described in Sections 4.5 and 4.6 at the same time, instead of waiting for the technical evaluations to be completed before opening the price volumes. However, the final price scores cannot be calculated until after the technical evaluations are complete, since the price score only includes those proposals evaluated as technically compliant.

4.3.1.2.2.   Bidders are advised that, since the evaluations are being conducted in parallel, they should not assume that they have been evaluated as technically compliant if they receive a clarification request regarding the Price volume.

4.3.1.2.2.1   Step 2A: Technical Evaluation

4.3.1.2.2.1.1   The Technical volumes will be evaluated against predetermined top-level criteria and identified sub-criteria (see paragraph 4.2.3 above), and scored accordingly. This evaluation will result in "raw" or unweighted technical scores against the criteria.

4.3.1.2.2.1.2   Bidders are advised that any Bid whose Technical Proposal receives a score of less than 20% of the total unweighted raw score possible in any of the sub-criteria listed in Section 4.5 of this document may be determined by the Purchaser to be non-compliant and not considered for further evaluation.

4.3.1.2.2.2   Step 2B: Price Evaluation

4.3.1.2.2.2.1   The Price volumes will be opened and evaluated in accordance with section 4.6.

4.3.1.2.2.3   Step 3: Determination of Apparent Successful Bidder

4.3.1.2.2.3.1   Upon completion of the Technical and Price evaluations, the scores of the Bids considered to be technically compliant will be calculated. The Apparent Successful Bid will be determined in accordance with paragraph 4.7.

4.4.   Evaluation Step 1 - Administrative Compliance

4.4.1.   Bids will be reviewed for compliance with the formal requirements for Bid submission as stated in this IFB and the content of the Bid Administration Volume. The evaluation of the Bid Administration Volume will be made on its completeness, conformity and compliance to the requested information. This evaluation will not be scored in accordance with Best Value procedures 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:

4.4.1.1.   The Bid was received by the Bid Closing Date and Time,

4.4.1.2.   The Bid is packaged and marked properly,

4.4.1.3.   The Bid Administration Volume contains the documentation listed in paragraph 3.3.1 and complies with the formal requirements established in paragraph 3.1.

4.4.1.4.   The Bidder has not taken exception to the Terms and Conditions of the Prospective Contract or has not qualified or otherwise conditioned his offer on a modification or alteration of the Terms and Conditions or the language of the Statement of Work.

4.4.1.5.   **Receipt of an unreadable electronic bid**. If a bid received by email 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:

4.4.1.5.1.   Of the content of the bid as originally submitted; and,

4.4.1.5.2.   That the unreadable condition of the bid was caused by Purchaser software or hardware error, malfunction, or other Purchaser mishandling.

4.4.2.   A Bid that fails to conform to the above requirements may be declared non-compliant and may not be evaluated further by the Purchaser.

4.4.3.   Bids that are determined to be administratively compliant will proceed to Step 2A, Technical Evaluation, and Step 2B, Price Evaluation.

4.4.4.   Notwithstanding paragraph 4.4.3, if it is later discovered in the evaluation of the Bid Administration Volume, Technical Volume or the Price Volume that the Bidder has taken exception to the Terms and Conditions of the Prospective Contract, or has qualified and/or otherwise conditioned his offer on a modification or alteration of the Terms and Conditions or the language of the Statement of Work, the Bidder may be determined to have submitted a non-compliant Bbd at the point in time of discovery.

4.5.   Evaluation Step 2A – Technical Evaluation

4.5.1.   The Technical Proposal will be evaluated against the criteria set forth in this section. For some sub-criteria, there may be additional supporting factors at the next lower level. These lower level factors are not published in this IFB but are predetermined and included in the Technical Evaluation Weighting Scheme sealed before Bid Opening. The following paragraphs identify the aspects to be examined in the Technical Proposal evaluation and rating.

4.5.2.   PART 1: ENGINEERING

4.5.2.1.   The criteria used to evaluate Part 1, Engineering are listed in descending order of importance.

4.5.2.2.   The criteria of high importance will have higher weighting factors than the criteria of lower importance.

4.5.2.2.1.   The draft SDD provides information on the proposed solution to a level of detail that enables the Purchaser to assess the solution's feasibility and ability to fulfil the requirements as defined by the SRS.

4.5.2.2.2.   The proposed solution describes a solution architecture that addresses, and fulfils, the non-functional requirements (NFR) as defined in the SRS. The compliance with the NFRs are individually assessed and justified through the solution design.

4.5.2.2.3.   For **IFB-CO-14873-INTELFS2-BE**: The draft SDD demonstrates a sound approach to round-trip engineering and synchronizing of the SW implementation (source code) with the maintenance of the Information Model; ideally by implementing an automatic forward-transformation from the Information Model to solution artefacts (source code, database mapping, application programming interface (API), etc.).

4.5.2.2.4.   For **IFB-CO-14873-INTELFS2-BE**: The draft SDD describes how the proposed solution to the maximum extent possible/ practicable will make use of the services provided by the Bi-SC AIS SOA Platform including:

- Identity and Security Services
- Integration Services with reference to the platform integration domain specific language (DSL) based on the well-known Enterprise Application Integration Patterns
- Hosting Services to include a description of the proposed level of hosting, scheduling, elasticity, etc.
- Service Management and Control services including logging, alerting, log aggregation/ analytics, reporting, monitoring and message tracking.
- Platform services for realization of Non-Functional Requirements with particular emphasis on Performance, Scalability, Reliability, Resilience, Continuity of Service, Disaster Recovery and Availability

4.5.2.2.5.   For **IFB-CO-14873-INTELFS2-UA**: The proposed solution includes off-the-shelf and high-performance UI components with rich functionality for the Table View, Relationship View, Gantt View, and Chart View delivering to the maximum extent off-the-shelf implementation of functionality as defined by SRS chapter 2, and where these UI components can be integrated into an Angular 9 (or higher) framework

4.5.2.2.6.   For the **IFB-CO-14873-INTELFS2-UA**: UI mock-ups/ wireframes are provided for the BMD JIPOE Application, the Analysis Application (with a detailed elaboration of the visual Graph Query Builder), Collection Requirements Management Application, and the Collection & Exploitation Planning Application. The UI mock-ups/ wireframes demonstrates a good understanding of the functionality to be implemented within these four applications, and the described UI is compliant with the general UI requirements in SRS chapter 2.

4.5.2.2.7.   For **IFB-CO-14873-INTELFS2-BE**: The proposed solution describes a sound approach to eventual consistency in a distributed (multi-instance) environment configuration (i.e. in a high availability and robustness configuration).

4.5.2.2.8.   The proposed solution demonstrates that the Bidder's technology choices have taken the risk of technology obsolescence, technology proliferation and life-cycle supportability into consideration.

4.5.2.2.9.   The draft SDD describes a sound approach to Continuous Integration (CI) and Continuous Delivery (CD) adapted for the capability to be delivered and for usage within the NATO Software Factory. The SDD describes what type of tests will be automated, and how the automated tests will be implemented, as well as how the reporting of such tests will be automated.

4.5.2.2.10.   The draft SDD demonstrates an approach to the software development that will ensure a high degree of test automation (e.g. using behaviour driven development (BDD) and/ or Acceptance Test Driven Development (ATDD) methodologies).

4.5.2.2.11.   For **IFB-CO-14873-INTELFS2-UA**: The proposed solution does not introduce any backend processing services and is implemented fully as a browser-based client application. The only exceptions from this rule will be the User Management Application where server side functionality might be required, and the maintenance of the INTEL-FS Spiral 1 legacy backend in Phase 1.

4.5.2.2.12.   The draft SDD elaborates all fundamental solution decisions in accordance with the requirements defined in SOW section 2.5.3.2.

4.5.2.2.13.   For any COTS and FOSS components and libraries used in the solution the SDD provides details on Vendor Name, Product Name, SW version, and lifecycle cost and constraints (license/ subscription fee, licence type, etc.)

4.5.2.2.14.   The draft Delivery Plan (one for each work package) includes a draft Work Breakdown Structure (WBS) with a schedule in accordance with SOW Section 2.5.3.1 for the full scope of the project (excluding the optional WP for 3rd and 4th level Maintenance and Support). I.e. identifying start and end date for each of the increments in the work package, and identifying the deliverables allocated to increments.

4.5.2.2.15.   The format and content of the draft SDD complies with the requirements defined in SOW section 2.5.3.2, and contains a confirmation that all requirements of the SRS are met by the proposed solution (Note: service specification, if applicable for the solution, are not expected for the draft SDD).

4.5.3.   PART 2: MANAGEMENT

4.5.3.1.   The criteria used to evaluate Part 2, Management are listed in descending order of importance.

4.5.3.2.   Within those criteria, all of the sub-criteria are also listed in order of descending importance.

4.5.3.3.   The criteria of high importance will have higher weighting factors than the criteria of lower importance.

4.5.3.4.   Bidder Qualifications

4.5.3.4.1.   The Bidder demonstrates strong experience in the area of design, delivery, implementation and support of similar software-based systems.

4.5.3.4.2.   The Bidder demonstrates that the members of its project technical and implementation team possess strong education, experience and qualifications directly relevant to the needs of this Contract and in accordance with the SOW Section 3.1.

4.5.3.4.3.   The Bidder demonstrates that its Project Manager, Quality Assurance Manager, and Configuration Manager possess strong education, experience and qualifications in accordance with the SOW Section 2.1.1.

4.5.3.4.4.   The Bidder provides resumes (2-page limit per resume) of the individuals designated as Key Personnel in Contract Special Provision Annex B.

4.5.3.4.5.   The Bidder provides two relevant examples (2 pages max each) including a description of the solution deployed/delivered, the expertise/experience highlighting similarities to the bid solution; 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.

4.5.3.5.   Draft Project Management Plan (PMP)

4.5.3.5.1.   The proposed project organization and project management methodology (for Agile execution) and control processes demonstrate Bidder's ability to implement the entire project in conformance with the requirements as specified in the SOW.

4.5.3.5.2.   The scope of work to be performed by the prime contractor versus subcontractors is clearly defined.

4.5.3.5.3.   The Bidder has provided proof of the Bidder's premises being authorized and certified to handle information (physically and electronically) at the NATO Restricted level.

4.5.3.5.4.   The Draft PMP is in accordance with the SOW requirements.

4.5.3.6.   Initial Risk Register

4.5.3.6.1.   The initial Risk Register level does not raise concerns. The risk level is not too high (this could indicate that the Bidder will not be able to deliver). The Bidder is taking ownership of the risks instead of making NATO responsible for the majority of them.

4.5.3.6.2.   The initial Risk Register contains a set of probable risks that demonstrates that the Bidder has a good understanding of the complexities and dependencies inherent in the project.

4.5.3.6.3.   The risks in the initial Risk Register are all properly addressed with a risk identifier, description of the risk, impact analysis, probability assessment, mitigation measures, risk owner, etc.

4.5.3.7.   Basis of Estimate (BOE)

4.5.3.7.1.   The BOE provides realistic effort and duration estimates for all of the deliverables in the Bidding Sheet to demonstrate a good understanding of the complexity and level of effort of work to be conducted.

4.5.3.7.2.   The BOE provides level of effort estimates for all of the deliverables as defined in the Bidding Sheet.

4.5.3.7.3.   The BOE provides estimates of the duration for all of the deliverables as defined in the bidding sheet.

4.5.4.   PART 3: SUPPORTABILITY

4.5.4.1.   The criteria used to evaluate Part 3, Supportability, are listed in descending order of importance.

4.5.4.2.   Within those criteria, all of the sub-criteria are also listed in order of descending importance.

4.5.4.3.   Draft Configuration Management Plan (CMP)

4.5.4.3.1.   The CMP demonstrates that the CM function is properly resourced, and organized with well-defined roles and responsibilities in accordance with SOW 2.5.2.4.

4.5.4.3.2.   The CMP details the Configuration Management Database (CMDB) solution and demonstrates that the CMDB solution will fulfil the requirements defined in SOW 2.1.5.1.

4.5.4.3.3.   The CMP is compliant with "*ACMP-2009-SRD-41: Examples of CM Plan Requirements, Edition A, Version 1, March 2017, NATO Standardization Office (NSO)*" in format and content, and clearly identifies requirements that the bidder deems not applicable to this contract as not applicable (N/A). Note: there should not be many such N/A requirements.

4.5.4.3.4.   The CMP has been tailored to address the Agile character of this project execution.

4.5.4.3.5.   The CMP identifies and defines all top-level configuration items (CI) to be delivered under this Contract and where these top-level CIs are traced to deliverables as defined in the SSS.

4.5.4.3.6.   The CMDB solution as described in the CMP includes integration with the NATO Software Factory tooling and support DevOps practices (e.g. including deployment configurations and automated deployment scripts as Configuration Items).

4.5.4.3.7.   The CMP includes a proposed ECP format that has been tailored to Agile project execution.

4.5.4.3.8.   The CMP includes a proposed format for Request for Deviation/ Request for Waiver that is suitable for use in the Contract.

4.5.4.4.   Draft and General Integrated Logistic Support (ILS) Plan

4.5.4.4.1.   The draft Integrated Logistics Support Plan is provided in accordance with the SOW requirements in Section 2.3 including the required sub-sections and content with sufficient details to demonstrate the Bidder's ability to perform the ILS activities.

4.5.4.4.2.   The Bidder demonstrates its understanding and compliance with all the SOW requirements by creating appropriate subsections and detailing the requirements with actual proposed activities.

4.5.4.4.3.   The Bidder provides a detailed approach for the Design Influence (RAMT and LSA) areas for the actual analyses, documenting the analysis, tools, skills and relation with SRS and design in general.

4.5.4.4.4.   The Bidder details the different Maintenance and Support Levels, the interfaces between these different levels, maintenance and support environment, constraints, locations, procedures, artefacts, organisation, personnel skills, related ITIL processes and responsibilities between different parties to maintain the delivered baselines of the system in different phases of the lifecycle, as defined in SOW Section 2.3.

4.5.4.4.5.   The Bidder details its approach for the warranty and optional support requirements, details the activities based on each party's responsibilities including the proposed services, response times, organization and planning in accordance with the SOW requirements in Section 2.3.

4.5.4.4.6.   The Bidder demonstrates that all ILS activities and milestones are integrated into the project delivery schedules.

4.5.4.5.   Draft Support Case

4.5.4.5.1.   The Bidder provides a draft Support Case, as detailed in SOW Section 2.3.4.3. The Support Case shall provide sufficient details to show the Bidder's approach and capability to perform the required LSA and RAMT studies, including how the proposed design shall take the SOW and SRS RAMT requirements into consideration.

4.5.4.5.2.   The Bidder demonstrates its understanding and compliance with the Support Case requirements by creating appropriate subsections and detailing the requirements with actual proposed activities to show the Bidder's approach and capability to perform the required LSA and RAMT studies, including how the proposed design shall take the SOW and SRS RAMT requirements into consideration.

4.5.4.6.   Draft Training Plan

4.5.4.6.1.   The draft Training Plan defines the training courses that will be delivered and how these courses will be conducted in accordance with Section 2.3.5.1 of the SOW.

4.5.4.6.2.   The Bidder demonstrates its understanding and compliance with Training Program requirements by explaining how the Bidder will schedule, resource and manage the various training requirements (training schedule, training courses and material, training tools, media, training personnel, training reviews, meetings, assessment, evaluation and reporting) starting from the contract award until the acceptance.

4.5.4.7.   Draft Quality Plan

4.5.4.7.1.   The Draft Quality Plan (QP) demonstrates that the Quality management processes are in place for the project, in accordance with the requirements defined by AQAP-2110.

4.5.4.7.2.   The Draft QP demonstrates that the Quality Assurance Manager has sufficient responsibility, authority, organisational freedom and independence to review and evaluate activities, identify problems and initiate or recommend appropriate corrective action.

4.6.   Evaluation Step 2B – Price Evaluation

4.6.1.   As stated in Section 4.3.1.2, the Price evaluation will be done in parallel to the Technical evaluation.

4.6.2.   The Bidder's Price Quotation will be first assessed for compliance against the following standards:

4.6.2.1.   For IFB-CO-14873-INTELFS2-UA the total amount of the bid (inclusive of all work packages for the basic contract and all option years) shall not exceed a ceiling of EUR 17,510,454. This amount does not include the incentive.

4.6.2.2.   For IFB-CO-14873-INTELFS2-BE the total amount of the bid (inclusive of all work packages for the basic contract and all option years) shall not exceed a ceiling of EUR 23,178,132. This amount does not include the incentive.

4.6.2.3.   The Price Quotation meets the requirements for preparation and submission of the Price Quotation set forth in the Bid Preparation Section and the Instructions for Preparation of the Bidding Sheets in Annex A.

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

4.6.2.5.   The Price Quotation meets requirements for price realism and balance as described below in paragraph 4.6.5.

4.6.3.   A Bid which fails to meet the compliance standards defined in this section may be declared non-compliant and may not be evaluated further by the Purchaser.

4.6.4.   Basis of Price Comparison

4.6.4.1.   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 at close of business on the last working day preceding the Bid Closing Date.

4.6.4.2.   The **Evaluated Bid Price** to be inserted into the formula specified at paragraph 4.2.4.1 will be derived as follows:

- For IFB-CO-14873-INTELFS2-UA User Applications: The sum of the Firm Fixed Prices proposed for CLINs 1-5 as detailed below:

CLIN Number	CLIN Name
1.0	Externalized User Account Management
2.0	Upgrade existing User Interfaces (UI) and add UI for BMD OPFOR ORBAT Management
3.0	New User Interfaces
4.0	Full integration with new backend API
5.0	3rd Level Support (SW Corrective Maintenance)

- For IFB-CO-14873-INTELFS2-BE Backend Services: The sum of the Firm Fixed Prices proposed for CLINs 1-6 as detailed below:

CLIN Number	CLIN Name
1.0	Backend services - Phase 1
2.0	Backend services - Phase 2
3.0	System Administration (SysAdm) tool
4.0	Integration services - I2BE source
5.0	Integration services – I2BE destination
6.0	3rd Level Support (SW Corrective Maintenance)

4.6.5.   Price Balance and Realism

4.6.5.1.   In those cases in which the prices quoted in relation with this Invitation for bid 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.

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

4.6.5.2.1.   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.

4.6.5.2.2.   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.

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

4.6.5.3.   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:

4.6.5.3.1.   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 or accept the Contract at the offered price, or to withdraw from the competition.

4.6.5.3.2.   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 convincingly and objectively describe the competitive advantage and the net savings achieved by this advantage over standard market practices and technology.

4.6.5.3.3.   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.

4.6.5.4.   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. If the Bidder responds on the basis of 4.6.5.3.1 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.

4.6.5.5.   If the Purchaser accepts the Bidder's explanation of mistake in paragraph 4.6.5.3.1 and allows the Bidder to accept the Contract at the offered price, or the Purchaser accepts the Bidder's explanation

pursuant to paragraph 4.6.5.3.3 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.

4.6.5.6.   If the Bidder presents a convincing rationale pursuant to paragraph 4.6.5.3.2 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.

4.6.5.7.   The Agency reserves the right to request prime contractors or the subcontractors to separately identify each of the direct/indirect costs, advise why each is required, and provide supporting documentation to substantiate each charge, such as: 1) catalogue price lists and any applicable discounts, 2) copies of the Subcontractor's orders from others for the same or similar items, including explanations for cost variations, 3) Subcontractor's internal cost estimate, or documentation of whatever means the Subcontractor used to arrive at the charge.

4.6.6.   Once the offered prices as described in paragraph 4.6.4.2 have been calculated and checked, the formula set forth in paragraph 4.2.4.1 above will be applied to derive the Price Score of each Bid.

4.7.   Evaluation Step 3 – Calculation of Best Value Scores

4.7.1.   Upon conclusion and approval of the Technical Evaluation and Price Evaluation results, the pre-determined weighting scheme for the Technical Evaluation will be unsealed and the scores for the Engineering, Management and Supportability factors will be calculated for each compliant bid. Then all partial scores will be fed into the formula stated in paragraph 4.2.5 in order to obtain the Best Value Score of each Bid.

4.7.2.   The highest scored Bid will be recommended as the Apparent Successful Bid.

4.7.3.   A statistical tie is deemed to exist when the final scores of the highest scoring bids are within one point (1.0) of each other. (For example, final scores of 67.30 and 68.30 are within one point of each other and would therefore be considered a statistical tie. Final scores of 67.30 and 68.31 are more than one point apart and would not be considered a tie.) The Purchaser will then resolve the statistical tie by awarding the contract to the Bid with the highest weighed technical score.

4.7.4.   Prior to confirmation of award, the Purchaser shall invite the Bidder with the Apparent Successful Offer to one or more rounds of pre-award discussions. These discussions shall aim at clarifying and confirming,

within the boundaries of the IFB documents, any remaining topics and results in the preparation of the final contract documents.

4.7.5.   Upon the successful completion of these pre-award discussions, to the Purchaser's full satisfaction, confirmation of final Bid compliance will be noted.

4.7.6.   The Purchaser will deliver the final set of contract documents to the Bidder for their signature.   Upon the Purchaser's countersignature of those contract documents, the contract shall be considered to be in effect.

Annex A   Bidding Sheets

A-1   Introduction

1. Bid pricing requirements as addressed in this Annex are mandatory. Failure to abide to the bid pricing requirements included in this section may lead to the Bid being declared non-compliant and not being taken into consideration for award.

2. No alteration of the Bidding sheets – including, but not limited to quantity indications, descriptions, titles or pre-populated Not-to-Exceed amounts – are allowed with the sole exception of those explicitly indicated as allowed in this document or in the instructions embedded in the Bidding Sheets file.

3. Additional price columns may be added if multiple currencies are Bid, including extra provisions for all totals.

A-2   General Requirements

1. Bidders are required, in preparing their Price Volume to utilise the electronic files provided as part of this IFB and referenced in Annex A-3 and/or A-4.

2. This Excel file includes detailed instructions on each tab that will facilitate bidders' preparation of the bid pricing. These instructions are mandatory.

3. 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.

4. 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.

5. All metrics (e.g., cost associated with labour) will be assumed to be standard or normalised to 7.6 hours/day, for a five-day workweek at NATO and National sites and Contractor facilities.

6. Should the Apparent Best Value Bid be in other than Euro currency, the award of the Contract will be made in the currency or currencies of the bid.

7. Bidders are advised that formulae are designed to ease evaluation of the Bidders proposal 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.

8. If the Bidder identifies an error in the spreadsheet, it should notify the Purchaser through process described section 2.6. The Purchaser will then make a correction and notify all the Bidders of the update.

9. Prices shall not include any provision for taxes or duties for which the Purchaser is exempt.

A-3 Bidding Sheets for Front-end User Applications Bid

1. Bidders are required, in preparing their Price Volume to utilise the correct electronic Bidding Sheets file provided as part of this IFB. For the Front-end User Applications bid, this is:

   "03_IFB-CO-14873-INTELFS2-UA Book I Bidding Sheets I2UA.xls"

2. Bidders shall include this file in its proposal in the same Excel format in which it is provided in this IFB.

A-4 Bidding Sheets for Back-end Data Management Bid

1. Bidders are required, in preparing their Price Volume to utilise the correct electronic Bidding Sheets file provided as part of this IFB. For the Back-end Data Management bid, this is:

   "04_IFB-CO-14873-INTELFS2-BE Book I Bidding Sheets I2BE.xls"

2. Bidders shall include this file in its proposal in the same Excel format in which it is provided in this IFB.

Annex B   Prescribed Administrative Forms and Certificates

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: _____

POINT OF CONTACT REGARDING THIS BID:

NAME: _____
POSITION: _____
TELEPHONE: _____

ALTERNATIVE POINT OF CONTACT:

NAME: _____
POSITION: _____
TELEPHONE: _____

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-2. Acknowledgement of Receipt of IFB Amendments

I confirm that the following amendments to Invitation for Bid CO-14873-INTELFS2 have been received and the Bid, as submitted, reflects the content of such amendments.

Amendment no.	Date of Issued	Date of receipt	Initials

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-3. Certificate of Independent Determination

It is hereby stated that:

a.   We have read and understand all documentation issued as part of IFB-CO-14873-INTELFS2. 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;

b.   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

c.   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.

_____

Date

_____

Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

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 (12) months from the Bid Closing Date of this Invitation for Bid.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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

The Bidder hereby certifies that he has reviewed the Contract Special Provisions and the NCI Agency Contract General Provisions set forth in the Prospective Contract, Book II, of this Invitation for Bid. The Bidder hereby provides his 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 Contract Special Provisions and Contract General Provisions if awarded the Contract as a result of this Invitation for Bid.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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 successor 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:
(insert list of supplemental agreements or specify "none")

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 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.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-8. Certificate of Compliance AQAP 2110 or ISO 9001:2015 or Equivalent

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

_____	_____
Date	Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

---

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

Annex B-9.   List of Prospective Subcontractors

Name and Address of Sub-Bidder	DUNS Number [2]	Primary Location of Work	Items/Services to be Provided	Estimated Value of Sub-Contract

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

---

[2] 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.

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 Article 8 of the Contract Special Provisions.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-11. List of Subcontractor 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 Clause 30 the Contract General Provisions.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-13.   List of Proposed Key Personnel

Key Personnel are not necessarily required to work full-time in that position. Therefore, it is possible for an individual to fill more than one Key Personnel role at the same time, assuming the person is qualified to perform both roles.
Note: "SW Architect" is a Key Personnel for IFB-CO-14873-INTEL-FS2-BE (Back-End) only.

Position	SOW Reference	Labour Category	Name	Designation Period
Project Manager				
Quality Assurance Manager				
Configuration Manager				
Technical Lead				
SW Architect (Back-end only)				
Scrum Master				
Test Director				
Lead Software Developer 1				
Lead Software Developer 2				

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-14.   Certificate of Price Ceiling

I hereby certify that the total price offered in the Price Volume of this Bid does not exceed the price ceiling provided in paragraph 3.5.3.1 of Book I:

- EUR 17,510,454, for the Front-end User Applications contract;

- EUR 23,178,132, for the Back-end Data Management contract.

Note: All prices, or supporting pricing information, shall be included in the Price Volume only. There shall be no pricing information disclosed in the either the Bid Administration Volume or the Technical Volume.

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-15.   Disclosure of Involvement of Former NCI Agency Employment

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

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

The Bidder hereby certifies that:

☐   Its personnel, at any tier, working as part of the company's team preparing the Bid have not held employment with NCI Agency within the last two years.

☐   It 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-16 of this IFB):

Employee Name	Former NCI Agency Position	Current Company Position

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 of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-16. NCI Agency AD. 05.00, Code of Conduct: Post Employment Measures

1. The NCI Agency will not offer employment contracts to former NCI Agency Personnel who departed less than 2 years earlier, unless prior approval by the General Manager has been received.

2. Former NCI Agency Personnel will not be accepted as consultants or commercial counterparts for two (2) years after finalization of their employment at NCI Agency, unless the General Manager decides otherwise in the interest of the Agency and as long as NATO rules on double remuneration are observed. Such decision shall be recorded in writing. Commercial counterparts include owners or majority shareholders, key account managers, or staff members, agents or consultants of a company and/or subcontractors seeking business at any tier with the NCI Agency in relation to a procurement action in which the departing NCI Agency staff member was involved when he/she was under the employment of the NCI Agency. As per the Prince 2 Project methodology, a Project is defined as a "temporary organization that is created for the purpose of delivering one or more business products according to an agreed business case". For the purpose of this provision, involvement requires (i) drafting, review or coordination of internal procurement activities and documentation, such as statement of work and statement of requirement; and/or (ii) access to procurement information that has not yet been authorized for release for outside distribution, including draft statements of work and requirement documentations; and/or (iii) being appointed as a representative to the Project governance (e.g., Project Board) with access to procurement information as per (ii) above; and/or (iv) having provided strategic guidance to the project, with access to procurement information as per (ii) above.

3. In addition to paragraph 2 above, former NCI Agency Personnel at grades A5 and above or ranks OF-5 and above are prohibited during twelve months following the end of their employment with the NCI Agency from engaging in negotiations, representational communications and/or advisory activities with the NCI Agency on behalf of a private entity, unless this has been agreed in advance by the NCI Agency General Manager and notified to the Agency Supervisory Board (ASB).

4. NCI Agency Personnel leaving the Agency shall not contact their former colleagues in view of obtaining any information or documentation about procurement activities' not-yet-authorized release. NCI Agency Personnel shall immediately report such contacts to the Director of Acquisition.

5. The ASB Chairman will be the approving authority upon recommendation by the Legal Adviser when the NCI Agency Personnel concerned by the above is the NCI Agency General Manager and will notify the ASB.

6. NCI Agency Personnel leaving the Agency shall sign a statement that they are aware of the post-employment measures set out in this Directive.

7. The post-employment measures set out in this Directive shall be reflected in the NCI Agency procurement documents, such as IFBs, and contract provisions.

Annex C   Bid Guarantee – Standby Letter of Credit

Standby Letter of Credit Number:

Issue Date: _____

Beneficiary: NATO CI Agency,
                          Financial Management Resource Centre,
                          Boulevard Leopold III,
                          B-1110 Brussels,
                          Belgium

Expiry Date: _____

Delete whichever paragraph 1 below does not apply.

1.   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 € 130,000.00 (One Hundred and Thirty Thousand Euro) . We are advised this Guarantee fulfils a requirement under Invitation for Bid IFB-CO-14873-INTELFS2-UA dated _____.

1.   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 € 170,000.00 (One Hundred and Seventy Thousand Euro) . We are advised this Guarantee fulfils a requirement under Invitation for Bid IFB-CO-14873-INTELFS2-BE dated _____.

2.   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 NATO CI Agency Contracting Officer that:

        a)   (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 his Bid, or stated that he does not consider his Bid valid or agree to be bound by his Bid, or

        b)   (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

        c)   The NATO CI 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

        d)   The NATO CI 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.

3.   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.

4.   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 NATO CI 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.

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

6.   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 NATO CI Agency Contracting Officer which states

"The NATO CI 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 NATO CI Agency from, or on behalf of (NAME OF BIDDER), and the NATO CI 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)."

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.

7.   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.

8.   Multiple drawings are allowed.

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

10.   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.

11.   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.

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

Annex D   Clarification Request Form

**INVITATION FOR BID
IFB-CO-14873-INTELFS2**

CLARIFICATION REQUEST FORM

Delete whichever does not apply:

IFB-CO-14873-INTELFS2-UA User Applications or IFB-CO-14873-INTELFS2-BE Back-end Data Management

Company Name _____   Submission Date_____

ADMINISTRATION or CONTRACTING				
Serial No.	**IFB Ref.**	**Bidder's Question**	**NCI Agency Answer**	**Status**
A.1				
A.2				
A.3				
A.4				

Delete whichever does not apply:

IFB-CO-14873-INTELFS2-UA User Applications or IFB-CO-14873-INTELFS2-BE Back-end Data Management

Company Name _____   Submission Date_____

PRICE				
Serial No.	**IFB Ref.**	**Bidder's Question**	**NCI Agency Answer**	**Status**
P.1				
P.2				
P.3				
P.4				

Delete whichever does not apply:

IFB-CO-14873-INTELFS2-UA User Applications or IFB-CO-14873-INTELFS2-BE Back-end Data Management

Company Name _____   Submission Date_____

TECHNICAL				
Serial No.	**IFB Ref.**	**Bidder's Question**	**NCI Agency Answer**	**Status**
T.1				
T.2				
T.3				
T.4				

NATO Communications and Information Agency
Agence OTAN d'information et de communication

INTEL-FS SPIRAL 2 - USER APPLICATIONS (I2UA)
BOOK II - PART IV - SOW

STATEMENT OF WORK (SOW)

Version 1.2

16/02/2021

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Document Revision History

Date	Version	Changes
21 Dec 2020	1.0	IFB package release version
29 Jan 2021	1.1	IFB Amendment 1: Minor typographical fixes
16 Feb 2021	1.2	IFB Amendment 3: Clarifications on IV&V and UAT

1   Introduction

1.1   Background

[1]   The Intelligence Functional Services (INTEL-FS) will provide an information management capability that will enable the Commands to execute the Intelligence Support function effectively and efficiently, and to provide comprehensive and relevant intelligence in a timely and responsive manner.

[2]   Delivery of the functionalities of INTEL-FS is planned to be done in spirals (where each spiral could consist of multiple increments). The first spiral (INTEL-FS Spiral 1) was delivered in 2016. INTEL-FS Spiral 2 capability will be procured as two separate systems:

(1)   As a set of backend services; and
(2)   As web-browser based collection of user applications.

[3]   This SOW is for the procurement of the web-browser based user applications hereafter referred to as INTEL-FS2 UA, or I2UA.

[4]   The backend services will be procured through a different contract. The procurement of the backend services is described in a separate SOW.

1.2   Purpose

[5]   The purpose of the present contract is to procure a new NATO-owned INTEL-FS User Applications capability (I2UA) for deployment to the NATO Command Structure (NCS) operational network.

[6]   The I2UA will replace the current user interface part of INTEL-FS Spiral 1.

[7]   The I2UA system requirements is defined in the Annex A to this SOW.

1.3   Scope of Work

[8]   The project will be executed in accordance with the principles from the Dynamic System Development Method (DSDM):

(1)   Focus on the business need;
(2)   Deliver on time;
(3)   Collaborate;
(4)   Never compromise quality;
(5)   Build incrementally from firm foundations;
(6)   Develop iteratively;
(7)   Communicate continuously and clearly;
(8)   Demonstrate control.

[9]   As shown in Figure 1-1, the main work will be organized in three work packages (WP 1.1, WP1.2, and WP1.3), and in addition an optional work package (WP 1.4) is defined for the eventuality of the Contractor, post the warranty period, is providing 3rd and 4th level software maintenance and support.
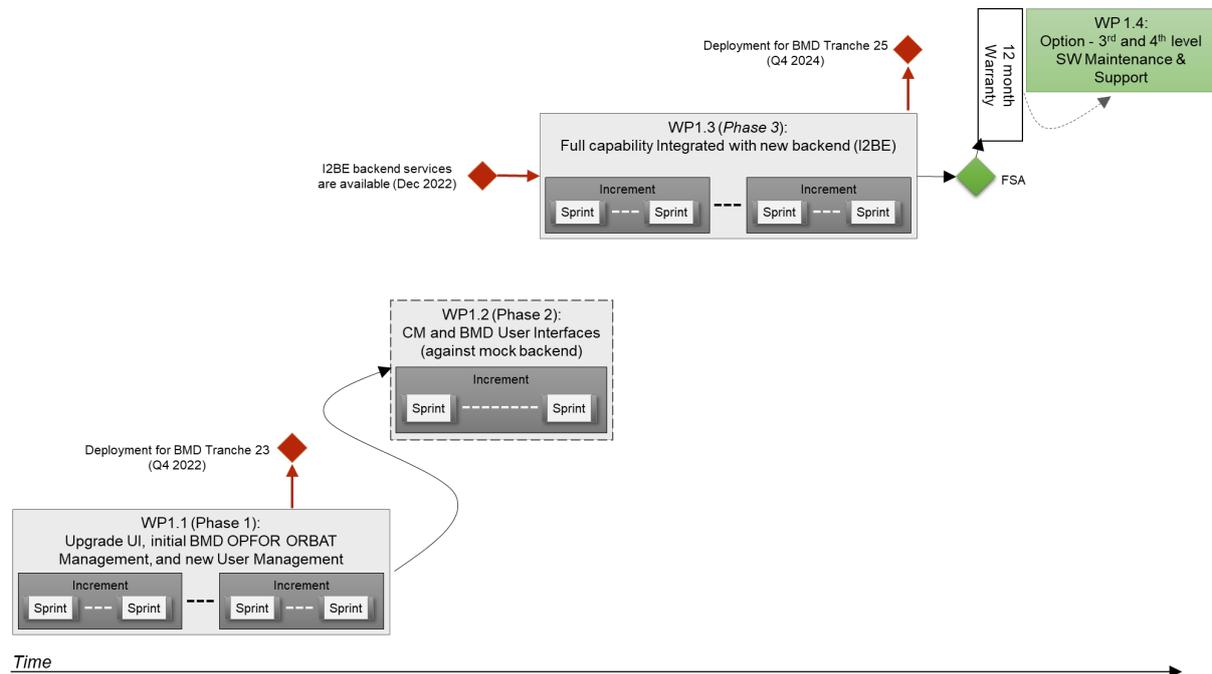
Figure 1-1   Work Packages, Increments, and Sprints

[10]   The main work package is subdivided into a set of increments, where each increment will deliver a tangible and payable deliverable. Each increment is again divided into multiple sprints.

[11]   The first work package (WP1.1) will start with the current INTEL-FS Spiral 1 and upgrade its user interfaces (UI) and it will also add some new UI functionality (in particular functionality for Ballistic Missile Defence (BMD) Order of Battle (ORBAT) management). For this work the Contractor will have to implement its UI functionality accessing the existing INTEL-FS Spiral 1 backend through an abstraction layer. To support the BMD ORBAT functionality the Contractor will have to implement some interim backend logic (it is interim, because it eventually will be replaced by the new I2BE backend services). Included in the work in WP 1.1 is also implementation of new functionality for managing users and their privileges while adapting to the new Bi-Strategic Command Automated Information System (B-SC AIS) identity management (IdM) platform.

[12]   The second work package (WP1.2) is introduced as a mitigation in case the new backend services (provided through a separate contract) is not ready after phase 1 is completed. In the period, waiting for the new I2BE services and the new I2BE application programming interface (API) to become ready, the Contractor will implement new user interfaces. This new UI will be implemented against mock backends (the Contractor will be responsible for establishing such mock backends).

[13]   The third work package (WP 1.3) will continue to evolve the new UI functionalities (started in WP 1.2) while integrating against the new I2BE API. The work also include upgrading all the functionality implemented in WP 1.1 to use the new I2BE API instead of accessing INTEL-FS Spiral 1 through an abstraction layer.

[14]   The Contractor will deliver training material for the usage of the user interfaces. This training material will be used to train a selected group of "students" during the sessions of testing the applications non-functional Learnability requirement.

[15]   The delivered SW at the end of each increment will have to have a quality at the level of being ready for deployment to production. The deployment of new software

modules will be led by the Purchaser with support from the Contractor. There might be multiple deployments to production of incrementally delivered functionality; e.g. deployment of new functionality including the BMD order of battle (ORBAT functionality in support of the BMD program tranche 23 before the end of the year 2022, deployments in support of the BMD tranche 25, and a final deployment prior to final system acceptance (FSA).

[16]   A fourth and optional work package (WP 1.4) is defined for the eventuality of the Contractor, post the warranty period, is providing software (SW) maintenance support (3rd level support).

[17]   The Contractor is expected to apply the Scrum agile process framework for managing the implementation work and to apply Behaviour Driven Development (BDD) methodology.

[18]   The Contractor will have to deliver all supplies and services as specified in this SOW and as stated in the Schedule of Supplies and Services (SSS) for all categories of the project.

[19]   The deliverables of the work is defined in the Schedule of Services and Supplies (SSS) where each deliverable will have by contract line item number (CLIN), a cost, and an expected delivery time information. The CLIN delivery times in the SSS is defined through the increment number when the deliverable is expected.

1.4   Purchaser's Responsibilities

[20]   The following services and items will be provided by the Purchaser for the performance of the Contract.
    (1)   Access to Subject Matter Experts (SME) and required NATO documentation during project execution;
    (2)   Provide purchaser furnished items (PFI) as per section 1.5 of this SOW;
    (3)   Coordinating access to NATO sites the Contractor will have to visit.

[21]   The Purchaser's Project Manager (PM) will act as the Purchaser's representative and will be the primary interface between the Contractor and Purchaser after the Effective Date of Contract (EDC).

[22]   The Purchaser's Project Manager will be supported by specialists in certain areas (e.g. the project Technical Lead) who may, from time to time, be delegated to act on the Project Manager's behalf in their area of expertise.

[23]   Neither the Project Manager, nor any other NATO personnel may make changes to the terms and conditions of the Contract, but may only provide the Purchaser's interpretation of technical matters. All changes to the Contract will be made through the Purchaser's contracting office only.

[24]   The Purchaser will provide the Contractor with available technical descriptions of external NATO interfaces if such descriptions are required for the work.

[25]   The Purchaser will make available to the Contractor the facilities necessary to test and demonstrate the delivered software's interoperability with required external NATO interfaces.

1.5   Purchaser Furnished Items (PFI)

[26]   The Purchaser will provide access to reference test environment and integration testbed facilities for the required testing activities under this contract at the Purchaser's facility (either The Hague-Netherlands or Mons-Belgium).

[27]   The Purchaser will equip the Contractor with one NATO RΞSTRICTED (NR) laptop to be used for sharing of NR material.

[28]   The Purchaser will provide the Contractor with a set of user accounts on the NATO Software Factory (NSF), see section 2.4.1.

[29]   The Purchaser will provide the Contractor with the Service Oriented Architecture (SOA) and Identity Management (IdM) Platform, see [SOA-IdM].

[30]   The Purchaser will provide the Contractor with a reference test environment for system integration testing (this will be provided within the NSF).

[31]   The Purchaser will provide the Contractor with the current INTEL-FS Spiral 1 software.

[32]   The Purchaser will provide the Contractor with C4ISR Visualization Component (VC), see SRS for additional details.

[33]   The Purchaser will provide the Contractor with a software library for the video player component, see SRS for additional details.

1.6   Conventions

[34]   Requirements in the SOW are formulated using the form "shall". Context information supporting the requirements definition is provided using the form "will".

[35]   "Shall" statements are contractually binding; "Will" statements are non-mandatory, or they imply intent on the part of the Purchaser.

[36]   Mandatory requirements in the SOW are preceded by a unique heading number, consisting of a prefix, followed by a number.

[37]   Informational or context information not conveying any requirement on the Contractor is preceded by a number heading in brackets, [xx], without prefix letters.

[38]   The term "the Purchaser" means the NCI Agency or its authorised representatives.

[39]   Whenever requirements are stated herein to "include" a group of items, parameters, or other considerations, "include" means "include but not limited to".

[40]   Whenever reference is made to a section or paragraph, the reference includes all subordinate and referenced paragraphs.

[41]   The convention to be used for dates appearing in free text (e.g. quoting dates of meetings) is day-month-year and not month-day-year.

1.7   Structure

[42]   This SOW is structured as follows:
- Chapter 1: Introduction of the project;
- Chapter 2: Specification of general requirements for the SOW where those requirements are of a general nature (i.e. applicable to most NATO software acquisition projects);
- Chapter 3: Specification of project specific SOW requirements that are of a character that have been specially identified for this project.

1.8   Applicable documents

[43]   Applicable documents provide details not explicitly set out through this SOW. They shall be considered by the Contractor as requirements associated with this SOW.

Table 1-1   Applicable documents

[ACMP-2009-SRD-41]	Examples of CM Plan Requirements, Edition A, Version 1, March 2017, NATO Standardization Office (NSO)
[AQAP-2110]	NATO Quality Assurance Requirements for Design, Development and Production, Edition D Version 1, JUNE 2016, NATO Standardization Office (NSO)
[INTEL-FS2-Special-Provisions]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – CONTRACT SPECIAL PROVISIONS – Book II, Part III, NCI Agency
[INTEL-FS2-General-Provisions]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – CONTRACT GENERAL PROVISIONS – Book II, Part III, NCI Agency
[NCIA AI TECH 06.03.01, 2016]	NATO Communications and Information Agency - Agency Instruction 06.03.01, "Identification of Software Assets", 2016.

1.9   Reference documents

[44]   Reference documents are documents providing contextual information that is relevant to this project. They shall be used by the Contractor to support his activity.

Table 1-2   Reference documents

[ADMP-1]	Guidance for Developing Dependability Requirements, Edition A, Version 1, 14 August 2014, NATO non-classified
[ADMP-2]	Guidance for Dependability In-Service, Edition A, Version 1, August 2014, NATO non-classified
[AIA/ASD SX000i, 2016]	International guide for the use of the S-Series Integrated Logistic Support (ILS) specifications (issue 1.1)
[ALP-10]	NATO Guidance on Integrated Logistics Support for Multinational Armament Programs
[ASD S3000L]	International Procedure Specification for Logistics Support Analysis (LSA), 2011
[C-M(2002)49-G]	Enclosure "G" to C-M(2002)49: Classified Project and Industrial Security, Amdt 12, Sep 2015
[DOORS]	IBM® Engineering Requirements Management DOORS, https://www.ibm.com/support/knowledgecenter/en/SSYQBZ_9.7.0/com.ibm.doors.requirements.doc/topics/c_welcome.html
[INTEL-FS2-InformationModel]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – Information Model Book II - Part V, NCI Agency
[Jira]	Atlassian Jira, https://www.atlassian.com/software/jira
[MIL-HDBK-338B]	Electronic Reliability Design Handbook, US Department of Defense, 1 October 1998
[MIL-HDBK-470A]	Designing and Developing Maintainable Products and Systems, Volume 1, US Department of Defense, 4 August 1997
[MIL-STD-1388-1A]	Logistics Support Analysis, 11 April 1983
[MIL-STD-1388-2B]	Logistics Support Analysis Records, 28 March 1991
[MIL-STD-1629A]	Procedures for Performing A Failure Mode, Effects and Criticality Analysis (FMECA), 24 November 1980
[SOA-IdM]	CO-14176-SOA-IDM Service Oriented Architecture (SOA) and Identity Management (IdM) Platform – Wave 1, System Design Specification (SDS) and Interface Control Document (ICD), NCI Agency
[SonarQube]	SonarQube, https://www.sonarqube.org/

2 General Requirements

[45] This section defines requirements that generally could be applied to acquisition of any software application for the NATO Bi-SC AIS.

2.1 Project Management Requirements

[46] The goal of the Contractor's project management will be to guide the project through a controlled, well-managed, visible set of activities to achieve the desired results and, wherever possible, to eliminate problems and to ensure that those problems that do occur are identified early, assessed accurately, and resolved quickly in partnership with the Purchaser.

2.1.1 Project Management Office

[SOWG-1] The Contractor shall establish and maintain a Project Management Office (PMO) to perform and manage all efforts necessary to discharge all his responsibilities under this Contract.

[SOWG-2] The Contractor shall provide all necessary manpower and resources to conduct and support the management and administration of operations in order to meet the objectives of the project, including taking all reasonable steps to ensure continuity of personnel assigned to work on this project.

[SOWG-3] The Contractor shall use PRINCE2 or a similar and internationally recognized Project Management standard for the direction, governance and management activities for the entire project.

[SOWG-4] The personnel identified below shall be considered as Key Personnel in accordance with the Special Provisions of this Contract.
(1) Project Manager;
(2) Quality Assurance Manager;
(3) Configuration Manager;
(4) Technical Team (see section 3).

[SOWG-5] Location of work: Unless otherwise specified by the Work Package or approved by the Purchaser, the main effort for this Project shall be carried out in the Contractor's premises.

[SOWG-6] The Contractor's team shall be located together to enable agile execution of the work (e.g. conducting daily stand-up meetings).

2.1.1.1 Project Manager

[SOWG-7] The Contractor shall designate a Project Manager (PM), who shall direct and co-ordinate the activities of the Contractor's project team.

[SOWG-8] The Contractor's Project Manager shall be prepared at all times to present and discuss the status of Contract activities with the Purchaser's Project Manager, Contracting Officer, or Technical Lead.

[SOWG-9] The Contractor`s Project Manager shall meet the following qualifications:
(1) Have a master's degree in management, engineering, or business administration;
(2) Have a formal certification through Project Management Institute or equivalent source, PRINCE 2 certified or equivalent;

(3) Have seven years of experience in managing projects similar to this project in technical and financial scope;

(4) Have a NATO SΞCRET clearance.

2.1.1.2 Quality Assurance Manager

[SOWG-10] The Contractor shall designate a Quality Assurance Manager; who shall be responsible for all Quality Assurance Manager for activities under this Contract.

[SOWG-11] The Quality Assurance Manager shall report to a separate manager within the Contractor's organisation at a level equivalent to or higher than the Project Manager.

[SOWG-12] The Contractor's Quality Assurance Manager shall meet the following qualifications:
(1) Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
(2) Have worked at least four years with quality control methods and tools;
(3) Have worked at least four years with supporting system development and test projects;
(4) Have a NATO SΞCRET clearance.

2.1.1.3 Configuration Manager

[SOWG-13] The Contractor shall designate a Configuration Manager, who shall be responsible for all configuration activities conducted under this Contract.

[SOWG-14] The Contractor's Configuration Manager shall meet the following qualifications:
(1) 3 years' experience as Configuration Manager in Projects of a similar nature, both in terms of the products to be delivered and the level of technicality;
(2) Have a NATO SΞCRET clearance.

2.1.1.4 Other Key Roles

[47] The required qualifications for other key roles in the Contractor's project team are defined in section 3 (Project-Specific Requirements)

2.1.2 Project Management

[SOWG-15] The Contractor shall establish and maintain a Project Management Plan (PMP) as defined in section 2.5.2.1.

[SOWG-16] The Contractor shall provide the initial baseline version of the PMP at the kick-off meeting and maintain it throughout the period of performance of the Contract.

[SOWG-17] After approval by the Purchaser, the final version of the PMP shall be the official document against which the Contractor is expected to conduct the performance of the Contract.

[SOWG-18] The approval of the PMP by the Purchaser signifies only that the Purchaser agrees to the Contractor's approach in meeting the requirements. This approval in no way relieves the Contractor from its responsibilities to meet the requirements stated in the Contract. The requirements of the Contract

supersede any statement in the PMP in case of any conflict, ambiguity or omission.

[SOWG-19]   The Contractor shall ensure that the Purchaser always have access to the latest version of the PMP, and that the PMP remains current throughout the duration of the Project to reflect the actual state of the Contractor's organisation and efforts.

2.1.3   Risk Management

[SOWG-20]   The Contractor shall establish a risk management process and perform risk management throughout the period of performance of this Contract.

[SOWG-21]   The Contractor shall document, update and maintain status of all risks in the Risk Register (see section 2.5.2.2).

[SOWG-22]   The Contractor shall update and maintain the Risk Register throughout the period of performance of the Contract.

2.1.4   Issue Management

[SOWG-23]   The Contractor shall establish and maintain a process for identifying, tracking, reviewing, reporting and resolving all project issues.

[SOWG-24]   The Contractor shall develop and maintain an Issue Register (see section 2.5.2.3) where all project issues are recorded and tracked regardless of their status.

[SOWG-25]   The Contractor shall use the Issue Register to track reported bugs in software previously delivered by the Contractor under this Contract.

[SOWG-26]   The Contractor shall update and maintain the Issue Register throughout the period of performance of the Contract.

[SOWG-27]   The Contractor shall ensure that the Purchaser always have access to the latest version of the Issue Register.

2.1.5   Configuration Management

[SOWG-28]   The Contractor shall be responsible for all necessary Configuration Management activities throughout the duration of the Contract.

[SOWG-29]   The Contractor shall establish and maintain a Configuration Management Plan (CMP) in compliance with section 2.5.2.4 that describes how the Contractor will implement Configuration Management within the project.

[SOWG-30]   All Contractor and Purchaser activities and milestones related to CM shall be identified and included in the Delivery Plans schedules (see section 2.5.3.1).

[SOWG-31]   The Contractor shall be responsible for the Configuration Status Accounting (CSA) and reporting for all CIs.

[SOWG-32]   Upon request from the Purchaser, the Contractor shall support configuration audits to demonstrate that the actual status of all CIs matches the state of CIs as registered in the CSA reports; this support shall include:
(1)   Providing the required baseline documentation;
(2)   Answering questions from the Purchaser's Auditor;
(3)   Summarizing the audit results in a Configuration Audit Report and providing this report the Purchaser's approval.

[SOWG-33]   The Contractor shall ensure that the Configuration Baselines and CIs are persistently stored, maintained and managed in the Configuration Management Database CMDB.

[SOWG-34]   The Contractor shall keep the CMDB consistent and updated throughout the duration of the project.

[SOWG-35]   The Contractor shall before FSA conduct a handover of a fully populated CMDB instance (including the full history of all changes to the CIs) to the Purchaser.

[SOWG-36]   The Contractor shall solve any deficiencies found during the Configuration Management Audits within the agreed timeframe and update the baseline accordingly.

2.1.5.1   Configuration Management (CM) Database (CMDB) and CM Tools

[SOWG-37]   The Contractor shall establish and maintain a CMDB that persists the Configuration Items (CIs) attributes, (inter-) relationships/ dependencies, and Configuration Baselines.

[SOWG-38]   The CMDB and CM Tools shall to the maximum extent possible integrate with, or use, the Azure DevOps tools provided within the NSF.

[SOWG-39]   The CMDB and CM Tools shall to the maximum extent possible support DevOps practices and integrate with tools used for automated deployment to production where such deployment scripts also are managed as CIs.

[SOWG-40]   Each CI in the CMDB shall be assigned a unique identifier.

[SOWG-41]   The CIs in the CMDB shall be organized around working and executable software units (e.g. applications or executable services).

[SOWG-42]   The top-level CIs in the CMDB shall be broken down into a tree/ hierarchy of its parts and sub-parts consisting of deliverables, the relevant documentation of these deliverables, all dependent third party components and libraries and respective documentation.

[SOWG-43]   The CMDB shall have support for tracing higher and subordinate CIs using CI identifiers or other CI attributes.

[SOWG-44]   It shall be possible from the CMDB, at any time, to generate Configuration Status Reports for any specified baseline where the report provides a full history on all CIs in the baseline including information on changes, deviations/ waivers, releases, etc.

[SOWG-45]   The CMDB/ CM Tools shall support generation of Configuration Status Accounting (CSA) Reports in two different formats:
(1)   Readable document format (either in PDF or Microsoft Word format);
(2)   XML format in accordance with a Contractor proposed XML schema.

[SOWG-46]   A baseline in the CMDB shall:
(1)   Be defined by version controlled artefacts that all resides in the proper repositories in the NSF;
(2)   Include (off-the-shelf) software and (off-the-self) software license(s) where all software license(s) shall be registered with the NCI Agency as the end-user;
(3)   Include all (supporting) documentation, e.g. off-the-shelf OEM manuals, operations and maintenance support documentation, training

documentation, quality assurance documentation, security documentation, configuration management documentation, and warranty documentation.

[SOWG-47]   The CMDB shall implement support for baselining of Configuration Items (CIs) into the Functional Baseline (FBL), Allocated Baseline (ABL), and Product Baseline (PBL).

[SOWG-48]   It shall be possible from the CMDB and CM Tools to generate a package (as one or several electronic files) with all the artefacts included in a PBL release.

[SOWG-49]   The Contractor's PBL version numbering strategy shall be compliant with [NCIA AI TECH 06.03.01, 2015].

[SOWG-50]   The Contractor shall not use any names that can be associated with the Contractor (e.g. company name) on any of the developed software artefacts (i.e. file names, class names, XML namespaces, etc.)

[SOWG-51]   The CM Tools using the CMDB shall have support for comparison of baselines and precisely identify the changes to the individual items from one baseline to the other (including versions of third-party software components and libraries).

2.1.5.2   Engineering Change Proposals (ECP)

[48]   The ECPs can be categorized by type and class as defined in Table 2-1

Table 2-1   ECP type and class

Type	Class	Definition
NP (New Product)	I	The development of a new capability in order to implement functionalities to meet new requirements.
PE (Product Enhancement)	I	The addition or modification of functionalities to existing capabilities to meet changing requirements (change in the fit-for-purpose).
PC (Product Correction)	I or II	The correction of existing capabilities in order to maintain their functionalities to meet existing requirements (change in the fit-for-use).
DC (Documentation Change)	II	The correction or improvement of documentation. This type of ECP does not affect any other configuration item type.

[SOWG-52]   The Contractor shall prepare and process the ECP for engineering, design, or development changes.

[SOWG-53]   The Contractor shall use the configuration control procedures specified in the CMP for the preparation and processing of ECPs.

[SOWG-54]   The Contractor shall use the ECP format as defined in the CMP when submitting ECPs.

[SOWG-55]   The Contractor shall in the ECP:
(1)   Include a unique ECP reference number;
(2)   Describe the rationale for the change;
(3)   Describe the nature of the change (Deletion, Modification, or Addition);

> (4) Describe what impact the change will have on the delivered capability's cost, schedule, scope, and/or performance (this description shall include any trade-offs that shall be considered);
> (5) Identify the SOW and SRS section(s) affected;
> (6) Include, or reference, an updated Solution Decision Document (SDD), see section 2.5.3.2, that records the analysis and options considered for the proposed change;
> (7) Propose a Priority and a Schedule for the change;
> (8) Propose a Classification for the change (as either Class I or Class II ECPs as defined in Table 2-1).

[SOWG-56]   Class I ECPs shall have to be mutually agreed upon by the Contractor and Purchaser.

[SOWG-57]   The Contractor shall submit all Class II ECPs to the Purchaser for review and classification concurrence before starting implementation of the change.

[SOWG-58]   The Contractor shall, after the Purchaser's approval of the ECP, update the SDD with a reference to the Purchaser-approved ECP.

[SOWG-59]   Where a change affects more than one document, or affects documents previously approved and delivered, the Contractor shall update and properly reflect the change in all baseline documents affected by that change.

[SOWG-60]   The Contractor shall place all submitted ECPs under configuration control.

2.1.5.3 Requesting Deviations/ Waivers

[49]   A Request for Deviation (RFD) is defined as "planned departure" from a specific requirement where "departure" defined as the "inability of a product to meet one of its functional performance or technical requirements".

[50]   A Request for Waiver (RFW) is defined as "unplanned departure" from a specific requirement.

[SOWG-61]   If required, the Contractor shall submit RFDs/ RFWs for Purchaser's approval.

[SOWG-62]   The Contractor shall be aware that permanent departures from contractual requirements shall be accomplished by ECP action rather than by RFD.

[SOWG-63]   The Contractor shall use the RFD/ RFW format as defined in the CMP when submitting RFDs/ RFWs.

[SOWG-64]   The Contractor shall in the RFD/ RFW:
> (1) Include a unique reference number;
> (2) Identify the requirement that cannot be fully met (to include references to the affected CLIN in the SSS and the requirement(s) in the SRS);
> (3) Describe what impact the departure will have on cost, schedule, ILS, scope, and/or performance;
> (4) Description of the deviation/ waiver;
> (5) Justify the departure from the specific requirement.

[SOWG-65]   The Contractor shall place all submitted RFDs/ RFWs under configuration control.

2.1.5.4 Deficiency Reporting

[SOWG-66] The Contractor shall establish and maintain a process for reporting, tracking, and resolving deficiencies.

[SOWG-67] The Contractor shall use Deficiency Reports (DRs) to document problems during the design, configuration, implementation, or operation of the system.

[SOWG-68] The Contractor shall close out DRs after the identified problem is resolved.

[SOWG-69] The Contractor shall place all DRs under configuration control.

2.1.6 Security Aspects

[51] Security aspects relevant to the Contractor's work are defined in the Contract Special Provisions (see [INTEL-FS2-Special-Provisions]) document and in the Contract General Provisions document (see [INTEL-FS2-General-Provisions]). This section identifies additional security oriented requirements related to the execution of the Contractor's work.

[SOWG-70] The Contractor shall ensure that all software implementation activities in the NSF is kept at NATO UNCLASSIFIED level.

2.2 Quality Assurance (QA) Requirements

[SOWG-71] The Contractor shall comply with the requirements as defined [AQAP-2110].

[SOWG-72] The Contractor shall provide a Quality Plan (QP) as defined by [AQAP-2110] to the Purchaser.

[SOWG-73] The Contractor shall manage the QP as a living document subject to revision/update, as required.

2.2.1 Audits

[52] The Purchaser reserves the right to perform Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities.

[53] Audit activities at Sub-supplier's facilities do not relieve the Contractor and Subcontractors from any contractual quality responsibilities.

[SOWG-74] The Contractor shall fully support the Purchaser in performing Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities activities and in particular:
   (1) Host inspection visits by Purchaser's auditors;
   (2) Make himself available for answering questions and furnishing information related to the project;
   (3) Allow the Purchaser's auditors to inspect and monitor the Contractor's processes applicable to this project.

[SOWG-75] The Contractor shall transfer to the Purchaser's auditors all information deemed necessary to perform the activities, on his own initiative or on request by Purchaser's auditors.

2.3 Integrated Logistics Support (ILS) Requirements

2.3.1 General

[SOWG-76] [The Contractor activities and milestones related to ILS shall be identified and included in the WP Delivery Plans.

[SOWG-77] The Contractor shall use the [ALP 10-2016] and [AIA/ASD SX000i, 2016] specification as guidance when establishing and conducting the ILS Process (i.e. Integrated Logistics Support – ILS Process), in accordance with the requirements of the contract.

[SOWG-78] The Contractor shall use [ADMP-1], [ADMP-2], [MIL-HDBK-338B], [MIL-HDBK-470A], [MIL-STD-1388-1A], [MIL-STD-1388-2B] and [ASD S3000L] as guidance when establishing and conducting the Logistic Support Analysis (LSA) programme, including the Reliability, Availability, Maintainability and Testability (RAMT) programme, in accordance with the requirements of the Contract.

[SOWG-79] All ILS related deliverables and activities shall be aligned with the incremental delivery approach of the project, and be delivered as required.

2.3.2 Integrated Logistics Support Plan (ILSP)

[SOWG-80] The Contractor shall provide and maintain an ILSP, tailored to the project and in accordance with the requirements of this section.

[SOWG-81] The Contractor shall detail in the ILSP how ILS will be designed, managed, procured and provided throughout the system lifetime.

[SOWG-82] The Contractor shall provide an updated version of the ILSP to the Purchaser for each milestone for Purchaser acceptance, and update it as required to reflect the changes in baselines.

[SOWG-83] The Contractor shall cover the following sections at minimum including the processes to perform the related activities in ILSP:
(1) The Contractor's ILS organization, roles, responsibilities and procedures;
(2) Maintenance Concept (Maintenance Plan, detailed Maintenance Level definitions and tasks);
(3) Planning of supply support (System Inventory, Codification, Recommended Spare Parts and Consumables list);
(4) Design Influence:
  (a) RAMT Programme planning, activities, processes;
  (b) Logistics Support Analysis planning, activities and processes;
  (c) Support Case planning, releases and processes.
(5) Support and Test Equipment Lists;
(6) Computer Resources (licences, SWDL etc.);
(7) Manpower and Personnel Requirements;
(8) Technical Documentation (organization, process, inputs, reviews, release schedule);
(9) Planning of packaging, handling, storage, and transportation (PHS&T);
(10) Planning of supply chain security;
(11) In-Service Support Plan (ISSP).

[SOWG-84]   The Contractor shall provide an In Service Support Plan (ISSP) as an annex to the ILSP and the ISSP shall cover the following topics at minimum with practical instructions:

(1)   The Contractor's Support organization, roles, responsibilities, processes and procedures (until FSA; during warranty and optional support period);

(2)   Description of the system of interest (SOI) in scope of integrated support,

(3)   Description of the integrated support concept, including the maintenance concept, warranty concept, customer support concept, service management & control concept including but not limited to the incident, problem management, release and deployment management, and configuration and change management;

(4)   Description of the parties involved, their responsibilities for the various levels of support (with indication of start and end dates), interfaces, response times and POC details;

(5)   Description and allocation of operation, SM&C and corrective and preventive maintenance tasks required to operate and maintain the system;

(6)   Description of the Sustainability measures (obsolescence management, failure reporting, performance monitoring, reliability and availability assessment and reporting);

(7)   Procedures to follow when any part of the system fails; response times for analyses and resolution by the Contractor;

(8)   Comprehensive lists (as applicable) of all available software licenses (SWDL), support software tools, COTS documentation, technical documentation, training documentation and manuals;

(9)   Description of services during optional Contractor Logistics Support (CLS) period.

[SOWG-85]   The Contractor shall provide the latest ISSP as part of each release and finally before FSA milestone achievement.

2.3.3 Maintenance and support concept

2.3.3.1 Definitions

[54]   <u>Level of Support</u>: Level of support indicates a specific extent of technical assistance in the total range of assistance that is provided by an information technology product to its customer. The Service management is divided in three different level of service, which interface each other, in order to activate the proper level of maintenance in accordance with the event (incident) happened on the system.

[55]   <u>Level of Maintenance</u>: are various echelons at which maintenance tasks are performed on systems and equipment. The levels are distinguished by the relative sophistication of skills, facilities and equipment available at them. Thus, although typically associated with specific organisations and/or geographic locations, in their purest form, the individual maintenance levels denote differences in inherent complexity of maintenance capability.

[56]   <u>First Level Support Process</u>: implements the Incident Management process in accordance with the ISO/IEC 20000 and Information Technology Infrastructure Library (ITIL) framework or equivalent; As part of the Incident Management, the Service Desk receives the issue from the user, puts it into a standard format

(Trouble Ticket (TT)), performs an initial assessment and distributes it to the predefined actors to solve it

[57]   Second Level Support Process: implements the Problem Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Problem Management process receives the TT from the Service Desk and performs the following tasks (not limited to):
(1)   (Re-)evaluation of TT category, criticality and priority,
(2)   Identification of the root cause of the issue (e.g. by issue replication testing),
(3)   Identification of workarounds,
(4)   Identification and initial planning of possible short, medium and long-term solutions (e.g. workarounds, patches, or new baseline or CI releases),
(5)   Create Problem Analysis Report and Change Request incl. schedule of implementation, and synchronisation with the Baseline Maintenance process;
(6)   Presentation of the Problem Analysis Report and Change Request to the Change Control Board (CCB) for approval,
(7)   Monitor and Control the approved Change Request during implementation,
(8)   Trigger 3rd Level Support and/or 3rd Level Maintenance process to implement the Change Request, in case the incident cannot be solved at 2nd level;
(9)   Perform the post- Change Request implementation review.

[58]   Third Level Support Process: implements the Deployment and Release Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Deployment and Release Management process receives the approved Change Request from the 2nd Level Support and performs the following tasks (not limited to):
a.   Activating Level 3 maintenance when new solutions shall be developed;
b.   Development of the solution (e.g. new CI Fix, Repair, Replacement, Patch, or Release);
c.   Testing of the solution (e.g. Regression testing, issue/deficiency replication testing);
d.   Update of baseline content and status;
e.   Release of the solution (release unit/record);
f.   Delivery and deployment of the solution.

[59]   First Level of Maintenance: It is responsible for the very basic maintenance activities. It is responsible to activate the second level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding O&M Manual. All 1st Level Maintenance procedures do not require specialised tools and/or specialised personnel.

[60]   Second Level of Maintenance: It is responsible of isolation and resolution of system-level maintenance and management of deficiency reports and repair. It is responsible to activate the third level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding Manual. All 2nd Level Maintenance procedures do not require specialised tools and/or specialised personnel.

[61]   Third Level of Maintenance: It is responsible of any support that involves a change to the system baseline, such as software patches or new releases. It is responsible of specialised hardware repair, if applicable. Third level maintenance is activated by third level support and can be initiated either to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive

maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/ or site specific procedures that are defined in the corresponding Manual. 3rd Level Maintenance procedures can require specialised tools and/ or Personnel

[62]　　Fourth Level of Maintenance: It is the hardware vendor or the software original developer. It is activated from the 3rd level of maintenance only when it is needed.

2.3.3.2　General Requirements

[SOWG-86]　　The Contractor shall develop and maintain the Maintenance and Support Concept that defines the maintenance and support environment, constraints, locations, procedures, artefacts, roles and responsibilities (Responsible, Accountable, Consulted and Informed (RACI), organisation and personnel skills to maintain the Delivered baselines.

[SOWG-87]　　The Contractor shall design/deliver the system/elements and the Operation/Support/Maintenance documentation, training (when applicable), instructions, and resources (skills, tools/test equipment) in order to allow the Purchaser to fully operate the system, to perform Level 1, Level 2 and Level 3 Maintenance and Support from the first SW release.

[SOWG-88]　　Until FSA, the Contractor shall be responsible for the Level 2, Level 3 and Level 4 maintenance and support activities for the releases.

[SOWG-89]　　Starting from FSA and until the end of warranty period, all maintenance activities beyond Purchaser capabilities/skills (Level 3 and Level 4 maintenance) required to restore the System from a critical failure shall be carried on by the Contractor by dedicated on-site interventions and/or off-site resolutions.

[SOWG-90]　　The Contractor shall ensure the Maintenance and Support Concept refers to the functional and non-functional Requirements of the System.

[SOWG-91]　　The Contractor shall define the 2nd and 3rd Level Support process interfaces to the other processes, including the existing NCIA Service Desk (1st Level of Support) and various NATO locations, organisations.

[SOWG-92]　　The Contractor shall ensure the process interface definition includes the input and output information, its structure, the communication path (i.e., Points of Contact (POC)), the time constraints for sending and receiving information, and quality criteria to evaluate the integrity of the interface. This shall include the related ITIL Processes to be tailored and detailed for the purposes of Support Concept.

2.3.4　Design Influence

2.3.4.1　Reliability, Availability, and Maintainability (RAM) Requirements

[SOWG-93]　　The Contractor shall develop its RAM Programme and perform the analysis based on the RAM metrics and requirements outlined in the SRS.

[SOWG-94]　　The Contractor shall ensure the design of the system includes sufficient redundancy and other Reliability, Maintainability, Availability and Testability measures to ensure the RAM requirements in this Contract are achieved and attained at an optimal Total Cost of Ownership (TCO), minimising preventive

maintenance, manpower requirement and usage of special-to-type tools and test equipment.

[SOWG-95]   The RAM analysis shall clearly capture and display the RAM characteristics of each main component, aggregated up to the level of sub-system, and subsequently the entire system. System breakdown in line with the configuration item structure shall be used as reference to perform the analysis.

[SOWG-96]   The RAM analysis shall include the reliability prediction based on the proposed design solution and created Reliability Block Diagrams (RBD), as well as the reliability allocation model to include to trigger the design changes

[SOWG-97]   The RAM analysis shall include Failure Modes, Effects and Criticality Analysis (FMECA) in accordance with [MIL-STD-1629A].

[SOWG-98]   The Contractor shall ensure that the first issue RAM analysis is performed and delivered for each increment, to include all relevant data to demonstrate compliance with the SRS and SOW requirements. Such data shall be documented in the Support Case as outlined below.

2.3.4.2 Logistics Support Analysis (LSA)

[SOWG-99]   The Contractor shall conduct a Logistic Support Analysis (LSA) Process, tailored to support the specific scope of the System operation activities.

[SOWG-100]   The Contractor's LSA analysis shall include, as a minimum:
(1)   Task Analysis for identification of operational tasks, SM&C tasks, administration and maintenance tasks (corrective, preventive, adaptive)
(2)   Planning and execution of the O&M Procedures Verification Test with references to the Master Test Plan.
(3)   Total Cost of Ownership Analysis, which shall include the warranty cost and all the operational costs and all the maintenance cost for all the support and Maintenance levels for at least 5 years after FSA

[SOWG-101]   The Contractor shall ensure that Operation tasks are identified through analysis of the functional and non-functional requirements of the new system taking into account mission scenarios and conditions under which the system will be operated.

[SOWG-102]   The Contractor shall ensure that maintenance tasks are identified using the RAM data and results.

[SOWG-103]   For each task in Task Analysis, the Contractor shall determine the properties and physical resources required to execute the task. For that purpose, each task shall be analysed to identify and capture:
(1)   The support level to be assigned;
(2)   Location/ facility involved;
(3)   Personnel skills required;
(4)   Roles;
(5)   Task duration and frequency, reusing Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) data available;

[SOWG-104]   The Contractor shall ensure the data and results of the Task Analysis are used as input to the development of technical publications and the development of training material.

2.3.4.3 Support Case

[SOWG-105]   The Contractor shall develop and maintain the necessary Support Cases in which all LSA and RAM activities shall be documented. The Support Case shall include:
(1)   System description and breakdown down to lowest level of maintenance significant items and in accordance with the CI structure and identifications;
(2)   All COTS equipment datasheets, clearly indicating the reliability and maintainability characteristics which will be used as input for LSA and RAM;
(3)   Availability, Reliability, and Maintainability analysis modelling, calculations and results (complete set of RBDs, FMECA including a list of critical items);
(4)   The complete data set of the Task Analysis, including listings of all operation tasks, administrative tasks, corrective maintenance tasks and preventive maintenance tasks;
(5)   References to deliverable test plans and other relevant testing documentation for RAM requirements verification and validation;
(6)   The results from the O&M Task Procedures Verification Test.

[SOWG-106]   The Contractor's Support Case shall form a body of evidence, providing justification for all data used and sufficient credibility that all LSA and RAM requirements outlined in SOW and SRS have been met by providing credibility to the data used and the results achieved in all calculations and models.

[SOWG-107]   The Contractor shall ensure that the Support Case is delivered before the completion of each increment in accordance with the scope, to include all relevant data to demonstrate compliance with the SRS and SOW requirements.

2.3.5 Training

2.3.5.1 Training Plan

[SOWG-108]   The Contractor shall develop and provide a Training Plan that describes how the Training requirements outlined in this Contract will be met.

[SOWG-109]   The Contractor shall describe in this plan the approach to training, milestones, organization and resource requirements, management structure, interrelationships and other tasks related for training development.

[SOWG-110]   The Contractor shall develop and provide a Training Plan that describes the training documentation for each course including but not limited to the syllabuses, schedules, course prerequisites (both for attendees and physical resources), course descriptions and training materials, method of evaluations (if applicable) and instructors.

[SOWG-111]   The Contractor's Training Plan shall describe the requirement to perform the training in a physical classroom at Purchaser locations, or requirements for performing the training in a virtual classroom as remote training sessions.

[SOWG-112]   The Training Plan shall define training modules and/ or courses required to enable all initially assigned Purchaser personnel to maintain the system at Level 1, 2 and 3, see also [SOWG-229] in section 2.4.5.2.7.

2.3.5.2 Training Material

[SOWG-113]   Each training course material shall be provided for Purchaser review minimum 8 weeks before the start of the training courses.

[SOWG-114]   The Contractor shall generate the following Training Material:
(1)   Training syllabus;
(2)   Student manual;
(3)   Instructor guide and material;
(4)   Learning guide;
(5)   Quick reference card.

[SOWG-115]   The Contractor shall include, in the Training presentation materials, all slides/ information to be presented by the instructor during the course.

2.3.5.3 Training the Purchaser's O&M team

[SOWG-116]   The Contractor shall provide all training modules and courses required to enable Purchaser's O&M personnel to maintain the system at Level 1, 2 and 3.

[SOWG-117]   The training courses shall cover all aspects of the Maintenance and Administration Manual (MAM), see section 2.5.4.4.

[SOWG-118]   The Contractor shall provide all the appropriate training documentation to support the Purchaser O&M personnel to test, operate and maintain the system.

[SOWG-119]   The training of the Purchaser's O&M team shall be conducted one time before each release of new Contractor provided software to production. I.e. the Contractor shall deliver this type of training as many times as the Contractor delivered software is made ready for deployment to production.

[SOWG-120]   The training shall normally take place in person at the Purchaser's premises (in the Netherlands or in Belgium at the discretion of the Purchaser), but a video conference might be acceptable.

2.3.6 Supply Support

2.3.6.1 System Inventory

[SOWG-121]   The Contractor shall provide the Purchaser's ILS POC with a System Inventory in electronic Microsoft Excel format at least 14 (fourteen) calendar days before each software release.

[SOWG-122]   The System Inventory shall include, in separate chapters, all items furnished under this Contract, as follows and as applicable:
(1)   All SW artefacts – i.e. all SW tools, SW test equipment, etc.;
(2)   All Purchaser Furnished Items (PFI);
(3)   All documentation, such as manuals, handbooks and drawings;
(4)   All training materials.

[SOWG-123]   Additionally, the Contractor shall provide a detailed Software Distribution List (SWDL), which shall detail comprehensively all CSCIs and associated software, firmware or feature/performance licenses provided under this Contract. The SWDL shall include, the following data elements:
(1)   CSCI identification number;
(2)   Nomenclature;

(3)   Version number;
(4)   License key (if applicable);
(5)   License renewal date (if applicable);
(6)   Warranty expiration date;
(7)   Date of distribution.

[SOWG-124]   The Contractor shall make sure that all licenses are registered with the NCI Agency as end-user.

2.3.6.2 Physical labelling (if applicable)

[SOWG-125]   In case hardware (CD, USB, memory stick, hard drive etc.) is used to deliver or transfer the software by the Contractor, then this hardware shall be physically labelled with the contract information, CLIN, identification, release date and security classification. The label shall be durable and non-erasable to ensure proper identification is warranted at all times.

2.3.6.3 SW shipment (if applicable)

[63]   Note: As all software should be developed in the NSF, the two following requirements only apply to software developed outside of the NSF.

[SOWG-126]   Unless clearly specified otherwise, the Contractor shall be responsible for the delivery of Installation packages (physical/electronic media) of all SW, firmware and modifications provided under this Contract from Contractor's premises to the respective implementation destination.

[SOWG-127]   14 (fourteen) calendar days before each delivery of supplies, the Contractor shall provide the Purchaser with a Notice of Delivery comprising the following details:
(1)   Shipment Date;
(2)   Purchaser Contract Number;
(3)   CLIN;
(4)   Consignor's and Consignee's name and address;
(5)   Number and type of Installation media and/or Packages/Containers;
(6)   Number of 302 Forms used (if applicable).

2.3.6.4 Customs

[SOWG-128]   The Contractor shall be responsible for customs clearance and/or export licences of all deliveries into their destination countries. It is the Contractor's responsibility to take into account delays at customs. The Contractor shall therefore consider eventual delays and arrange for shipment in time. Under no circumstances can the Purchaser be held responsible for delays incurred, even when utilising Purchaser provided Customs Form 302 (if applicable).

2.3.7   Warranty Requirements

[SOWG-129]   The Contractor shall warrant that all software furnished under this Contract and all installation work performed under this Contract conform to the requirements and is free of any defect in code or workmanship for a period starting at date of Final System Acceptance (FSA) to date of FSA plus one (1) year.

[SOWG-130]   The Contractor shall support the system as part of the project implementation scope from the first site activation until FSA milestone is

successfully completed. During this period, the Contractor shall provide on-site and off-site maintenance and support services as required.

[SOWG-131]   The Contractor shall integrate the 3rd Level Maintenance and Support services within its warranty services, to be provided off-site from the Contractor's premises or on-site from the Purchaser premises, as required due to the corrections in SW. If the on-site Level 3 support is requested by the Purchaser for additional technical support or due to the changes in SW environment without any reported SW deficiency, then the Contractor shall provide this on-site support up to 6 times a year without any additional cost to the Purchaser.

[SOWG-132]   The Contractor shall provide a specific Customer POC for all warranty and support requests. The Contractor shall detail all the warranty and support requirements in its ISSP including the roles and responsibilities.

[SOWG-133]   The Contractor shall ensure that the warranty conditions remain valid even if the software is relocated/ redeployed to an equivalent platform during the warranty period.

[SOWG-134]   The Contractor shall fix all software defects as per the Contractor's internal procedures with the highest priority allocated. The Contractor shall provide the workaround within maximum 3 business days and the fixed solution within 20 business days after the Purchaser has provided the failure notification in written. The Contractor shall follow the Configuration and Change Management processes before the release of each fix. For this purpose the Contractor shall identify the changes, propose to the Purchaser, perform the test activities required and perform the Release Management activities.

[SOWG-135]   The Contractor shall provide 3rd Level maintenance, when requested by the Purchaser, to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs.

[SOWG-136]   If the Contractor becomes aware at any time before acceptance by the Purchaser that a defect exists in any Contract deliverables, the Contractor shall coordinate with the Purchaser and promptly correct the defect.

[SOWG-137]   During the warranty period, the Contractor shall be responsible for supplying all COTS software upgrades and updates.

[SOWG-138]   The availability of COTS software upgrades and updates shall be made known to the Purchaser and, if proposed for introduction by the Contractor (including any corrective action for an identified fault), shall always be subject to Purchaser approval. The Contractor shall support the Purchaser to update the CMDB with information on all changes made to CIs in the warranty period.

[SOWG-139]   The Contractor shall provide Technical Assistance, during business hours between 08.30-17.30 CET, to the Purchaser or his representatives during the warranty period. Technical assistance information details shall be indicated in the ISSP.

[SOWG-140]   The Technical Assistance shall provide on-call support in English for requests that correspond to information demands limited to the perimeter of

delivered products, evolution proposals, problem reports, or any information needed by the Purchaser or its representatives, which are not included in the supplied technical documentation. The Contractor shall not be responsible for the correction of defects in Purchaser furnished property, except for defects in installation, unless the Contractor performs, or is obligated to perform, any modifications or other work on such property. In the event described above, the Contractor shall be responsible for correction of defects that result from the modifications or other work.

2.3.7.1 COTS Component Warranty Requirements

[SOWG-141]   The contractor shall warrant the COTS Software components warranty whose duration shall be consistent with the identified Warranty Period.

[SOWG-142]   The Contractor shall coordinate the COTS Software warranty activation with the Purchaser in order to facilitate the system's handover to the Service Provision Authority.

2.3.7.2 Developed Components Warranty Requirements

[SOWG-143]   The Contractor shall be able to extend the warranty for a further period based on Purchaser's request.

[SOWG-144]   The price of the extended warranty shall be consistent with the bid prices, and shall be negotiated at the time of extension.

[SOWG-145]   The Extended warranty shall provide the same coverage as the original warranty and guarantee of the reliability of the Software Component under conditions of ordinary use.

2.4   Work Execution Requirements

2.4.1   NATO Software Factory (NSF)

[64]   The NCI Agency is moving towards a short-cycle capability development approach embracing a high degree of componentization and reuse through services, leading to composite capabilities with a much shorter time to in-service value, cost optimization and transparency. The approach makes use of standardized software engineering processes and common tooling in a test and development cloud DevSecOps Platform (the NSF) shared by NCI Agency, Industry and potentially by Nations.

[65]   The NSF toolchain includes a number of tools that the Contractor can make use of in execution of this work including:
   (1)   Azure DevOps
   (2)   GitLab
   (3)   Jira
   (4)   Jenkins
   (5)   Nexus
   (6)   SonarCube

[SOWG-146]   The Contractor shall, unless otherwise agreed with Purchaser, use the NSF as the platform for all software engineering, implementation work, and testing (including system integration testing).

[SOWG-147]   As the Contractor can only create and maintain engineering artefact at unclassified level on the NSF, the Contractor shall

     (1)   On occasions be able to use mock data values (e.g. mock domain values) and/ or data structures to enable work at unclassified level;

     (2)   For any module/ component where it is not feasible to do work at unclassified level (using mock data is not feasible), be able to do the work in Contractor's own secure software engineering environment at NATO RΞSTRICTED level.

[SOWG-148]   The Contractor shall when feasible use existing NSF tooling (see list above) for managing the project engineering artefacts. The Contractor may propose additional tooling for managing engineering artefacts on the NSF for Purchaser's approval.

[SOWG-149]   The Contractor shall organize the engineering artefacts in a structured and logical way that will enable the Purchaser to quickly find any artefacts based on context (e.g. work package, increment/ deliverable, etc.) and artefact type.

2.4.2 Meetings – General Requirements

[SOWG-150]   Meetings and phone calls shall be conducted in English.

[SOWG-151]   Unless otherwise specified, at least one week before all meetings required under this Contract, the Contractor shall send an invitation, including:
     (1)   Purpose;
     (2)   Agenda;
     (3)   List of participants;
     (4)   Date, hour, place, duration.

[SOWG-152]   The Contractor shall record meeting minutes and provide the minutes to the Purchaser within 3 working days.

[SOWG-153]   The Minutes shall include:
     (1)   Date, place, and time of the meeting;
     (2)   Purpose of the meeting;
     (3)   Name of participants;
     (4)   Approval of previous meeting's minutes and all resolutions
     (5)   Record of principle points discussed, actions taken, and decisions made;
     (6)   Copies of materials distributed at the meeting.

[SOWG-154]   The minutes shall not be used as a mechanism to change the terms, conditions or specifications of the Contract nor as a vehicle to alter the design or configuration of equipment or systems. Such changes shall only be made by agreement, amendment or by authorized mechanisms as set forth in the Contract.

[SOWG-155]   If meeting facilities at a Purchaser location are not available at the specified Purchaser location in the time frame required to support an in-person meeting, the Contractor shall:
     (1)   Reschedule the meeting to such time as meeting facilities are available at the Purchaser location, with no further adjustment to schedule or cost; or
     (2)   Provide suitable meeting facilities (e.g., hotel meeting facility) for the meeting/review at no additional cost to the Purchaser; or
     (3)   Arrange to host the meeting at the Contractor's facility. This facility shall be provided at no additional cost to the Purchaser.

2.4.3   Kick-Off Meeting

[66]   The Purchaser will prior to the Kick-Off Meeting provide the initial MoSCoW prioritization to all the requirements as defined in the SRS. Note: The periodization is used in this contract for scheduling reasons. I.e. at the end of the project all requirements are expected to be fulfilled.

[67]   The MoSCoW priorities for the WP requirements will be updated at regular interval based on the performance and progress of the work delivered by the Contractor.

[68]   The preparation for and the conduct of the Kick-Off meeting is depicted in Figure 2-1.

[SOWG-156]   The Contractor's key personnel shall meet with the Purchaser's Project Manager no later than 1 month after efficient date of contract (EDC). The meeting will normally take place in person at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-157]   The Contractor shall one week prior to the meeting submit to the Purchaser:
              (1)   The Project Management Plan (see 2.5.2.1);
              (2)   The initial WP Delivery Plans for all of the project work packages (see 2.5.3) that as a minimum shall include the work breakdown structure (WBS) and schedules (see section 2.5.3.1);
              (3)   The Risk Register (see 2.5.2.2);
              (4)   The Issue Register (see 2.5.2.3).

[SOWG-158]   The Contractor shall be prepared to present the Project Management Plan, the initial WP Delivery Plans for all of the project work packages, the Risk Register, and the Issue Register.

[SOWG-159]   The initial WP Delivery Plans shall include:
              (1)   A plan to deliver all requirements as defined in the SRS;
              (2)   The start and end time of all work packages where the Contractor's schedule shall be in accordance with the Contractor's bid. Note: This initial schedule will be the basis for progress and performance monitoring. The Purchaser may agree to schedule adjustments and re-baselining progress and performance monitoring milestones at WP start-up pending these adjustment are justifiable.

[69]   The Purchaser will review the PMP for concerns (for instance unacceptable replacement of key personnel where the replacement personnel does not have the skill sets compliant with the requirements set forth in this SOW). If there are concerns with the PMP, then the Purchaser will not give the Contractor the permission to proceed.

[70]   The Purchaser will provide feedback to the Contractor on the WBS and schedule.

[71]   The Purchaser will review the Risk Register and the Issue Register for concerns to the execution of the contract. If the registers are properly initialized with acceptable risks and manageable issues and contains appropriate mitigation/ action plans, the Purchaser will give Contractor permission to proceed.

[SOWG-160]   The Contractor shall verify that the Contractor's key personnel (in particular the SW developers) have access to the NSF.

Figure 2-1   Kick-Off Meeting
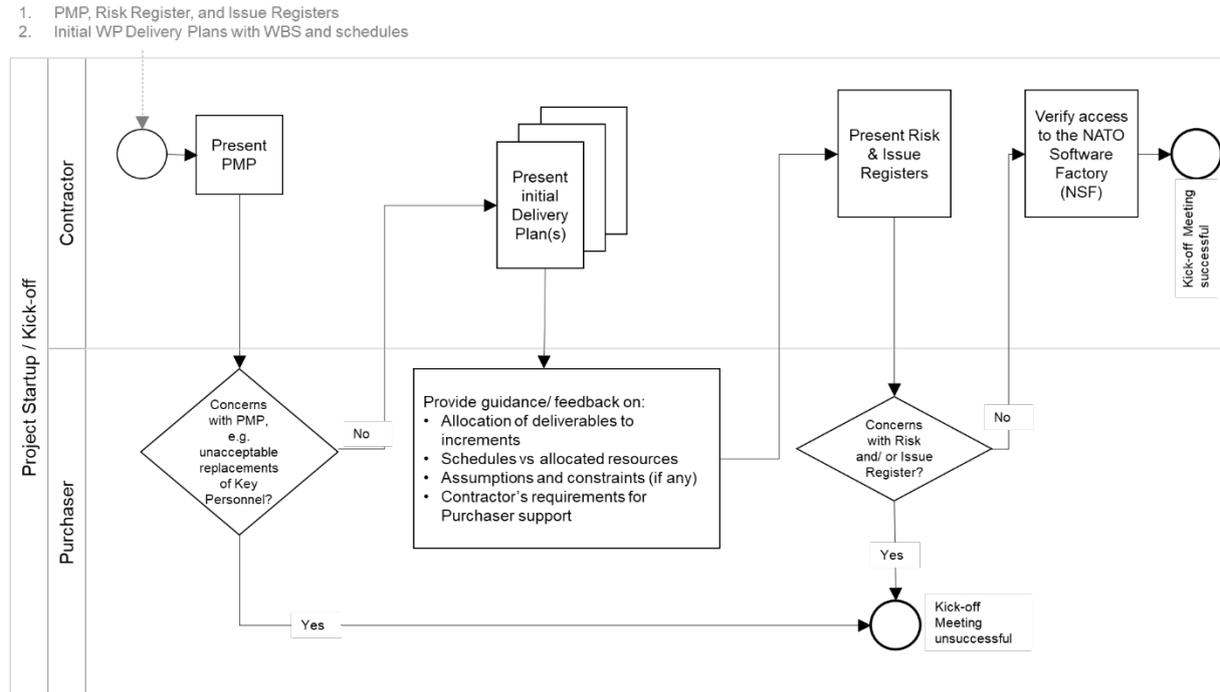
2.4.4   WP Start-up and Execution

2.4.4.1   WP Start-up Meeting

[72]   The preparation for and the conduct of the WP-Start-up Meeting is depicted in Figure 2-2.

[SOWG-161]   The Contractor's key personnel shall meet with the Purchaser's Project Manager. The meeting will normally take place in person at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-162]   The Contractor shall submit a refined WP Delivery Plan (see section 2.5.3) and other supporting material to the Purchaser minimum a week prior to the WP Start-up Meeting. This shall include:
(1)   An extract of the CMDB, in the form of a Functional Baseline (FBL), that defines all configuration items of relevance for the WP;
(2)   A work breakdown structure (WBS) defining all increments in time (start and end time) and the deliverables planned for each increment (see section 2.5.3.1);
(3)   An initial Solution Description Document (SDD) (see section 2.5.3.2) which describes the overall solution design that can justify that the WP functional and non-functional requirements will be fulfilled;
(4)   The full Deliverable Requirements Traceability Matrix (DRTM) as defined in section 2.5.3.3. I.e. it shall
(a) Contain all WP requirements;
(b) Define delivery status for each requirement (NOT_STARTED);
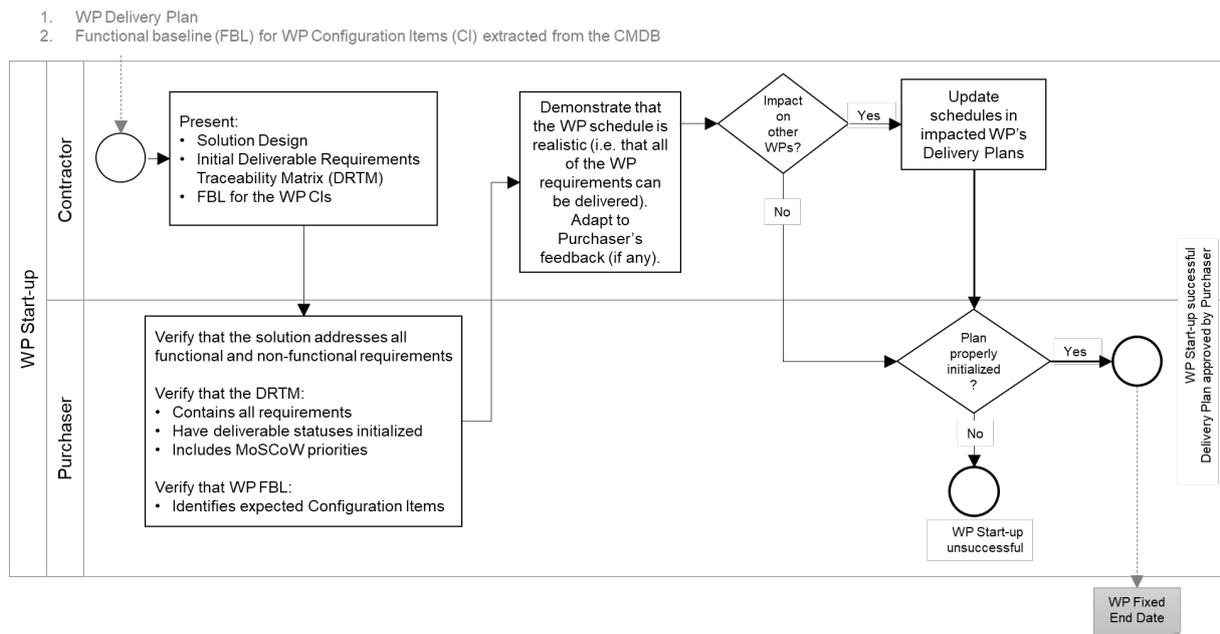(c) Specify initial MoSCoW priority for each requirement.

[SOWG-163]   The Contractor shall at the meeting present the refined WP Delivery Plan. The presentation shall be:
    (1)   Demonstrating that the WP schedule is realistic and that a team of skilled personnel has been allocated that matches the identified resource requirements;
    (2)   Demonstrating that the solution design will address the SRS requirements;
    (3)   Demonstrating the initial DRTM;
    (4)   Demonstrating that the FBL contains all expected CIs.

[73]   The Purchaser will review the Delivery Plan and if agreeing with the plan give Contractor permission to proceed.

[SOWG-164]   In case the Contractor choses to adapt the Delivery Plan to accommodate any Purchaser's recommendation and those changes have an impact of any other work packages, then the Contractor shall update all affected Delivery Plans.

Figure 2-2   WP Start-up Meeting

1.   WP Delivery Plan
2.   Functional baseline (FBL) for WP Configuration Items (CI) extracted from the CMDB

[74]   An outcome of the WP Start-up meeting is the identification of a Fixed WP End-date.

2.4.4.2 WP Execution

[75]   After a successful WP start-up the project will, as shown in Figure 2-3, run through a set of increments, where each increment will consist of a series of sprints where the duration of a sprint should never exceed 4 weeks.

[76]   Each increment will include a delivery acceptance event where the deliverable(s) are scrutinized against the SRS requirements. If the deliverables are not accepted by Purchaser additional work (through added sprints) will have to be performed by the Contractor to reach the acceptance criteria.

[77]   Following a successful delivery acceptance the delivered capability may be released to production.

[SOWG-165]   The Contractor shall be cognisant of the fixed WP End-date and throughout the WP track the progress of implemented deliverables against the fixed WP
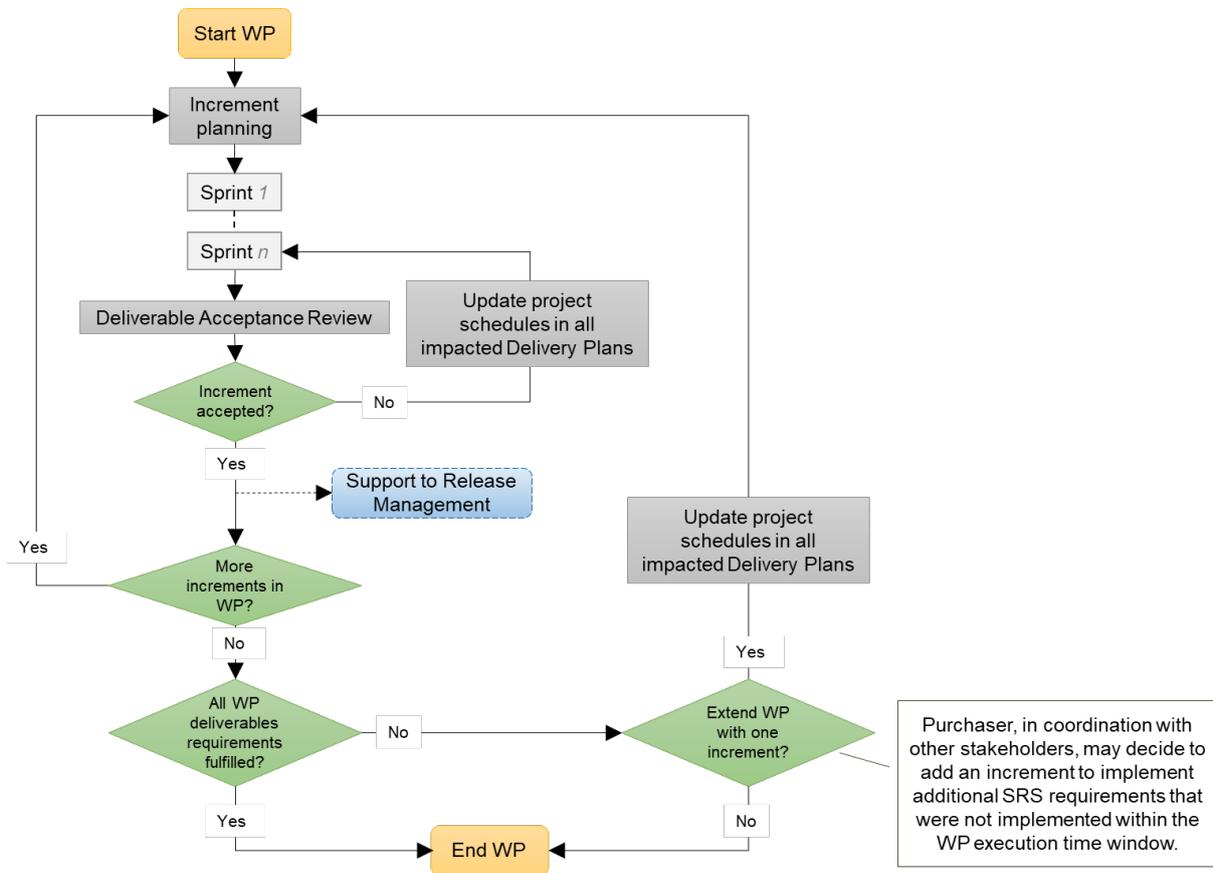
End-date, and whenever a potential schedule slippage is identified take corrective actions to prevent the schedule slippage.

[78]   At the end of the last planned increment in the WP the Purchaser may, in coordination and agreement with other project stakeholders, decide to extend the WP with one or more additional increment(s) to implement unfulfilled requirements.

[SOWG-166]   The Contractor shall, in case the WP is extended with additional increment(s), update the WP's Delivery Plan, and also update Delivery Plan's for WPs if they are impacted by the extension (e.g. if a subsequent WP cannot start before the WP being extended ends).

[SOWG-167]   The Contractor shall for the additional increment(s) implement remaining requirements in an order defined by priorities defined by the Purchaser.

Figure 2-3   WP execution

2.4.5   Increment Start-up and Execution

2.4.5.1   Increment Start-up Meeting

[79]   The preparation for and the conduct of the Increment-Start-up Meeting is depicted in Figure 2-4.

[SOWG-168]   The time and duration of each Increment Start-up Meeting shall be in accordance with the schedule established in the Delivery Plan at the WP Start-up meeting.

[SOWG-169]   The Contractor's key personnel shall meet with the Purchaser's Project Manager. The meeting will normally take place in person at the Purchaser's

facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-170] The Contractor shall submit the planning artefacts of the Release Package (see section 2.5.4) and supporting material for the increment to the Purchaser minimum a week prior to the Start-up Meeting. This shall include:
(1) A Scope and Requirements Analysis (see section 2.5.4.1). In case the increment deliverable includes any user interface (UI) applications the analysis shall also include UI wireframes[1] for all user interfaces to be implemented;
(2) An Integrated Logistics Support (ILS) Plan (see section 2.5.4.2);
(3) A Test Plan including test cases and test report templates (see section 2.5.4.3);
(4) If applicable, Site Activation Test Plan and Report templates (see section 2.5.4.6);
(5) An extract of the CMDB, in the form of an Allocated Baseline (ABL) that is an enrichment of the FBL that now includes information on third-party components and libraries and their licence costs and/ or constraints.

[SOWG-171] The Contractor shall prior to the meeting provide the Purchaser with the latest version of the Solution Description Document (SDD) with content in accordance with section 2.5.3.2.

[SOWG-172] The Contractor shall prior to the meeting, with a minimum of one week notice to the Purchaser, state the need for:
(1) Prerequisites and required documentation;
(2) Purchaser provision of specific subject matter knowledge transfer.

[SOWG-173] The Contractor shall one week prior to the meeting provide the Contractor with a Schedule Assessment Analysis that:
(1) Report on accumulated schedule slippage over previous WP increments (if any) and the estimated impact on the on the WP Fixed End-date.
(2) Report on mitigations that will be implemented in the starting increment to reduce the schedule slippage with the goal of delivering the WP in accordance with the WP Delivery Plan schedule.

[80] The Purchaser will at the meeting review:
(1) The Scope and Requirements Analysis. If proposed changes are deemed to resolve inconsistencies or ambiguities, or suggests no-cost improvements, the Purchaser may approve the proposed changes. Any accepted changes to requirements will be updated in the relevant contractual documents;
(2) The Schedule Assessment Analysis.

[81] The Purchaser will support the Contractor with:
(1) Prerequisites (if feasible);

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[1] A wireframe is expected to be a low fidelity sketch (sometimes literally a pen and paper sketch) of the UI. The wireframes must convey main features, functions and content of a user interface, without getting into the visual design
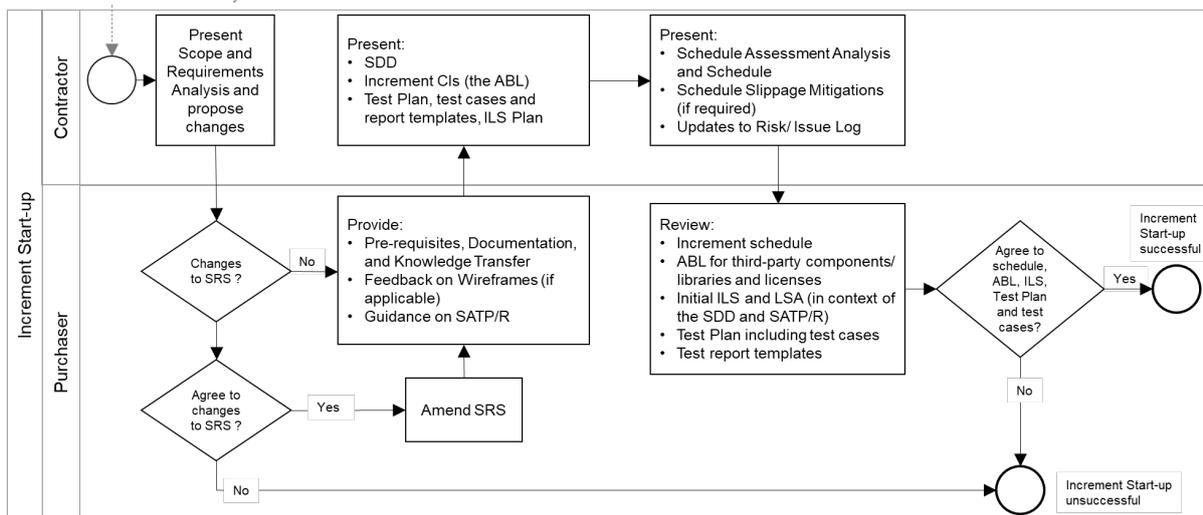
(2) Documentation that is relevant to the contract and can be provided by the Purchaser at no cost to Purchaser;

(3) Knowledge Transfer (if requested);

(4) Guidance on UI Wireframes (if applicable);

(5) Guidance on the solution design;

(6) Guidance on the presented plans and report templates.

[82] The Purchaser will agree to start-up of increment pending acceptable ABL, acceptable quality and completeness of plans, test cases, report templates, and increment schedule.

[SOWG-174] The Contractor shall at the end of the meeting update the Risk Register or Issue Register to reflect the outcome of the Schedule Assessment Analysis.

Figure 2-4   Increment Start-up Meeting
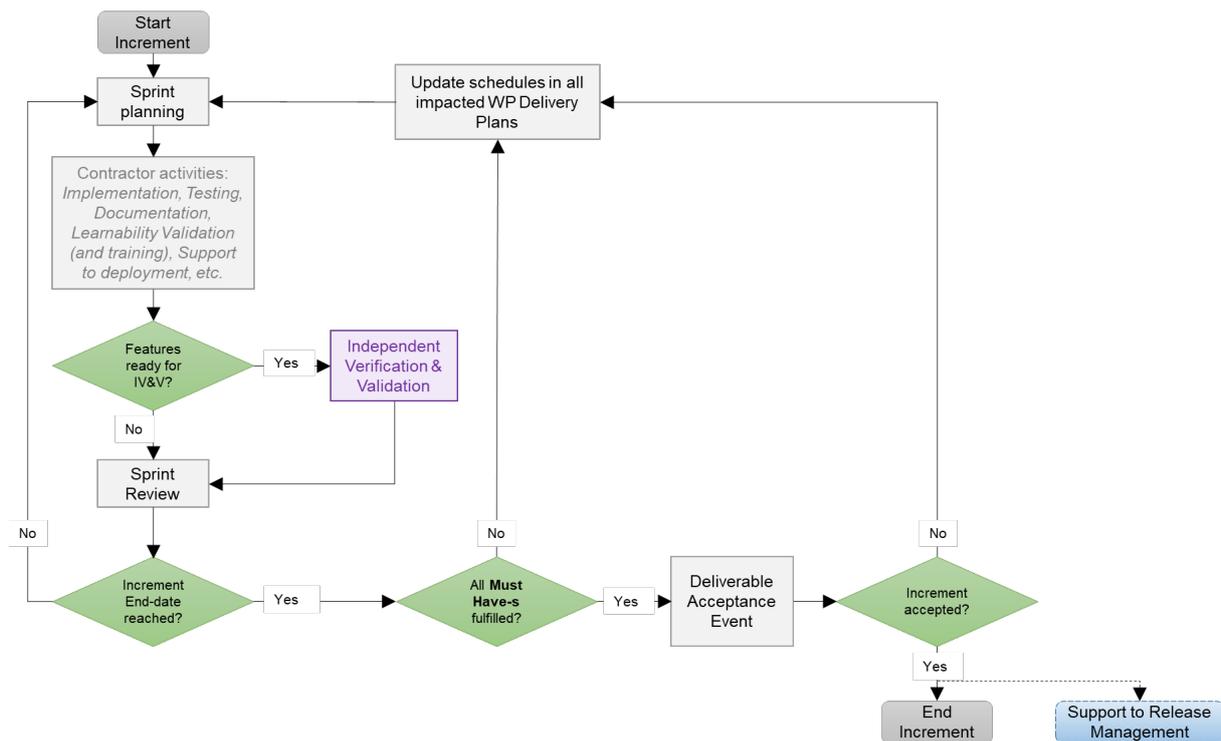

2.4.5.2 Increment Execution

[83] After a successful Increment Start-up the project will, as shown in Figure 2-5 run through a number of sprints.

[84] As features become ready (i.e. the Contractor has tested the features and produced the required test reports), the Purchaser will submit those features for Independent Verification & Validation (IV&V). The IV&V will be conducted by the Purchaser, and the Contractor will have to (upon Purchaser's request) support such IV&V activities at no additional cost to the Purchaser. This support includes:

(1) Presenting test plans and test cases at Increment start-up meetings;

(2) Presenting and reporting on test results at sprint review meetings;

(3) Participating in ad hoc discussions on test results (e.g. in case IV&V identifies potential bugs);

(4) Supporting Purchaser in setting up additional installations on the NSF (the expectation here is that the SW is easily installable and that Purchaser's personnel will be able to do this without contractor support);

(5)   Providing answers to question the Change Manager may have to the software submitted into the RFC process.

[85]   In case the Contractor is not able to deliver all requirements at Must Have priority before the end of the increment, another sprint is added, and all project schedules are updated.

[86]   Once the increment ends with all Must Have requirement fulfilled, a final Delivery Acceptance Review is conducted where the Deliverable Acceptance Report (DAR) (see section 2.5.4.7) will be used to formally record acceptance of the increment's deliverables. In case of the DAR being incomplete, or not providing sufficient proof of a successful delivery, the delivery will not be approved and another sprint added to address the DAR deficiencies.

[87]   Following a successful Delivery Acceptance Review, the Increment ends, and the Purchaser may decide to proceed with obtaining approvals for deployment to the production environment. With such an approval, the Purchaser will deploy the Increment's deliverables to the production environment. The Contractor will have to provide support to the Purchaser in the release management activities, see section 2.4.5.2.7.

Figure 2-5 Increment execution

[SOWG-175]   The Contractor shall, in case the increment is extended with an additional sprint, update the WP Delivery Plans for all impacted WPs.

2.4.5.2.1   Sprints

[SOWG-176]   The Contractor shall break up the execution of an increment into a sequence sprints where the duration of a sprint is no longer than 4 weeks.

[SOWG-177]   The Contractor shall conduct a Sprint Planning Meeting and a Sprint Review Meeting and invite the Purchaser to take part in these meetings.

[SOWG-178]   The Sprint Planning and Review meetings shall normally take place at the Contractor's premises, but can, upon Contractor's request be conducted at Purchaser's facilities.

[SOWG-179]   The Contractor shall enable the Purchaser to participate remotely in Sprint Planning and Review meetings using video conferencing technology.

2.4.5.2.1.1   Sprint Planning

[SOWG-180]   The Contractor shall after each Sprint Planning Meeting produce a Sprint Work Plan that shall be provided to the Purchaser.

[SOWG-181]   The Sprint Work Plan shall include:
(1)   A list of project implementation tasks (or user stories) with individual priorities;
(2)   Tasks to implement bug-fixes in the case bugs has been discovered in software functionality previously delivered by the Contractor under this contract;
(3)   Updated UI Wireframes (if applicable);
(4)   Recorded request for specific Purchaser support during the sprint (e.g. support to testing, support to assessing User Interfaces, etc.)

[88]   The Purchaser will participate in the Sprint Planning Meeting with Subject Matter Experts to support the Contractor's planning.

2.4.5.2.1.2   Sprint execution

[SOWG-182]   The Contractor shall every day of the Sprint conduct a scrum meeting.

[SOWG-183]   The Contractor shall facilitate participation of the Purchaser in the daily scrum meetings (e.g. by using the Microsoft Teams tool available through the NSF).

[SOWG-184]   The Contractor shall each day of the sprint (typically at the end of the day) commit the implemented software changes to the Git repository in the NSF where the updated software shall pass the CI/ CD build tests.

2.4.5.2.1.3   Sprint Review Meeting

[SOWG-185]   The Contractor shall at the Sprint Review meeting:
(1)   Report the final status of planned tasks, and achievements and progress in the Sprint, to the Purchaser. Note: this report shall include an assessment from the Contractor on the outlook for being able to deliver all the requirements defined for the increment;
(2)   Provide the Purchaser with a new, updated and working, version of the software being developed. I.e. the Contractor shall make sure that the a Sprint always concludes with new working software.

2.4.5.2.2   Contractor's Test Activities

2.4.5.2.2.1   Managing the increment Test Plan, test cases, and test reports

[SOWG-186]   The Contractor shall maintain (i.e. improve and update if required) detailed test cases for how to perform tests that will produce the test report for the deliverable. I.e. there shall be detailed test cases enabling the production of the following reports:
(1)   Software Quality Metrics Report (SQMR), see 2.5.4.3.4;
(2)   Source Code Review Report (SCRR), see 2.5.4.3.5;

(3)　　Security Test Report (SecTR), see 2.5.4.3.6;
(4)　　Deliverable Functional and Performance Test Report (DFPTR), see 2.5.4.3.7;
(5)　　System Integration Test Report (SITR), see 2.5.4.3.8;
(6)　　Continuous Delivery Assessment Report (CDAR), see 2.5.4.3.9.

[SOWG-187]　　The Contractor shall, when executing automated tests make the output from the tests (i.e. test results) available in the NUnit report XML format.

[SOWG-188]　　Test reports shall be uploaded to the Purchaser test reporting tool in the NSF. The report entry in the reporting tool includes shall include an input field reserved for Purchaser's use (to add remarks to the test result).

[89]　　　　Note: The Purchaser is expecting to use Jira tool with a Test Event Management plugin as the test reporting tool.

2.4.5.2.2.2　Defect management process

[SOWG-189]　　The Contractor shall record provide a reporting and defect management process to be applied throughout the duration of the Project.

[SOWG-190]　　The Contractor shall manage defects in the NSF Jira tool (see [Jira]).

[SOWG-191]　　The Contractor shall classify all deficiencies in accordance with the Purchasers' categorization nomenclature for all defects and non-compliances as defined by Table 2-2, Table 2-3, and Table 2-4.

Table 2-2　　Definitions for defect categorization

Attribute	Definition
Severity	The severity of a defect is the degree of impact that the failure has on the development or operation of a component, a system or a user function. The severity shall initially be proposed by the tester but shall officially be set in agreement with all the stakeholders. When agreement cannot be reached, the Purchaser's PM will set the severity.
Priority	The priority of a defect defines the order in which defects shall be resolved. The priority of the defect shall initially be proposed by the tester but shall officially be set in agreement with all the stakeholders. When agreement cannot be reached, the Purchase's PM will set the priority.
Category	The type of observation identified during the execution of a test case.

Table 2-3   Classification of defects based on severity

Severity	Definition
Critical	The failure of testing of a requirement. The failure results in the termination of the complete system or one or more component of the system. The failure causes extensive corruption of data. The failed function is unusable and there is no acceptable alternative method to achieve the required results.
Major	A significant failure that causes severely impaired functions but does not prevent operational processing. Applies to conditions under which the complete system or one or more component of the system are partially inoperative, but are still usable by the users. A work around may be available, but it may require manual intervention. Examples: • Absence of expected modules/ object or Unit • Failure of business operational process that affects a large group of users • Complete failure of a module
Moderate	The failure does not result in the termination and all functions are available but causes the system to produce incorrect, incomplete or inconsistent results. When resources are available and budgeted, should be resolved.
Minor	The failure does not result in termination and does not damage the functioning of the system. The desired results can be easily obtained by working around the failure.
Cosmetic	The failure is related to the look and feel of the application, typos in a document or user interfaces (amongst others), and not part of the immediate usability or contractual requirements. The failure does not adversely affect the overall system operation.

Table 2-4   Priorities for defect classification

Priority	Definition
Urgent	The defect shall be resolved as soon as possible. Required to complete independent verification and validation activities.
Medium	The defect shall be resolved in the normal course of development activities. It can wait until a new build or version is created.
Low	The defect is an irritant which should be repaired, but repair can be deferred until after more serious defects have been fixed.

2.4.5.2.2.3   Software Quality Metrics Reporting

[SOWG-192]   The Contractor shall, within the Contractor's continuous integration build pipeline, set up an automated software metrics analysis (e.g. using the NSF SonarQube) which shall provide the required software quality metrics for the Software Quality Metrics Report (SQMR) as defined in section 2.5.4.3.4.

[SOWG-193]   The test coverage reported in the SQMR shall be higher than 80%.

[90]   Note the coverage information can be collected using test runner tools like dotCover (see https://www.jetbrains.com/dotcover) when running unit tests and integration tests etc.

[SOWG-194]   An SQMR shall be produced for the relevant deliverable each time new
software is committed back to the deliverable's software repository.

2.4.5.2.2.4   Source Code Review Reporting

[SOWG-195]   The Contractor shall establish routines for peer review of the developed
software and produce source code review reports (SCRR) as defined in
section 2.5.4.3.5.

2.4.5.2.2.5   Security Tests and Analysis and Reporting

[SOWG-196]   The Contractor shall, within the Contractor's continuous integration build
pipeline, set up automated security test that tests security aspects of the
implemented software in accordance with the OWASP Testing Guide. The
automated security tests shall include:
   (1)   Static Application Security Testing (SAST) (e.g. using the NSF
SonarQube);
   (2)   Dynamic Application Security Testing (DAST) (e.g. using OWASP
ZAP);
   (3)   Dependency checking (i.e. security scanning of third-party libraries);
   (4)   Security-related unit and integration tests.

[SOWG-197]   The Contractor shall during source code reviews shall also consider security
in accordance with the OWASP Code Review Guide.

[SOWG-198]   The Contractor shall document all security test and analysis findings in a
Security Test Report (SecTR), see section 2.5.4.3.6.

2.4.5.2.2.6   Functional and Non-functional Tests and Reporting

[SOWG-199]   The Contractor shall whenever feasible develop automated tests, using a
BDD and/ or Acceptance Test Driven Development (ATDD) methodologies,
which tests functional requirements in the SRS and automatically report the
test results to the Purchaser's test reporting tool. For functional requirements
in the SRS where automated tests are not feasible, the Contractor shall
define manual test cases so that with the combination of automated and
manual tests, all functional requirements in the SRS are tested.

[SOWG-200]   The Contractor shall develop automated and/ or manual tests that tests all
testable non-functional requirements in the SRS.

[SOWG-201]   The Contractor shall whenever feasible, and when it provides test value,
implement unit tests to ensure correct functional and non-functional
behaviour of the delivered software.

[SOWG-202]   The Contractor shall perform regression analysis and conduct regression
testing against dedicated regression test cases and report the results as
regression tests.

[SOWG-203]   The Contractor shall as part of these tests conduct, prepare training material
for the Learnability Tests as defined in section 2.4.5.2.3.

[91]   Note: The training material for the Learnability Test will always have to be
developed. However, the Purchaser may decide from reviewing the training material
that the user interface is intuitive and that the actual Learnability Test event will not
be required.

[SOWG-204]   The Contractor shall, if not deemed unnecessary by the Purchaser (see comment above), conduct a Learnability Test event and document the results from this event (see section 2.4.5.2.3 for details).

[SOWG-205]   The Contractor shall update the DRTM (see section 2.5.3.3) and link the DRTM to the functional and non-functional test results.

[SOWG-206]   The Contractor shall document all function, non-functional, and regression tests in the Deliverable Functional and Performance Test Report (DFPTR), see section 2.5.4.3.7.

2.4.5.2.2.7   System Integration Tests (SIT) and Reporting

[SOWG-207]   The Contractor shall in the Test Plan and test cases for the System Integration Tests identify all external interfaces and develop dedicated test cases for each interface.

[SOWG-208]   The Contractor shall, within the continuous integration build pipeline, set up automated testing of all interfaces that the software implements that can be consumed by external systems. The automated test of such interfaces shall:
   (1)   Be implemented as a test harness using an appropriate test framework (e.g. using the NUnit framework)
   (2)   Test all methods of all services according to documented interface/ service specifications.

[SOWG-209]   The Contractor shall deploy the software to a Purchaser Provided reference environment and verify that the implemented software can consume needed services provided by other Bi-SC AIS systems (e.g. Open Geospatial Consortium (OGC) services provided by the NATO CoreGIS system).

[SOWG-210]   The Contractor shall document all SIT tests results in the System Integration Test Report (SITR), see section 2.5.4.3.8.

2.4.5.2.2.8   Continuous Integration & Continuous Delivery Assessment Report

[SOWG-211]   The Contractor shall, within the continuous integration and continuous delivery (CI/CD) build pipeline, set up automated deployment to a Purchaser provided reference environment and verify that the software functions correctly on a platform running the latest NATO security settings.

[SOWG-212]   For software with a user interface the continuous integration shall include automated tests to verify that users can log on and access the application (e.g. using tools like Selenium Webdriver).

[SOWG-213]   Behavioural aspects of the delivered software shall be tested using behaviour driven development (BDD) testing through usage of Gherkin scenarios with a test runner (e.g. Cucumber).

[SOWG-214]   The Contractor shall report on the tests in the Continuous Delivery Assessment Report (CDAR), see section 2.5.4.3.9.

2.4.5.2.3   Learnability Test

[92]   Any developed software that includes user applications with a graphical user interface will normally have a non-functional requirement on the developed applications Learnability. The purpose of the Learnability requirement is to put a high emphasis on delivering good user experience (UX).

[93]   The Purchaser will select a group of people representing the users that are new to the user application developed by the Contractor. The test will be conducted as follows:

(1)   The Contractor will perform a short training session on the user interfaces for the users;

(2)   The Users will subsequently be given a set of tasks covering most of the user interface's functionality, and will be given a time limit to perform these tasks;

(3)   The result of the users' performance in conducting the selected tasks will be used to assess the Learnability of the user interface.

[94]   The Purchaser will most likely select people that will be responsible for providing training on the new user application as the users for these tests. This means that the Purchaser will use these Learnability Tests as an opportunity to 'Train the Trainers".

[SOWG-215]   The Contractor shall produce training material for any new UI functionality. This training material shall:

(1)   Be in the form of a PowerPoint presentation;

(2)   Be based on screenshots from the application user interface;

(3)   Describe all features of the deliverables user interface.

[SOWG-216]   The Contractor shall develop a Learnability Test to be used for assessing the test-users' performance and efficiency in conducted a representative set of key tasks. The Learnability Test shall:

(1)   Include tasks covering all main features of the user interface;

(2)   Enable a user that is a fast learner to conduct all the test steps in a relatively short time (maximum 10 minutes if feasible);

(3)   Define a time limit for how much time the users will be given to conclude the test. This time limit shall be justifiable (e.g. 1.5 times the time it takes the Contractor to do the tests);

(4)   Be designed such that each user's performance is recorded and can be evaluated (e.g. through recorded screen captures, or expected results entered into the application data set, etc.);

(5)   Be of a binary nature (i.e. pass or fail).

[95]   Note: The Purchaser may from studying the Learnability Training material, and from hands-on experience with the delivered software, decide that it will not be necessary to execute the actual Learnability Test event as described in requirements [SOWG-217] through [SOWG-220] below.

[SOWG-217]   The Learnability Tests shall normally be done in person with the Purchaser's selected user group at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but, if feasible, a video conference might be acceptable.

[SOWG-218]   The Contractor shall train the users using the prepared training material (PowerPoint slides) and, if required, perform some limited demonstrations using the application.

[SOWG-219]   The Contractor shall start the test, time the tests, and stop the tests after an agreed end time.

[SOWG-220]   The Contractor shall review the individual test results for all the test users and calculate the following statistics:

(1)   The percentage of users passing each of the tests;

(2)   The percentage of passed tests versus the total number of tests;

(3)   The percentage of passed tests for 80% of the tests with the highest score (i.e. identify the 20% most difficult tests and remove them from the result set before calculating the statistics).

[96]   The Purchaser will compare the test results and the calculated statistics against the Learnability requirement in the SRS.

2.4.5.2.4   Independent Verification and Validation (IV&V)

[97]   The Purchaser will be conducting IV&V activities that will:
(1)   Independently repeat tests conducted by Contractor with the aim of recreating the test results reported by the Contractor;
(2)   Run additional tests. These additional tests may use different data sets, and may include extended system-to-system integration tests;
(3)   Verify that the software can be installed and maintained as described in the Maintenance and Administration Manual (MAM) see section 2.5.4.4;
(4)   Verify that the successful site activation can be verified using a Site Activation Test Plan and Report (SATP/R), see 2.5.4.6 (each release will normally be installed at a minimum to one site, the Purchaser production staging environment).

[SOWG-221]   The Contractor shall support the Purchaser in installing the latest version of the software in up to two separate installations after every sprint.

[98]   The installation of the latest software should be so simple that the Purchaser is able to perform the installation without support. The Purchaser will need these installed versions for parallel ongoing IV&V activities.

[SOWG-222]   The Contractor shall, if required, travel to the Purchaser's facility to support such installation.

2.4.5.2.5   UAT

[99]   At the end of each increment the Purchaser will conduct a user acceptance test (UAT) event that will verify that the new features delivered within the increment is able to support operational intelligence processes and is ready for operational use.

[100]   The UAT will be organized by the Purchaser and it will be conducted from the Purchaser's facility using an installation on the Purchaser's production staging environment.

[SOWG-223]   The Contractor shall be physically present at the first UAT event with the right personnel to be able to support the UAT event. For all other UAT events the Contractor shall provide remote support (e.g. through video conferences) to discuss UAT findings.

2.4.5.2.6   Deliverable Acceptance Review

[101]   The Deliverable Acceptance Review serves as an Increment Close-out Meeting.

[102]   The Deliverable Acceptance Review can take place when all Must Have requirements defined for the increment deliverables have been delivered, and there are no recorded defects with a severity above "Minor" (see section 2.4.5.2.2.2).

[SOWG-224]   At the end of each Increment, the Contractor shall by default meet, in person, with the Purchaser's Project Manager and Purchaser's subject matter experts (SME) at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser) for a

Deliverables Acceptance Review. If agreed between Purchaser and Contractor, the meeting could be done as a video-conference meeting.

[SOWG-225] The Contractor shall one week prior to the Deliverables Acceptance Review provide the Deliverable Acceptance Report (DAR) as defined in section 2.5.4.7.

[SOWG-226] The Contractor shall at the Deliverables Acceptance Review Meeting present:
(1) The updated Deliverable Requirements Traceability Matrix (DRTM) (see section 2.5.3.3) that reflect the deliverables and tests produced/ reported in this release;
(2) A calculation for the total value of the invoice to be submitted for the release. The invoice value shall be calculated as the sum the individual cost value of all successfully delivered requirements in the release.

2.4.5.2.7 Supporting the release to production

[103] Following a successful Deliverable Acceptance Review the Purchaser may proceed with the release management process to obtain the approval to deploy the implemented capability to the production environment. The result of this approval process will be that the implemented capability is included on the NATO Approved Fielded Product List (AFPL).

[104] With the implemented capability on the AFPL list, the Purchaser will seek to deploy it onto the production environment.

[SOWG-227] The Contractor shall support the security testing (penetration tests) of the release management process.

[SOWG-228] The Contractor shall support the Purchaser in meetings, and other communication, with the Change Advisory Board.

[SOWG-229] The Contractor shall, prior to deployment to production, provide Administrator training for the Purchaser's O&M support staff, see section 2.3.5.3.

[SOWG-230] The Contractor shall support the Purchaser in deploying the implemented capability to the production environment.

2.4.6 Final System Acceptance (FSA)

[105] The FSA requirements are defined in the Contract Special Provisions document, see [INTEL-FS2-Special-Provisions].

2.5 Documentation Requirements

2.5.1 Cross-cutting (General) Document Requirements

[106] The Purchaser's default software packages for managing projects are:
(1) Microsoft Office Professional;
(2) Microsoft Project.

2.5.1.1 Formatting and Naming Conventions

[SOWG-231] The Contractor shall use filenames for all documentation deliverables in compliance with the following filename convention [NU|NR]_[Contract

number]_[Name of document]_[v0.x|v1.0].[filename extension] and the fields used in the filename convention shall be used as follows:

(1)   [NU|NR] is the classification of the document: NATO Unclassified or NATO Restricted;

(2)   [Contract number] is the official Purchaser contract number;

(3)   [Name of deliverable] is the Contractor proposed, Purchaser agreed designation of the deliverable;

(4)   [v0.x|v1.0] is the version number in the range (v0.1, v0.2, …, v0.9, v0.10, v0.11, …) for drafts not eligible for acceptance and with v1.0 only for the final deliverable;

(5)   [filename extension] is the standard filename extension, but ".zip" may be used to aggregate multiple files.

[SOWG-232]   COTS documents, such as a vendor supplied user manual, shall retain their original filenames and shall hence not be renamed according to the above filename convention.

[SOWG-233]   All documentation produced under this contract shall adhere to the same presentation style (cover pages, approval pages, headers, footers, headings and paragraphs, font types and sizes within headings and paragraphs), irrespective of the source of the document within the Contractor's team, including any subcontractors except COTS equipment documentation.

[SOWG-234]   All documentation (including source code comments) shall be written in UK English.

[SOWG-235]   The first page shall show the document title, project title, contract number as well as version number and issue date, if applicable, and which shall also be shown on each subsequent page bottom. The first page shall also include the classification headers and footers with the highest classification of information contained in the entire document (including annexes and appendices).

[SOWG-236]   Header and Footer Marking shall show the NATO classification, normally —NATO UNCLASSIFIED — or — NATO RESTRICTED —.

[SOWG-237]   Developed documentation shall contain a Table of Contents. It shall be noted that depending on the type of document, a Table of Content might not be required. This shall be agreed between the Purchaser and Contractor beforehand.

[SOWG-238]   All documents shall contain a preface, containing details of related documents and information on how to navigate the document.

[SOWG-239]   All documents produced under this Contract shall use sans-serif fonts (e.g. Arial, Helvetica, Calibri, etc), and obey the following principles:

(1)   Headings shall be numbered and use bold font-types of sizes higher than the body text (the higher the Heading in the document hierarchy, the larger the font-size);

(2)   No document shall use Headings below level 6 (i.e. 1.1.1.2.3.1 Heading Text);

(3)   Body text (under the headings) shall not use fonts smaller than Arial 10 pt (or equivalent size if another font type(s) is (are) selected);

(4)   Any graphic material generated under this Contract, including network diagrams, shall not use font sizes smaller than Arial 8 (or equivalent size if another font type(s) is (are) selected).

[SOWG-240]　　Larger font sizes than those specified above shall be selected if the corresponding text or drawing is to be reduced in size when embedded in the document, in order to guarantee that the PDF output keeps the font size as specified.

[SOWG-241]　　All documentation developed in Microsoft Word shall be printable if required and therefore the page format shall be A4, printable in loose-leaf form, and possible to be presented bound in stiff backed covers with 4-ringed binders which permit the removal and insertion of individual pages and drawings.

[SOWG-242]　　The convention to be used for numbers appearing in textual documents is for a comma to be the thousands separator and a period to be the decimal separator (e.g., 1,365,276.24).

[SOWG-243]　　The convention to be used for dates appearing in free text (e.g., quoting dates of meetings) is day-month-year and not month-day-year.

[SOWG-244]　　Where documents contain many complex specialized or strongly domain oriented terminologies these shall be defined in a glossary.

2.5.1.2　Distribution

[SOWG-245]　　Documentation shall not contain warnings limiting the rights to use or reproduce the document. The Purchaser reserves the right to make additional copies of any documentation provided under this contract for his internal use.

[SOWG-246]　　All contractual documentation (e.g., change proposals, invoices, etc.) shall be delivered electronically unless specified otherwise by the Purchaser Contracting Officer.

[SOWG-247]　　All electronic copies shall be delivered in a format which is best suited for review and maintenance by the Purchaser. In general the following guidelines shall be used:
(1)　Microsoft Word shall be used for generating text document;
(2)　Microsoft Excel shall be used for tabular or matrix data;
(3)　Microsoft Project shall be used for schedule; and
(4)　Microsoft PowerPoint shall be used for briefings.

[SOWG-248]　　The Contractor shall submit documentation, intended for review by the Purchaser in electronic formats compatible guidelines in [SOWG-247].

[SOWG-249]　　The Contractor shall submit all final and accepted versions of documentation deliverables in electronic format, as PDF. For non-COTS documentation, the documentation shall also be delivered in an editable Microsoft Office format.

[SOWG-250]　　Documentation shall be distributed as follows:
(1)　For all documents unless otherwise instructed: an electronic copy to the Purchaser's Project Manager;
(2)　For contractual documents: an electronic copy to the Purchaser's Contracting Officer and if required and additional hard copy.

2.5.1.3　Review and Updates

[107]　　The Purchaser will when reviewing a document provide comments, corrections, and suggested changes to the Contractor within two weeks of receipt, unless specified differently in this Contract

[108]   The Purchaser reserves the right to return without review a document that has significant deficiencies.

[SOWG-251]   All documentation is subject to Purchaser approval.

[SOWG-252]   The Contractor shall not rely on the Purchaser review to fill in deficiencies or obtain missing Purchaser information.

[SOWG-253]   The Contractor shall resubmit the document as a revised draft incorporating the Purchaser's comments within two weeks after receipt, unless specified differently in this SOW.

[SOWG-254]   If there is a change to an already delivered deliverable, then the Contractor shall be responsible for updating all documentation pertaining to the specific deliverable where the deliverable documentation is affected by the change.

2.5.2 Project Management Documentation Package

2.5.2.1 Project Management Plan (PMP)

[SOWG-255]   The PMP shall identify all major Contractor operating units and any Subcontractors involved in the work and a description of the portion of the overall effort or deliverable item for which they are responsible.

[SOWG-256]   The PMP shall cover all aspects of the project implementation, including the Contractor's project management methodology, project control processes, personnel assignments, and external relationships necessary to provide the deliverables as required by this Contract.

[SOWG-257]   The PMP shall be sufficiently detailed to ensure that the Purchaser is able to assess the Contractor plans, capabilities, and ability to satisfactorily implement the entire project in conformance with the requirements as specified in this SOW.

[SOWG-258]   The PMP shall identify key personnel in the project organization, their qualifications, and their responsibilities.

[SOWG-259]   The PMP shall describe the Contractor's, and Subcontractors', approach to security management, including personnel and facility security.

[SOWG-260]   The PMP shall identify Assumptions and Constraints.

[SOWG-261]   The PMP shall describe methodology used for cost and schedule estimation

[SOWG-262]   The PMP shall include a master schedule that defines the project start-up, all major milestones (to include increment start-up and increment end dates), the project durations (in months from the start-up), and the project end-date.

[SOWG-263]   The PMP shall define all expected Purchase involvements and all expected Purchaser Furnished Items (PFI) and associated timelines.

2.5.2.2 Risk Register

[SOWG-264]   The Risk register shall list all project risks, and indicating for each risk the following information (but not limited to):
(1)   Risk identifier: unique code to allow grouping of all information on this risk;
(2)   Description: brief description of the risk;
(3)   Risk category (e.g. management, technical, schedule, quality and cost risks);

(4) Impact: effect on the project if this risk were to occur;
(5) Probability: estimate of the likelihood of the risk occurring;
(6) Risk rating (High, Medium, Low);
(7) Proximity: how close in time is the risk likely to occur;
(8) Response strategy: avoidance, mitigation, acceptance, transference
(9) Response plan(s): what actions have been taken/will be taken to counter this risk;
(10) Owner: who has been appointed to keep an eye on this risk;
(11) Author: who submitted the risk;
(12) Date identified: when was the risk first identified;
(13) Date of last update: when was the status of this risk last checked;
(14) Status: e.g. closed, reducing, increasing, no change.

[SOWG-265] It shall be possible to export the Risk Register to Microsoft Excel.

2.5.2.3 Issue Register

[SOWG-266] The Issue Register shall comprise the following information (but not limited to):
(1) Issue Number or Trouble Ticket Number (in case the issue is received through 1st Level Support Service Desk);
(2) Issue Type (Request for change, Schedule slippage, 2nd Level Support, general issue such as a question or a statement of concern);
(3) Author;
(4) Date identified;
(5) Date of last update;
(6) Description;
(7) Criticality;
(8) Resolution Analysis;
(9) Status.

[SOWG-267] It shall be possible to export the Issue Register to Microsoft Excel.

2.5.2.4 Configuration Management Plan (CMP)

[SOWG-268] The CMP shall in general comply with the requirements of a CMP as defined in [ACMP-2009-SRD-41], and shall be in the format defined by section 2.1 in [ACMP-2009-SRD-41].

[SOWG-269] Any requirements in the [ACMP-2009-SRD-41] deemed by the Contractor to be not applicable for this contract shall in the CMP be specifically defined as not applicable (N/A) followed by a short justification why the requirement is not applicable.

[109] Note: Requirements in [ACMP-2009-SRD-41] that are expected to be declared N/A for a SW acquisition contract are found in:
(1) Paragraph 3.2.1 - Hardware Configuration Item (HWCI) Identification;
(2) Paragraph 3.7 - Drawing library;
(3) Paragraph 5.1.3 - Interface Control Working Group (ICWG).

[SOWG-270] The CMP shall define the CM organisation including the Configuration Manager role and any other supporting CM personnel. Note: CM personnel shall have sufficient knowledge, experience, responsibility, authority, organisational freedom, organisation independence and security clearance to review and evaluate activities, identify problems and initiate or recommend corrective actions.

[SOWG-271]   The CMP shall be tailored to the requirements of the technical solution, specifically addressing how CM shall be achieved in an Agile project.

[SOWG-272]   The CMP shall be maintained as a living document subject to revisions and updates, as required.

[SOWG-273]   The CMP shall be placed under configuration control throughout the period of performance the Contract.

[SOWG-274]   The CMP shall identify and define all top-level configuration items (CI) to be delivered under this Contract and where these top-level CIs are traced to deliverables as defined in the SSS.

[SOWG-275]   The CMP shall define the format for Engineering Change Proposals (ECP) to be used during this Contract.

[SOWG-276]   The CMP shall defined the format for Request for Deviation (RFD)/ Request for Waiver (RFW) to be used during this Contract.

[SOWG-277]   The CMP shall describe how the Configuration Management Database (CMDB) will be implemented.

[SOWG-278]   The CMP shall define the format for the human readable Configuration Status Accounting (CSA) Report.

2.5.3   WP Delivery Plan

[110]   This section identifies documentation artefacts that are specific to the planning and execution of a work package (WP).

[111]   As shown in Figure 2-6 the WP Delivery Plan consists of:
   (1)   A Functional Baseline (FBL) extract from the CMDB;
   (2)   A Work Breakdown Structure (WBS) identifying all WP deliverables and schedule information for when the individual deliverable is planned to be delivered;
   (3)   A Solution Description Document (SDD) describing the solution design, solution decisions, and service specifications for implemented services;
   (4)   A Deliverable Requirements Traceability Matrix (DRTM);
   (5)   A number of Release documentation sets (see section 2.5.4).

Figure 2-6   WP Delivery Plan
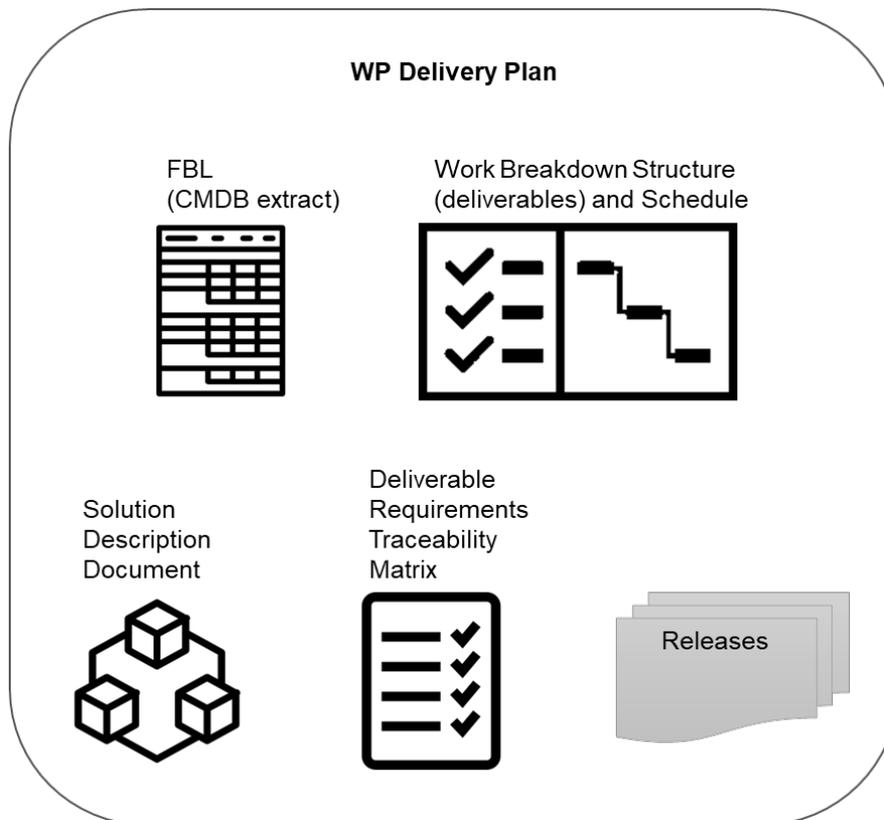
[112]   The requirements defined for a deliverable will each have a Contractor defined cost assigned to it prior to starting an increment and prior to the final prioritization of the deliverable's requirements.

[113]   The requirements defined for a deliverable will be prioritized using the MoSCoW prioritization scheme where the Purchaser prior to starting the increment work, decides the individual priorities of the deliverable's requirements.

[114]   A deliverable will be accepted at the end of an increment pending all of the defined Must Have requirements have been fulfilled, and the deliverable passes all the required tests (see section 2.5.4.7).

[115]   The cost of the implemented deliverable will be calculated as the sum of the individually fulfilled requirements.

2.5.3.1 Work Breakdown Structure (WBS) with Schedule (WBS/ Schedule)

[SOWG-279]   The WBS/ Schedule shall identify each of the deliverables (e.g. applications, services, etc.) using the deliverables identifying code from the CLIN number in the SSS.

[SOWG-280]   The WBS/ Schedule shall group the deliverables by Increment where each Increment is identified by a unique number.

[SOWG-281]   The Level-of-Effort (LOE) in number of person-days shall be defined for each of the deliverables in the WBS/ Schedule.

[SOWG-282]   It shall be possible to view the WBS/ Schedule as a Gantt chart where the start and end time of the increment is depicted. I.e. it shall from this schedule

be possible to identify the time window when a particular deliverable will be delivered.

[SOWG-283] The WBS/ Schedule shall show all key events within the Work Package. The key events shall include:
  (1) All Increment Start-up and Increment Review meetings;
  (2) All Sprint Planning and Review meetings (where the duration of a sprint is expected to be 3 or 4 weeks);
  (3) All Test Events.

[SOWG-284] The WBS/ Schedules for each of the Delivery Plans shall be placed under configuration control throughout the period of performance the Contract.

2.5.3.2 Solution Description Document (SDD)

[116] The purpose of the SDD is to describe solution decisions to a level of detail that the enable the Purchaser to assess the solution's feasibility and ability to fulfil the requirements as defined by the SRS.

[SOWG-285] The SDD shall include a design that includes:
  (1) Diagrams identifying key components and services and how they relate to each other;
  (2) Description of purpose of each of the identified components/ services and a short description of the business logic it will implement;
  (3) Identification of key technologies and frameworks to be used;
  (4) Identification of all 3rd party components and/ or libraries to be used and including licensing information on these;
  (5) Assessment of the proposed solution against the non-functional requirements as defined in the SRS.

[SOWG-286] The SDD shall record all fundamental solution decisions. Each such decision shall include:
  (1) An Issue or Problem Statement paragraph/ subsection, that describes the issue/ problem and including motivation for change, and a reference to SRS requirements, if applicable;
  (2) An Assumption paragraph/ subsection, that provides background information on (external) context, expected future situations, etc.;
  (3) An Alternatives paragraph/ subsection, that describes the alternatives that have been considered, and their implications. These considerations shall include assessment of the alternative against non-functional requirements (including RAMT), risk of obsolescence, lifecycle costs, licensing constraints, and compute resources requirements (processing power and memory);
  (4) A Decision and Justification paragraph/ subsection, that identifies the recommended solution and justifies why this is the preferred solution.

[SOWG-287] The SDD shall identify all COTS and FOSS components and libraries to be included in the solution where this identification shall include Vendor Name, Product Name, SW version, and the full details of the component/ library's lifecycle cost and constraints (license/ subscription fee, licence type, etc.)

[SOWG-288] The SDD shall include detailed information on all aspects of the Contractor's Continuous Integration (CI) and Continuous Delivery (CD) pipeline. This shall include information on the tooling planned to be used, the approach to automated testing in general, automated integration testing, and automated security testing.

[SOWG-289]   The SDD shall, if required, include an Annex for documenting user interface wireframes or mock-ups.

[SOWG-290]   The SDD shall include annexes that documents implemented server-side services (if any), see section 2.5.3.2.1 below.

[SOWG-291]   The SDDs for each of the Delivery Plans shall be placed under configuration control.

2.5.3.2.1   Service Specifications

[117]   The purpose of a Service Specification is to document the service such that:
   (1)   SW developers implementing functionality that consumes the service have sufficient information to build functionality that can successfully interact with the service;
   (2)   Maintenance of the service is possible as the SW maintenance team will have sufficient information to enable them to understand the inner workings of the service.

[SOWG-292]   Service Specifications shall include machine-readable interface files, in a standardized format/ representation (e.g. OpenAPI for describing RESTful services, Web Services Description Language (WSDL) files for SOAP services, etc.)

[SOWG-293]   Service Specifications shall, when applicable, include documentation of, or reference to, an underlying information model.

[SOWG-294]   Service Specifications shall include documentation of the business logic and business rules implemented by the service.

[SOWG-295]   Service Specification shall include documentation on the service non-functional/ performance characteristics (e.g. response times).

2.5.3.3   Deliverable Requirements Traceability Matrix (DRTM)

[118]   The DRTM will be used to track the progress on all the individual requirements of the WP deliverables as defined in the SRS.

[119]   The Purchaser will provide the contracted requirements as an extract from the Purchaser's requirement management system (see [DOORS]) in a format that can be imported into Jira (see [Jira]).

[SOWG-296]   The DRTM shall be integrated with (or if feasible fully implemented in) the Jira tool (see [Jira]) on the NSF (the Jira tool will be provided as PFI in the NSF).

[SOWG-297]   The DRTM shall record the delivery status for all requirements. The delivery status of a requirement shall be {NOT_STARTED, IN_DEVELOPMENT, COMPLETE}.

[SOWG-298]   The DRTM shall for each requirement record references to the location(s) in the software where the requirement is implemented (e.g. file(s), package(s), classes).

[SOWG-299]   The DRTM shall for each requirement include the verification method based on the SRS. The verification methods are defined in Table 2-5.

Table 2-5   Verification methods

Method	Description
Analysis	The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results; analysing the performance of design by running simulations. This method can be used if a test scenario cannot be created at the Test Environment.
Test	The operation of the software element or component, using instrumentation or other special test equipment to collect data for later analysis. Controlled condition, configurations, and inputs are used in order to observe the response. Results are quantified and analysed. This method can be used where user interaction is involved and when computations with input data are necessary.
Demonstration	The operation of the software element or component, that relies on observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis. This method is used to demonstrate a capability to be provided by the requirement.
Inspection	The visual examination of software code, documentation, etc. This method can be used where testing is not possible (e.g. the maximum number of items used as a limitation inside the code).
Special Case	Any special qualification methods for the software element, such as special tools, techniques, procedures, facilities, and acceptance limits.

[SOWG-300]   The DRTM shall for each requirement, in the COMPLETE state, record a reference to the requirement test result within the Deliverable Functional and Performance Test Report (DFPTR) (see section 2.5.4.3.7).

[SOWG-301]   The DRTM shall include a comments field with the test results records that shall be reserved for the Purchaser's use (the Purchaser will use this comments field to raise comments to the test results).

[SOWG-302]   The DRTM shall for each requirement, in addition to recording the individual test result for the requirement, also include a reference to the Deliverable Acceptance Report (DAR) (see section 2.5.4.7), identifying the requirement was formally accepted by the Purchaser.

[SOWG-303]   The DRTM shall for each requirement record that a requirement has been invoiced by providing a reference number to the invoice where the Contractor requested payment for the requirement.

[SOWG-304]   The DRTM shall for each invoiced requirement record the invoice number and date.

[SOWG-305]   The DRTM shall record the current MoSCoW priorities for all requirements in the work package {M, S, C, W}.

[SOWG-306]   The DRTM shall for each requirement record the date for the last change to the requirement's tracking information.

[SOWG-307]   The Contractor shall be able to provide the DRTM in Excel format to the Purchaser where the information is organized in accordance with the following rules:

> (1)   The Excel spreadsheet shall contain the complete DRTM where each attribute of the DRTM is represented by a column, and where each row represents a requirement;
> (2)   The Excel spreadsheet shall be sortable by column values;
> (3)   It shall be possible to organize the information around the individual deliverables for the work package. I.e. all requirements pertaining to a deliverable can be grouped together in subsequent rows in the matrix.

[SOWG-308]   The DRTM shall be placed under configuration control throughout the period of performance the Contract.
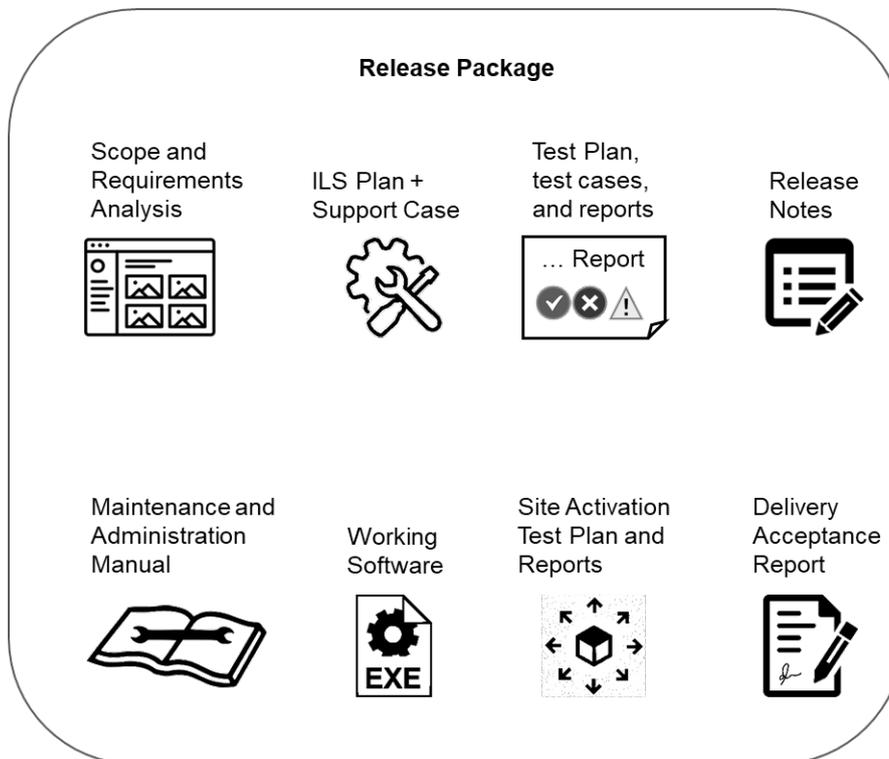
2.5.4   Release Package

[120]   This section identifies documentation artefacts that are specific to the planning and execution of the work required to produce a software release (where the release could be deployed to production). Each WP increment will result in a release; i.e. working software including a set of deliverables.

[121]   As shown in Figure 2-7 the Release Package consists of:
  (1)   A Scope and Requirements Analysis (SRA);
  (2)   An Integrated Logistics Support (ILS) Plan (ILSP) and a Support Case;
  (3)   A Test Plan including test cases and Reports (TP/R);
  (4)   A Release Note;
  (5)   A Maintenance and Administration Manual;
  (6)   A working software component;
  (7)   Site Activation Test Plans and Reports (SATP/R);
  (8)   A Deliverable Acceptance Report (DAR).

Figure 2-7   Release Package

2.5.4.1 Scope and Requirements Analysis (SRA)

[SOWG-309]   The SRA shall include an analysis of all requirements pertaining to the deliverables planned for the next release where this analysis shall:
(1)   Identify potential issues with the requirements for the planned release;
(2)   Propose changes to the requirements definitions to resolve inconsistencies or ambiguities, or to suggest no-cost improvements.

[SOWG-310]   The SRA shall identify any pre-requisites, documentation, and knowledge transfer required for implementation of the Increment's deliverables.

[SOWG-311]   The SRA shall provide UI wireframes (e.g. using Balsamiq Wireframes) or mock-ups for any deliverables in the release that includes user interface (UI) components (the UI wireframes or mock-ups shall also be recorded in the SDD).

[SOWG-312]   The SRA shall identify all documentation artefacts required for the release (to be configuration controlled with the PBL). This list shall include Release Notes, Maintenance and Administration Manual, and Service Specifications (if applicable), etc.

[SOWG-313]   The SRA shall include a general Site Activation Test Plan & Report (SATP/R) that shall defines how the deliverables can be deployed to production, and define the test steps to verify a successful deployment.

[SOWG-314]   Each release shall as a minimum plan for deploying to a staging server on the production environment where the Contractor shall support the Purchaser in the installation and activation at the site.

[SOWG-315]   The SRA and all its individual artefacts shall be placed under configuration control throughout the period of performance the Contract.

2.5.4.2 Integrated Logistic Support Plan (ILSP) and Support Case

[122]   See section 2.3.2 and section 2.3.4.3.

2.5.4.3 Test Plan and Reports (TP/R)

[123]   The purpose of the TP/R is to plan for and record the results of all tests, verification and validation activities for the deliverables of the release.

2.5.4.3.1 General

[SOWG-316]   The TP/R shall be structured in accordance with the deliverable configuration items and the TP/R also shall form configuration items. I.e. the TP/R shall be included in the PBL.

[SOWG-317]   The TP/R shall include:
(1)   Overall Test Plan;
(2)   All test cases for the deliverables planned for the release;
(3)   Software Quality Metrics Report (SQMR);
(4)   Source Code Review Report (SCRR);
(5)   Security Test Report (SecTR);
(6)   Deliverable Functional and Performance Test Report (DFPTR);
(7)   System Integration Test Report (SITR);
(8)   Continuous Delivery Assessment Report (CDAR).

[SOWG-318]   Whenever feasible the test reports shall be automatically generated (e.g. through the NUnit report XML format).

[SOWG-319]   All manually written test reports (in a document format) shall on their front page show how many tests cases that passed, failed or were not run.

2.5.4.3.2 Overall Test Plan

[SOWG-320]   The Overall Test Plan shall describe the Contractor's approach to testing. I.e. how the Contractor will conduct tests that will collect the results to populate the individual reports as defined in section 2.5.4.3.4 through 2.5.4.3.9 below.

[SOWG-321]   The Overall Test Plan shall include templates for all the individual test reports.

2.5.4.3.3 Test cases

[SOWG-322]   The test cases shall document and describe all the test steps that meet or demonstrate Purchaser's requirements with an expected Test Result and pass/fail result.

[SOWG-323]   Whenever feasible, the test cases shall be defined, documented and implemented as executable test code (e.g. as Gherkin scenarios) to enable fully automated tests.

2.5.4.3.4 Software Quality Metrics Report (SQMR)

[SOWG-324]   The SQMR shall be auto-generated from full SonarCube (see [SonarCube]) static code analysis and dependency checking.

[SOWG-325]   The SQMR shall include an analysis on the test coverage achieved.

2.5.4.3.5   Source Code Review Report (SCRR)

[124]   Source code reviews is expected to be produced as a result of peer review of implemented source code. However, tool-based source code analysis (e.g. HP Fortify) could be used instead or in combination to the manual reviews.

[SOWG-326]   The SCRR shall document the source code review findings, and record any action items (or issues) resulting from such reviews, and the latest status of these action items (or issues). The SCRR shall include assessments on:
(1)   Readability of developed code;
(2)   Level of, and quality of, comments embedded in the source code. E.g.:
   (a)   Comments explaining the purpose of a class;
   (b)   Comments explaining what a function does, including descriptions of input parameters and return values;
   (c)   Comments explaining member variables; what the variable means (including unit of measure where appropriate;
   (d)   Comments on type definition explaining what the type represents;
(3)   Compliance with programming style guides and naming conventions;
(4)   Security vulnerability analysis against the Open Web Application Security Project (OWASP) identified vulnerabilities.

2.5.4.3.6   Security Test Report (SecTR)

[SOWG-327]   The SecTR shall record the results of source code analysis of security vulnerabilities, of manual security tests, and of automated security tests.

[SOWG-328]   The SecTR shall describe any security measures that aim to mitigate security issues identified in the SecTR.

2.5.4.3.7   Deliverable Functional and Performance Test Report (DFPTR)

[SOWG-329]   The DFPTR shall report the results of tests that verifies that the deliverable's functional and non-functional requirements (as defined in the SRS) are fulfilled.

[SOWG-330]   The DFPTR shall include test results from a test environment mimicking the actual production environment. This means:
(1)   Test results from the PBL release executing in a reference environment with all the same security constraints, compute resources, etc.;
(2)   Test results from using real operational data in the same volume, size, and quality (or "flaws") as in the production environment.

[SOWG-331]   The DFPTR shall include references to the SRS requirements being tested.

[SOWG-332]   Each individual test record in the DFPTR shall include a unique identifier, a date for when the test was recorded, and an identification of the PBL being tested.

[SOWG-333]   The DFPTR shall include regression testing as required and specifically report on, and record, the results of regression tests performed.

[SOWG-334]   In case a feature has been discontinued and no regression tests has been performed for this feature, this shall be explicitly called out and recorded.

[SOWG-335]   The DFPTR shall, in accordance with section 2.4.5.2.2.2, identify and describe defects found during testing.

2.5.4.3.8   System Integration Test Report (SITR)

[125]   The purpose of this report is to record of testing interfaces used for communicating with external applications and services. Such tests could be done through usage of test harnesses executed as part of the build process (Continuous Integration), or by direct test with the external application and services, or by a combination of the two approaches.

[SOWG-336]   The SITR shall be organized around the interfaces implemented in the PBL release.

[SOWG-337]   The SITR shall record results of integration tests for each of the identified interfaces in the PBL release.

2.5.4.3.9   Continuous Delivery Assessment Report (CDAR)

[126]   The purpose of the CDAR is to track the maturity and quality of the Continuous Integration & Continuous Delivery (CI/CD) processes implemented.

[SOWG-338]   The CDAR shall describe in detail setup of the CI/CD pipeline to include details on:
(1)   The steps in the pipeline;
(2)   What tools are being used;
(3)   What tests are being run.

[SOWG-339]   The CDAR shall describe the main or high-level GitHub activities (Git flows, branches, commits, pull-requests, etc.) for the work of implementing the PBL release.

[SOWG-340]   The CDAR shall include identified weaknesses in the current CI/CD setup and proposal for possible improvements to the CI/CD pipeline.

2.5.4.4   Maintenance and Administration Manual (MAM)

[SOWG-341]   The Contractor shall develop, provide and maintain the System Maintenance and Administration Manual.

[SOWG-342]   The Contractor shall detail all Scheduled and Unscheduled maintenance procedures and all Administration procedures in accordance with the Task Analysis.

[SOWG-343]   The Contractor shall test and validate the procedures and resources described in the MAM and in original equipment manufacturer (OEM) manuals.

[SOWG-344]   The Contractor's MAM shall provide product breakdown list (with CIs), functional descriptions and specifications, screenshots from the software with the procedures required for: deployment, installation, configuration and settings, use of LOG files, security procedures, disaster recovery, backup/restore, BIT/condition monitoring, troubleshooting techniques, test remove/ replace.

[SOWG-345]   The MAM shall describe in detail how to install a new baseline, including description on how to recover the old baseline if the new baseline installation must be aborted. If data migration is needed between baseline versions, the MAM shall describe how to migrate data form the previous baseline to the new baseline.

[SOWG-346]   The Contractor's Maintenance Manual shall provide the description for the usage of all third-party applications needed to configure, manage and maintain the system.

[SOWG-347]   The Contractor's Maintenance Manual shall define the in-depth, step-by-step procedure how to perform the 1st, 2nd and 3rd level corrective and preventive maintenance tasks and SM&C tasks.

[SOWG-348]   The MAM shall include troubleshooting guidance with details on how to solve a full range of potential problems or on how to provide workarounds for potential problems.

[SOWG-349]   The Contractor shall ensure that each and every procedure include as a minimum the following information:
(1)   The support level to be assigned;
(2)   Location/facility involved (if the operation is performed remotely, it has to be specified);
(3)   Personnel skills required;
(4)   Task duration and frequency (if applicable), reusing MTBF and MTTR data available;
(5)   Manpower required;
(6)   Tools, test equipment and special tools required (if any);
(7)   The steps needed to perform the procedure.

2.5.4.4.1   OEM Manuals for COTS products

[SOWG-350]   The Contractor shall provide original OEM manuals for all COTS software installed.

[SOWG-351]   The Contractor shall be responsible to keep the COTS OEM manual under configuration control and to assure that all the COTS OEM Manuals will be always coherent with the operational configuration deployed.

2.5.4.5   Release Note

[SOWG-352]   The Release Note shall identify and explain new features provided in the PBL release.

[SOWG-353]   The Release Note shall identify all Configuration Items in the PBL release that has changed since the previous release.

[SOWG-354]   The Release Notes shall, for the deliverables in the release, identify all known issues and limitations, and workarounds for these.

2.5.4.6   Site Activation Test Plan and Report (SATP/R)

[SOWG-355]   The SATP/R shall describe how the deployment of the new PBL release to the site is tested and verified to be successful.

[SOWG-356]   The SATP/R shall include tests that verifies that the PBL release is fully functional at the site which includes:
(1)   Verifying that the users of the PBL release (if any) can correctly access it and its data;
(2)   Verifying that PBL release's interfaces to external systems is properly configured and functional.

2.5.4.7 Deliverable Acceptance Report (DAR)

[127] The purpose of the DAR is to serve as a record of the Purchaser's formal acceptance of a PBL release and through the PBL the SRS requirements it fulfils

[SOWG-357] The DAR shall include a summary describing the PBL release, a sheet for the sign-off of the formal acceptance of the PBL, and then include the following reports as annexes:
　　(1) A Configuration Status Report for the PBL;
　　(2) ILSP with the Logistics Support Analysis;
　　(3) Software Quality Metrics Report;
　　(4) Source Code Review Report;
　　(5) Security Test Report;
　　(6) Deliverable Functional and Performance Test Report;
　　(7) System Integration Test Report;
　　(8) Maintenance and Administration Manual;
　　(9) Release Notes;
　　(10) Site Activation Test Plan/ Reports (if applicable).

[SOWG-358] The Contractor shall provide the DAR in a PDF format.

[128] The Purchaser will sign off the DAR pending that:
　　(1) All requirements with a Must Have priority for the defined deliverable(s) have been fulfilled;
　　(2) All relevant test reports have been provided and the tests are successful.

[SOWG-359] The Contractor shall place the Purchaser-approved DAR under configuration control.

3   Project-Specific Requirements

3.1   Contractor's Technical Personnel Qualifications

[129]   This section specifies special skills for individuals of the Contractors project team that are deemed required for this project in particular. The skills for generic project management roles are defined in section 2.1.1.

3.1.1   Technical Lead

[SOWG-360]   The Contractor shall designate a Technical Lead for the project; who shall lead the efforts in analysis, design, development, integration, and follow-on enhancement efforts of the Contractor.

[SOWG-361]   The Contractor's Technical Lead shall meet the following qualifications:
    (1)   Have a master's degree in Computer Science, or related/ equivalent studies;
    (2)   Have seven years of experience in leading technical roles in projects similar to this project in technical scope;
    (3)   Have documented expert knowledge and experience in Angular application framework, OData REST API, OWASP, C# and .Net, Web-applications, JavaScript, SQL databases, Graph databases;
    (4)   Have documented knowledge and experience on Elasticsearch and Neo4j (both used with components of the INTEL-FS Spiral 1 software);
    (5)   Have documented knowledge and experience with social network analysis (SNA) and/ or link analysis, and preferably have experience with implementation of SNA Web and/ or link analysis applications (e.g. using the KeyLines software development kit (SDK), GoJS JavaScript/ TypeScript library, etc.)
    (6)   Have a NATO S≡CRET clearance.

3.1.2   Scrum Master

[SOWG-362]   The Contractor shall designate a Scrum Master for the project; who shall manage and assist the SW development team in planning and executing their work so that the expected delivery goals are achieved.

[SOWG-363]   The Contractor's Scrum Master shall meet the following qualifications:
    (1)   Have a bachelor's degree in Computer Science, or related/ equivalent studies;
    (2)   Have five years of experience in leading technical roles in projects similar to this project in technical scope;
    (3)   Have a minimum of two years of experience in the role of a Scrum Master;
    (4)   Have a NATO S≡CRET clearance.

3.1.3   Test Director

[SOWG-364]   The Contractor shall designate a Test Director for all test activities conducted under this Contract; who shall direct the test planning and test implementation/ execution.

[SOWG-365]   The Contractor's Test Director shall meet the following qualifications:
    (1)   Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;

(2)   Have seven years of experience working on SW intensive projects;
(3)   Have documented expert knowledge and experience with automating testing and test reporting (e.g. using the NUnit framework, Jasmine, Gherkin test-scenarios, Selenium, etc.) for Azure DevOps;
(4)   Have documented expert knowledge in automated security testing of Web-applications;
(5)   Have documented knowledge and experience of Angular application framework, OData REST API, OWASP, JavaScript, and Typescript;
(6)   Have a NATO SΞCRET clearance.

3.1.4   Software Developers

[SOWG-366]   The Contractor shall designate a team of experienced User Interface Software Developers, who shall implement the INTEL-FS2 UA user interfaces.

[SOWG-367]   The Contractor's User Interface Software Developers shall meet the following qualifications:
(1)   Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
(2)   Have five years of documented expert knowledge and experience with software implementation of user interfaces in Web-Applications in particular in the latest versions of the Angular application framework;
(3)   Have a UX design certification;
(4)   Have documented experience of working with OData REST API;
(5)   Have a NATO SΞCRET clearance.

3.2   Augmentation of SOW General Requirements

3.2.1   Additional requirements for deliverable acceptance

[SOWG-368]   The Contractor shall be able to demonstrate that whenever any UI is auto-generated (e.g. UI for entering IIE attributes) then such auto-generated UI shall be generated from the [INTEL-FS2-InformationModel]. The Contractor shall for auto-generated UI be able to demonstrate that a change in [INTEL-FS2-InformationModel] is automatically processed to update the relevant UI.

[130]   The purpose of the requirement above is to ensure that the UI is not auto-generated from aspects in the source code (as it is in INTEL-FS Spiral 1).

[SOWG-369]   The Contractor shall instrument the delivered software source code with additional logging that provides diagnostics information in case of issues with use of any Purchaser provided software component as PFI (this is of particular importance for issue the usage of the PFI-provide map visualization component (VC)).

[SOWG-370]   The Contractor shall for any requirements that cannot be fulfilled because of supposed issues in the usage of PFI software provide an analysis based on logged diagnostics information proving/ justifying that the root cause of not being able to meet the requirement is a defect in the PFI provided software. This analysis shall also include proof that the Contractor developed is complete and that once the issue in the PFI the requirement will be fulfilled without requiring any changes to the Contractor provided software.

3.2.2   Additional requirements for supporting release to production

[SOWG-371]   The Contractor shall, starting immediately after the first release to production (see 2.4.5.2.7) until the Final System Acceptance (FSA), provide support to ensure that the software running in production fulfils its availability requirements. This support shall, for all releases to production include:
  (1)   2nd level support by performing problem analysis to identify the cause of reported issues with the software in production;
  (2)   3rd level support by implementing bug fixes to identified issues and to subsequently produce a new PBL Release;
  (3)   4th level support by obtaining and including new versions of 3rd party components and libraries when this is required to resolve issues in production.

[SOWG-372]   The Contractor shall, after FSA, in the Warranty period, continue to provide the 3rd level and 4th level support.

3.3   WP1.1 Upgrade UI, initial BMD OPFOR ORBAT Management, and new User Management – Phase 1

3.3.1   Deliverables

[131]   Table 3-1 below show an extract of the SSS for WP 1.1 identifying the high-level CLIN numbers for the deliverables of the WP sorted by Purchaser-expected delivery increment (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-1   WP 1.1 SSS high-level CLIN numbers

CLIN	Description	Delivery at increment number
1.1	User Management Application	1
2.3	Battlespace Object (BSO) Management Application	1
2.2	Products Management Application	2
2.5	Intelligence Situation Application	3
2.7	Search Application	3
2.10	Intelligence Requirements Management (IRM) Application	4
2.8	Analysis Application	5
2.1	Dashboard Application	6
2.9	ISR Organization Management Application	6
2.11	Collection Requirement Management (CRM) Application	6

3.3.2   Additional Requirements for Site Activations

[132]   Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.

[SOWG-373]   In addition to the regular support for deployment of every release to the production staging environment the Contractor shall for WP1.1 also provide support for up to 10 installations and site activations on actual servers in production.

[SOWG-374]   The Contractor shall, if deemed required to achieve successful activation, provide the key personnel to be present in person at the installation and activation event.

[133]   Note: The installation and activation to production is normally executed from Purchaser's facility in Mons-Belgium.

[SOWG-375]   The Contractor shall during WP1.1 be responsible for corrective maintenance of software produced by the Contractor.

[SOWG-376]   The Contractor shall factor in the cost of the site installation and activation support, and for corrective maintenance of Contractor's developed software, into the cost of the software deliverables as defined in the SSS. I.e. the Contractor shall not expect any additional compensation for this support.

3.4   WP1.2 New user interfaces (using mock backends) – Phase 2

3.4.1   Deliverables

[134]   Table 3-2 below show an extract of the SSS for WP 1.2 identifying the high-level CLIN numbers for the deliverables of the WP (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-2   WP 1.2 SSS high-level CLIN numbers and functionalities groupings

CLIN	Description	Delivery at increment number
3.6	BM JIPOE Application (using mock backend)	7
3.10	IRM Application (using mock backend)	7
3.11	CRM Application (using mock backend)	7
3.12	Collection Operations Management (COM) Application (using mock backend)	7

3.4.2   Additional Requirements for Site Activations

[135]   Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.

[136]   In WP1.2 (Phase 2) the Contractor is not expected to deliver any new release to production as the work in this phase is to evolve the user interfaces against mock-backends.

[137]   However, in case critical issues are identified in the software the Contractor delivered in WP1.1 requires new releases to production to fix the issue then the Contractor will have to support this.

[SOWG-377]   The Contractor shall in Phase 2, when required provide installation and site activation support for any release to production that is required to address issues in the software delivered by the Contractor.

3.5   WP1.3 Full integration with new backend API – Phase 3

3.5.1   Deliverables

[138]   Table 3-3 below show an extract of the SSS for WP 1.2 identifying the high-level CLIN numbers for the deliverables of the WP sorted by Purchaser-expected delivery

increment (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-3   WP 1.3 SSS high-level CLIN numbers

CLIN	Description	Delivery at increment number
4.2	Products Management Application (new backend)	8
4.3	Battlespace Object (BSO) Management Application (new backend)	8
4.7	Search Application (new backend)	8
4.8	Analysis Application (new backend)	9
4.9	ISR Organization Management Application (new backend)	9
4.10	IRM Application (new backend)	9
4.11	CRM Application (new backend)	9
4.1	Dashboard Application (new backend)	10
4.6	BM JIPOE Application (new backend)	10
4.5	Intelligence Situation Application (new backend)	10
4.4	Targets Application (new implementation)	11
4.12	COM Application	11

3.5.2 Additional Requirements for Site Activations

[139]   Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.

[SOWG-378]   In addition to the regular support for deployment of every release to the production staging environment the Contractor shall for WP1.3 also provide support for up to 15 installations and site activations on actual servers in production.

[SOWG-379]   The Contractor shall, if deemed required to achieve successful activation, provide the key personnel to be present in person at the installation and activation event.

[140]   Note: The installation and activation to production is normally executed from Purchaser's facility in Mons-Belgium.

[SOWG-380]   The Contractor shall also during WP1.3 be responsible for corrective maintenance of software produced by the Contractor.

[SOWG-381]   The Contractor shall factor in the cost of the site installation and activation support, and for corrective maintenance of Contractor's developed software, into the cost of the software deliverables as defined in the SSS. I.e. the Contractor shall not expect any additional compensation for this support.

3.6   WP 1.4 Optional 3rd and 4th Level Maintenance and Support

[141]   This optional Work Package identifies a 3rd and 4th Level Maintenance and Support deliverable (see section 2.3.3.1) that can be exercised within the Contract for delivery after the Warranty period expires.

[SOWG-382]   The Contractor shall provide one year of 3rd Level and 4th Level Maintenance and Support for the I2UA capability where this support includes:
(1)   Support to NCI Agency's 2nd Level Support process with identification of the root cause of the issue (e.g. by issue replication testing);
(2)   Implement the software corrections as identified in (1);
(3)   Test the corrections in accordance with the testing activities as defined in section 2.4.5.2.2;
(4)   Support the IV&V testing in accordance with section 2.4.5.2.4;
(5)   Support the UAT testing in accordance with section 2.4.5.2.5;
(6)   Define a new PBL in the CMDB and create a Release Note in accordance with section 2.5.4.5;
(7)   Support the Deliverable Acceptance Review in accordance with section 2.4.5.2.6;
(8)   Support the Release Management in accordance with section 2.4.5.2.7.

[SOWG-304]   If the Purchaser activates the optional support package, the Contractor shall be fully compliant with section 2.3.7 Warranty Requirements and provide all the services described under aforementioned section without any additional cost.

NATO Communications and Information Agency
Agence OTAN d'information et de communication

INTEL-FS SPIRAL 2 - BACKEND SERVICES (I2BE)

BOOK II - PART IV - SOW

STATEMENT OF WORK (SOW)

Version 1.3

16/02/2021

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Document Revision History

Date	Version	Changes
21 Dec 2020	1.0	IFB package release version
29 Jan 2021	1.1	IFB Amendment 1: Minor typographical fixes
9 Feb 2021	1.2	IFB Amendment 2: Minor clarification
16 Feb 2021	1.3	IFB Amendment 3: Clarifications on IV&V and UAT

1　Introduction

1.1　Background

[1]　The Intelligence Functional Services (INTEL-FS) will provide an information management capability that will enable the Commands to execute the Intelligence Support function effectively and efficiently, and to provide comprehensive and relevant intelligence in a timely and responsive manner.

[2]　Delivery of the functionalities of INTEL-FS is planned to be done in spirals (where each spiral could consist of multiple increments). The first spiral (INTEL-FS Spiral 1) was delivered in 2016. INTEL-FS Spiral 2 capability will be procured as two separate systems:
(1)　As a set of backend services; and
(2)　As web-browser based collection of user applications.

[3]　This SOW is for the procurement of the set of backend services hereafter referred to as INTEL-FS2 BE, or I2BE.

[4]　The user applications will be procured through a different contract. The procurement of the user applications is described in a separate SOW.

1.2　Purpose

[5]　The purpose of the present contract is to procure the new NATO-owned INTEL-FS backend services (I2BE) for deployment to the NATO Command Structure (NCS) operational network.

[6]　The I2BE will replace the current web application backend part of INTEL-FS Spiral 1.

[7]　The I2BE system requirements is defined in the Annex A to this SOW.

1.3　Scope of Work

[8]　The project will be executed in accordance with the principles from the Dynamic System Development Method (DSDM):
(1)　Focus on the business need;
(2)　Deliver on time;
(3)　Collaborate;
(4)　Never compromise quality;
(5)　Build incrementally from firm foundations;
(6)　Develop iteratively;
(7)　Communicate continuously and clearly;
(8)　Demonstrate control.

[9]　As shown in Figure 1-1, all the implementation work will be organized in one single work packages (WP 2.1). In addition an optional work package (WP 2.2) is defined for the eventuality of the Contractor, post the warranty period, is providing 3rd and 4th level software (SW) maintenance and support.
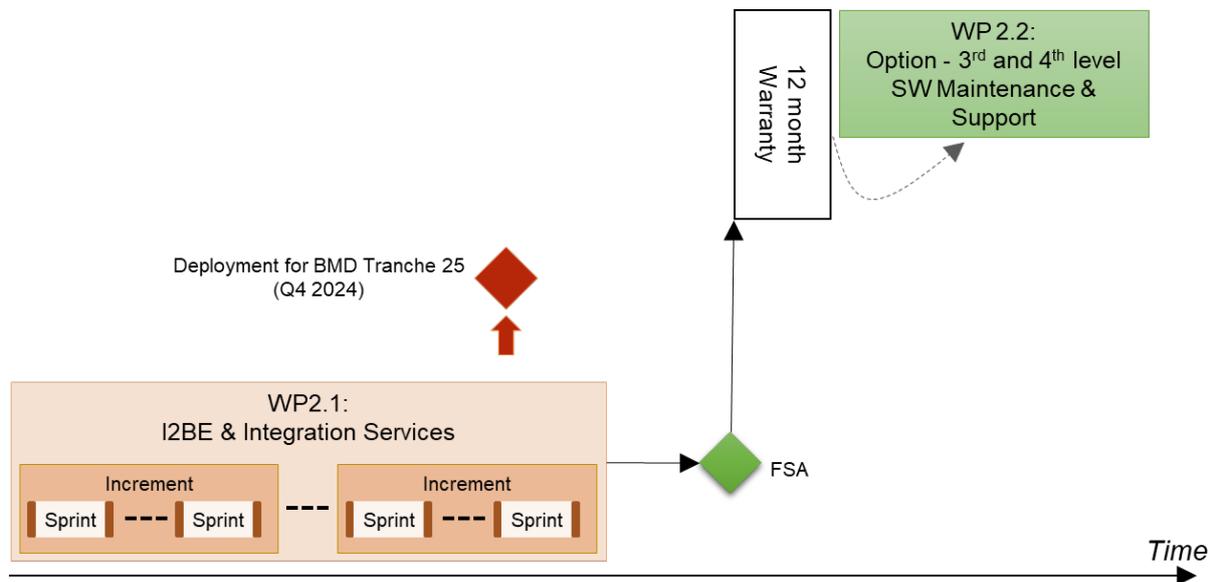
Figure 1-1   Work Packages, Increments, and Sprints

[10]   The main work package is subdivided into a set of increments, where each increment will deliver a tangible and payable deliverable. Each increment is again divided into multiple sprints.

[11]   The implementation work will include:

(1)   Implementation of a new, scalable, and high performance backend for INTEL-FS that will replace the current INTEL-FS Spiral 1 backend;

(2)   Implementing an OData application programming interface (API) enabling client application to access the INTEL-FS data;

(3)   Implement access control to all services that are compliant with the new Bi-Strategic Command Automated Information System (Bi-SC AIS) identity management (IdM) platform;

(4)   Implement the new backend solution as services to be hosted on the service oriented architecture (SOA) and IdM Platform;

(5)   Adding new functionalities (that does not exists in the existing INTEL-FS Spiral 1) in support of Ballistic Missile (BM) Defence (BMD) and Collection Management (CM);

(6)   Integration testing with the new INTEL-FS front end application (I2UA) and verification that the project user stories are properly served by the backend services;

(7)   Implementation of a number of integration services for importing data from other systems, and for exporting INTEL-FS data to other systems;

(8)   Delivery of system administration tools

[12]   The delivered SW at the end of each increment will have to have a quality at the level of being ready for deployment to production. The deployment of new software modules will be lead by the Purchaser with support from the Contractor. There might be multiple deployments to production of incrementally delivered functionality, e.g. deployment in support of the BMD tranche 25, and a final deployment prior to final system acceptance (FSA).

[13]   A second and optional work package (WP 2.2) is defined for the eventuality of the Contractor, post the warranty period, is providing software (SW) maintenance support (3rd level support).

[14]   The Contractor is expected to apply the Scrum agile process framework for managing the implementation work and to apply both Domain Driven Development (DDD) methodology and Behaviour Driven Development (BDD) methodology (the latter for test and verification purposes).

[15]   The Contractor will have to deliver all supplies and services as specified in this SOW and as stated in the Schedule of Supplies and Services (SSS) for all categories of the project.

[16]   The deliverables of the work is defined in the Schedule of Services and Supplies (SSS) where each deliverable will have by contract line item number (CLIN), a cost, and an expected delivery. The CLIN delivery times in the SSS is defined through the increment number where the deliverable is expected to be delivered

1.4   Purchaser's Responsibilities

[17]   The following services and items will be provided by the Purchaser for the performance of the Contract.
   (1)   Access to Subject Matter Experts (SME) and required NATO documentation during project execution;
   (2)   Provide purchaser furnished items (PFI) as per section 1.5 of this SOW;
   (3)   Coordinating access to NATO sites the Contractor will have to visit.

[18]   The Purchaser's Project Manager (PM) will act as the Purchaser's representative and will be the primary interface between the Contractor and Purchaser after the Effective Date of Contract (EDC).

[19]   The Purchaser's Project Manager will be supported by specialists in certain areas who may, from time to time, be delegated to act on the Project Manager's behalf in their area of expertise.

[20]   Neither the Project Manager, nor any other NATO personnel may make changes to the terms and conditions of the Contract, but may only provide the Purchaser's interpretation of technical matters. All changes to the Contract will be made through the Purchaser's contracting office only.

[21]   The Purchaser will provide the Contractor with available technical descriptions of external NATO interfaces if such descriptions are required for the work.

[22]   The Purchaser will make available to the Contractor the facilities necessary to test and demonstrate the delivered software's interoperability with required external NATO interfaces.

1.5   Purchaser Furnished Items (PFI)

[23]   The Purchaser will provide access to reference test environment and integration testbed facilities for the required testing activities under this contract at the Purchaser's facility (either The Hague-Netherlands or Mons-Belgium).

[24]   The Purchaser will equip the Contractor with one NATO RΞSTRICTED (NR) laptop to be used for sharing of NR material.

[25]   The Purchaser will provide the Contractor with a set of user accounts on the NATO Software Factory (NSF), see section 2.4.1.

[26]   The Purchaser will provide the Contractor with the Service Oriented Architecture (SOA) and Identity Management (IdM) Platform, see [SOA-IdM].

[27]   The Purchaser will provide the Contractor with a reference test environment for system integration testing (this will be provided within the NSF).

[28]   The Purchaser will provide the Contractor with the current INTEL-FS Spiral 1 software.

[29]   The Purchaser will provide the Contractor with the source code for the STANAG 4609 video conditioner, for additional details.

1.6   Conventions

[30]   Requirements in the SOW are formulated using the form "shall". Context information supporting the requirements definition is provided using the form "will".

[31]   "Shall" statements are contractually binding; "Will" statements are non-mandatory, or they imply intent on the part of the Purchaser.

[32]   Mandatory requirements in the SOW are preceded by a unique heading number, consisting of a prefix, followed by a number.

[33]   Informational or context information not conveying any requirement on the Contractor is preceded by a number heading in brackets, [xx], without prefix letters.

[34]   The term "the Purchaser" means the NCI Agency or its authorised representatives.

[35]   Whenever requirements are stated herein to "include" a group of items, parameters, or other considerations, "include" means "include but not limited to".

[36]   Whenever reference is made to a section or paragraph, the reference includes all subordinate and referenced paragraphs.

[37]   The convention to be used for dates appearing in free text (e.g. quoting dates of meetings) is day-month-year and not month-day-year.

1.7   Structure

[38]   This SOW is structured as follows:
- Chapter 1: Introduction of the project;
- Chapter 2: Specification of general requirements for the SOW where those requirements are of a general nature (i.e. applicable to most NATO software acquisition projects);
- Chapter 3: Specification of project specific SOW requirements that are of a character that have been specially identified for this project.

1.8   Applicable documents

[39]   Applicable documents provide details not explicitly set out through this SOW. They shall be considered by the Contractor as requirements associated with this SOW.

Table 1-1   Applicable documents

[ACMP-2009-SRD-41]	Examples of CM Plan Requirements, Edition A, Version 1, March 2017, NATO Standardization Office (NSO)
[AQAP-2110]	NATO Quality Assurance Requirements for Design, Development and Production, Edition D Version 1, JUNE 2016, NATO Standardization Office (NSO)
[INTEL-FS2-Special-Provisions]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – CONTRACT SPECIAL PROVISIONS – Book II, Part III, NCI Agency
[INTEL-FS2-General-Provisions]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – CONTRACT GENERAL PROVISIONS – Book II, Part III, NCI Agency
[NCIA AI TECH 06.03.01, 2016]	NATO Communications and Information Agency - Agency Instruction 06.03.01, "Identification of Software Assets", 2016.

1.9   Reference documents

[40]   Reference documents are documents providing contextual information that is relevant to this project. They shall be used by the Contractor to support his activity.

Table 1-2   Reference documents

[ADMP-1]	Guidance for Developing Dependability Requirements, Edition A, Version 1, 14 August 2014, NATO non-classified
[ADMP-2]	Guidance for Dependability In-Service, Edition A, Version 1, August 2014, NATO non-classified
[AIA/ASD SX000i, 2016]	International guide for the use of the S-Series Integrated Logistic Support (ILS) specifications (issue 1.1)
[ALP-10]	NATO Guidance on Integrated Logistics Support for Multinational Armament Programs
[ASD S3000L]	International Procedure Specification for Logistics Support Analysis (LSA), 2011
[C-M(2002)49-G]	Enclosure "G" to C-M(2002)49: Classified Project and Industrial Security, Amdt 12, Sep 2015
[DOORS]	IBM® Engineering Requirements Management DOORS, https://www.ibm.com/support/knowledgecenter/en/SSYQBZ_9.7.0/com.ibm.doors.requirements.doc/topics/c_welcome.html
[INTEL-FS2-InformationModel]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 – Information Model Book II - Part V, NCI Agency
[INTEL-FS2-UserStories]	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 - USER APPLICATIONS (I2UA) BOOK II - PART IV – USER STORY DOCUMENT (USD), NCI Agency
[Jira]	Atlassian Jira, https://www.atlassian.com/software/jira
[MIL-HDBK-338B]	Electronic Reliability Design Handbook, US Department of Defense, 1 October 1998
[MIL-HDBK-470A]	Designing and Developing Maintainable Products and Systems, Volume 1, US Department of Defense, 4 August 1997
[MIL-STD-1388-1A]	Logistics Support Analysis, 11 April 1983
[MIL-STD-1388-2B]	Logistics Support Analysis Records, 28 March 1991
[MIL-STD-1629A]	Procedures for Performing A Failure Mode, Effects and Criticality Analysis (FMECA), 24 November 1980
[SOA-IdM]	CO-14176-SOA-IDM Service Oriented Architecture (SOA) and Identity Management (IdM) Platform – Wave 1, System Design Specification (SDS) and Interface Control Document (ICD), NCI Agency
[SonarQube]	SonarQube, https://www.sonarqube.org/

2 General Requirements

[41] This section defines requirements that generally could be applied to acquisition of any software application for the NATO Bi-SC AIS.

2.1 Project Management Requirements

[42] The goal of the Contractor's project management will be to guide the project through a controlled, well-managed, visible set of activities to achieve the desired results and, wherever possible, to eliminate problems and to ensure that those problems that do occur are identified early, assessed accurately, and resolved quickly in partnership with the Purchaser.

2.1.1 Project Management Office

[SOWG-1] The Contractor shall establish and maintain a Project Management Office (PMO) to perform and manage all efforts necessary to discharge all his responsibilities under this Contract.

[SOWG-2] The Contractor shall provide all necessary manpower and resources to conduct and support the management and administration of operations in order to meet the objectives of the project, including taking all reasonable steps to ensure continuity of personnel assigned to work on this project.

[SOWG-3] The Contractor shall use PRINCE2 or a similar and internationally recognized Project Management standard for the direction, governance and management activities for the entire project.

[SOWG-4] The personnel identified below shall be considered as Key Personnel in accordance with the Special Provisions of this Contract.
(1) Project Manager;
(2) Quality Assurance Manager;
(3) Configuration Manager;
(4) Technical Team (see section 3).

[SOWG-5] Location of work: Unless otherwise specified by the Work Package or approved by the Purchaser, the main effort for this Project shall be carried out in the Contractor's premises.

[SOWG-6] The Contractor's team shall be located together to enable agile execution of the work (e.g. conducting daily stand-up meetings).

2.1.1.1 Project Manager

[SOWG-7] The Contractor shall designate a Project Manager (PM), who shall direct and co-ordinate the activities of the Contractor's project team.

[SOWG-8] The Contractor's Project Manager shall be prepared at all times to present and discuss the status of Contract activities with the Purchaser's Project Manager, Contracting Officer, or Technical Lead.

[SOWG-9] The Contractor`s Project Manager shall meet the following qualifications:
(1) Have a master's degree in management, engineering, or business administration;
(2) Have a formal certification through Project Management Institute or equivalent source, PRINCE 2 certified or equivalent;

(3)   Have seven years of experience in managing projects similar to this project in technical and financial scope;
(4)   Have a NATO SΞCRET clearance.

2.1.1.2 Quality Assurance Manager

[SOWG-10]   The Contractor shall designate a Quality Assurance Manager; who shall be responsible for all Quality Assurance Manager for activities under this Contract.

[SOWG-11]   The Quality Assurance Manager shall report to a separate manager within the Contractor's organisation at a level equivalent to or higher than the Project Manager.

[SOWG-12]   The Contractor's Quality Assurance Manager shall meet the following qualifications:
(1)   Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
(2)   Have worked at least four years with quality control methods and tools;
(3)   Have worked at least four years with supporting system development and test projects;
(4)   Have a NATO SΞCRET clearance.

2.1.1.3 Configuration Manager

[SOWG-13]   The Contractor shall designate a Configuration Manager, who shall be responsible for all configuration activities conducted under this Contract.

[SOWG-14]   The Contractor's Configuration Manager shall meet the following qualifications:
(1)   3 years' experience as Configuration Manager in Projects of a similar nature, both in terms of the products to be delivered and the level of technicality;
(2)   Have a NATO SΞCRET clearance.

2.1.1.4 Other Key Roles

[43]   The required qualifications for other key roles in the Contractor's project team are defined in section 3 (Project-Specific Requirements)

2.1.2 Project Management

[SOWG-15]   The Contractor shall establish and maintain a Project Management Plan (PMP) as defined in section 2.5.2.1.

[SOWG-16]   The Contractor shall provide the initial baseline version of the PMP at the kick-off meeting and maintain it throughout the period of performance of the Contract.

[SOWG-17]   After approval by the Purchaser, the final version of the PMP shall be the official document against which the Contractor is expected to conduct the performance of the Contract.

[SOWG-18]   The approval of the PMP by the Purchaser signifies only that the Purchaser agrees to the Contractor's approach in meeting the requirements. This approval in no way relieves the Contractor from its responsibilities to meet the requirements stated in the Contract. The requirements of the Contract

supersede any statement in the PMP in case of any conflict, ambiguity or omission.

[SOWG-19]   The Contractor shall ensure that the Purchaser always have access to the latest version of the PMP, and that the PMP remains current throughout the duration of the Project to reflect the actual state of the Contractor's organisation and efforts.

2.1.3   Risk Management

[SOWG-20]   The Contractor shall establish a risk management process and perform risk management throughout the period of performance of this Contract.

[SOWG-21]   The Contractor shall document, update and maintain status of all risks in the Risk Register (see section 2.5.2.2).

[SOWG-22]   The Contractor shall update and maintain the Risk Register throughout the period of performance of the Contract.

2.1.4   Issue Management

[SOWG-23]   The Contractor shall establish and maintain a process for identifying, tracking, reviewing, reporting and resolving all project issues.

[SOWG-24]   The Contractor shall develop and maintain an Issue Register (see section 2.5.2.3) where all project issues are recorded and tracked regardless of their status.

[SOWG-25]   The Contractor shall use the Issue Register to track reported bugs in software previously delivered by the Contractor under this Contract.

[SOWG-26]   The Contractor shall update and maintain the Issue Register throughout the period of performance of the Contract.

[SOWG-27]   The Contractor shall ensure that the Purchaser always have access to the latest version of the Issue Register.

2.1.5   Configuration Management

[SOWG-28]   The Contractor shall be responsible for all necessary Configuration Management activities throughout the duration of the Contract.

[SOWG-29]   The Contractor shall establish and maintain a Configuration Management Plan (CMP) in compliance with section 2.5.2.4 that describes how the Contractor will implement Configuration Management within the project.

[SOWG-30]   All Contractor and Purchaser activities and milestones related to CM shall be identified and included in the Delivery Plans schedules (see section 2.5.3.1).

[SOWG-31]   The Contractor shall be responsible for the Configuration Status Accounting (CSA) and reporting for all CIs.

[SOWG-32]   Upon request from the Purchaser, the Contractor shall support configuration audits to demonstrate that the actual status of all CIs matches the state of CIs as registered in the CSA reports; this support shall include:
(1)   Providing the required baseline documentation;
(2)   Answering questions from the Purchaser's Auditor;
(3)   Summarizing the audit results in a Configuration Audit Report and providing this report the Purchaser's approval.

[SOWG-33]   The Contractor shall ensure that the Configuration Baselines and CIs are
             persistently stored, maintained and managed in the Configuration
             Management Database CMDB.

[SOWG-34]   The Contractor shall keep the CMDB consistent and updated throughout the
             duration of the project.

[SOWG-35]   The Contractor shall before FSA conduct a handover of a fully populated
             CMDB instance (including the full history of all changes to the CIs) to the
             Purchaser.

[SOWG-36]   The Contractor shall solve any deficiencies found during the Configuration
             Management Audits within the agreed timeframe and update the baseline
             accordingly.

2.1.5.1 Configuration Management (CM) Database (CMDB) and CM Tools

[SOWG-37]   The Contractor shall establish and maintain a CMDB that persists the
             Configuration Items (CIs) attributes, (inter-) relationships/ dependencies, and
             Configuration Baselines.

[SOWG-38]   The CMDB and CM Tools shall to the maximum extent possible integrate
             with, or use, the Azure DevOps tools provided within the NSF.

[SOWG-39]   The CMDB and CM Tools shall to the maximum extent possible support
             DevOps practices and integrate with tools used for automated deployment to
             production where such deployment scripts also are managed as CIs.

[SOWG-40]   Each CI in the CMDB shall be assigned a unique identifier.

[SOWG-41]   The CIs in the CMDB shall be organized around working and executable
             software units (e.g. applications or executable services).

[SOWG-42]   The top-level CIs in the CMDB shall be broken down into a tree/ hierarchy of
             its parts and sub-parts consisting of deliverables, the relevant documentation
             of these deliverables, all dependent third party components and libraries and
             respective documentation.

[SOWG-43]   The CMDB shall have support for tracing higher and subordinate CIs using
             CI identifiers or other CI attributes.

[SOWG-44]   It shall be possible from the CMDB, at any time, to generate Configuration
             Status Reports for any specified baseline where the report provides a full
             history on all CIs in the baseline including information on changes,
             deviations/ waivers, releases, etc.

[SOWG-45]   The CMDB/ CM Tools shall support generation of Configuration Status
             Accounting (CSA) Reports in two different formats:
             (1)   Readable document format (either in PDF or Microsoft Word format);
             (2)   XML format in accordance with a Contractor proposed XML schema.

[SOWG-46]   A baseline in the CMDB shall:
             (1)   Be defined by version controlled artefacts that all resides in the proper
                   repositories in the NSF;
             (2)   Include (off-the-shelf) software and (off-the-self) software license(s)
                   where all software license(s) shall be registered with the NCI Agency
                   as the end-user;
             (3)   Include all (supporting) documentation, e.g. off-the-shelf OEM
                   manuals, operations and maintenance support documentation, training

documentation, quality assurance documentation, security documentation, configuration management documentation, and warranty documentation.

[SOWG-47]   The CMDB shall implement support for baselining of Configuration Items (CIs) into the Functional Baseline (FBL), Allocated Baseline (ABL), and Product Baseline (PBL).

[SOWG-48]   It shall be possible from the CMDB and CM Tools to generate a package (as one or several electronic files) with all the artefacts included in a PBL release.

[SOWG-49]   The Contractor's PBL version numbering strategy shall be compliant with [NCIA AI TECH 06.03.01, 2015].

[SOWG-50]   The Contractor shall not use any names that can be associated with the Contractor (e.g. company name) on any of the developed software artefacts (i.e. file names, class names, XML namespaces, etc.)

[SOWG-51]   The CM Tools using the CMDB shall have support for comparison of baselines and precisely identify the changes to the individual items from one baseline to the other (including versions of third-party software components and libraries).

2.1.5.2   Engineering Change Proposals (ECP)

[44]   The ECPs can be categorized by type and class as defined in Table 2-1

Table 2-1   ECP type and class

Type	Class	Definition
NP (New Product)	I	The development of a new capability in order to implement functionalities to meet new requirements.
PE (Product Enhancement)	I	The addition or modification of functionalities to existing capabilities to meet changing requirements (change in the fit-for-purpose).
PC (Product Correction)	I or II	The correction of existing capabilities in order to maintain their functionalities to meet existing requirements (change in the fit-for-use).
DC (Documentation Change)	II	The correction or improvement of documentation. This type of ECP does not affect any other configuration item type.

[SOWG-52]   The Contractor shall prepare and process the ECP for engineering, design, or development changes.

[SOWG-53]   The Contractor shall use the configuration control procedures specified in the CMP for the preparation and processing of ECPs.

[SOWG-54]   The Contractor shall use the ECP format as defined in the CMP when submitting ECPs.

[SOWG-55]   The Contractor shall in the ECP:
(1)   Include a unique ECP reference number;
(2)   Describe the rationale for the change;
(3)   Describe the nature of the change (Deletion, Modification, or Addition);

(4)   Describe what impact the change will have on the delivered capability's cost, schedule, scope, and/or performance (this description shall include any trade-offs that shall be considered);

(5)   Identify the SOW and SRS section(s) affected;

(6)   Include, or reference, an updated Solution Decision Document (SDD), see section 2.5.3.2, that records the analysis and options considered for the proposed change;

(7)   Propose a Priority and a Schedule for the change;

(8)   Propose a Classification for the change (as either Class I or Class II ECPs as defined in Table 2-1).

[SOWG-56]   Class I ECPs shall have to be mutually agreed upon by the Contractor and Purchaser.

[SOWG-57]   The Contractor shall submit all Class II ECPs to the Purchaser for review and classification concurrence before starting implementation of the change.

[SOWG-58]   The Contractor shall, after the Purchaser's approval of the ECP, update the SDD with a reference to the Purchaser-approved ECP.

[SOWG-59]   Where a change affects more than one document, or affects documents previously approved and delivered, the Contractor shall update and properly reflect the change in all baseline documents affected by that change.

[SOWG-60]   The Contractor shall place all submitted ECPs under configuration control.

2.1.5.3   Requesting Deviations/ Waivers

[45]   A Request for Deviation (RFD) is defined as "planned departure" from a specific requirement where "departure" defined as the "inability of a product to meet one of its functional performance or technical requirements".

[46]   A Request for Waiver (RFW) is defined as "unplanned departure" from a specific requirement.

[SOWG-61]   If required, the Contractor shall submit RFDs/ RFWs for Purchaser's approval.

[SOWG-62]   The Contractor shall be aware that permanent departures from contractual requirements shall be accomplished by ECP action rather than by RFD.

[SOWG-63]   The Contractor shall use the RFD/ RFW format as defined in the CMP when submitting RFDs/ RFWs.

[SOWG-64]   The Contractor shall in the RFD/ RFW:
(1)   Include a unique reference number;
(2)   Identify the requirement that cannot be fully met (to include references to the affected CLIN in the SSS and the requirement(s) in the SRS);
(3)   Describe what impact the departure will have on cost, schedule, ILS, scope, and/or performance;
(4)   Description of the deviation/ waiver;
(5)   Justify the departure from the specific requirement.

[SOWG-65]   The Contractor shall place all submitted RFDs/ RFWs under configuration control.

2.1.5.4 Deficiency Reporting

[SOWG-66]   The Contractor shall establish and maintain a process for reporting, tracking, and resolving deficiencies.

[SOWG-67]   The Contractor shall use Deficiency Reports (DRs) to document problems during the design, configuration, implementation, or operation of the system.

[SOWG-68]   The Contractor shall close out DRs after the identified problem is resolved.

[SOWG-69]   The Contractor shall place all DRs under configuration control.

2.1.6 Security Aspects

[47]   Security aspects relevant to the Contractor's work are defined in the Contract Special Provisions document (see [INTEL-FS2-Special-Provisions]) and in the Contract General Provisions document (see [INTEL-FS2-General-Provisions]). This section identifies additional security oriented requirements related to the execution of the Contractor's work.

[SOWG-70]   The Contractor shall ensure that all software implementation activities in the NSF is kept at NATO UNCLASSIFIED level.

2.2 Quality Assurance (QA) Requirements

[SOWG-71]   The Contractor shall comply with the requirements as defined [AQAP-2110].

[SOWG-72]   The Contractor shall provide a Quality Plan (QP) as defined by [AQAP-2110] to the Purchaser.

[SOWG-73]   The Contractor shall manage the QP as a living document subject to revision/update, as required.

2.2.1 Audits

[48]   The Purchaser reserves the right to perform Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities.

[49]   Audit activities at Sub-supplier's facilities do not relieve the Contractor and Subcontractors from any contractual quality responsibilities.

[SOWG-74]   The Contractor shall fully support the Purchaser in performing Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities activities and in particular:
(1)   Host inspection visits by Purchaser's auditors;
(2)   Make himself available for answering questions and furnishing information related to the project;
(3)   Allow the Purchaser's auditors to inspect and monitor the Contractor's processes applicable to this project.

[SOWG-75]   The Contractor shall transfer to the Purchaser's auditors all information deemed necessary to perform the activities, on his own initiative or on request by Purchaser's auditors.

2.3   Integrated Logistics Support (ILS) Requirements

2.3.1   General

[SOWG-76]   [The Contractor activities and milestones related to ILS shall be identified
                 and included in the WP Delivery Plans.

[SOWG-77]   The Contractor shall use the [ALP 10-2016] and [AIA/ASD SX000i, 2016]
                 specification as guidance when establishing and conducting the ILS Process
                 (i.e. Integrated Logistics Support – ILS Process), in accordance with the
                 requirements of the contract.

[SOWG-78]   The Contractor shall use [ADMP-1], [ADMP-2], [MIL-HDBK-338B], [MIL-
                 HDBK-470A], [MIL-STD-1388-1A], [MIL-STD-1388-2B] and [ASD S3000L] as
                 guidance when establishing and conducting the Logistic Support Analysis
                 (LSA) programme, including the Reliability, Availability, Maintainability and
                 Testability (RAMT) programme, in accordance with the requirements of the
                 Contract.

[SOWG-79]   All ILS related deliverables and activities shall be aligned with the
                 incremental delivery approach of the project, and be delivered as required.

2.3.2   Integrated Logistics Support Plan (ILSP)

[SOWG-80]   The Contractor shall provide and maintain an ILSP, tailored to the project
                 and in accordance with the requirements of this section.

[SOWG-81]   The Contractor shall detail in the ILSP how ILS will be designed, managed,
                 procured and provided throughout the system lifetime.

[SOWG-82]   The Contractor shall provide an updated version of the ILSP to the
                 Purchaser for each milestone for Purchaser acceptance, and update it as
                 required to reflect the changes in baselines.

[SOWG-83]   The Contractor shall cover the following sections at minimum including the
                 processes to perform the related activities in ILSP:
                 (1)   The Contractor's ILS organization, roles, responsibilities and
                       procedures;
                 (2)   Maintenance Concept (Maintenance Plan, detailed Maintenance Level
                       definitions and tasks);
                 (3)   Planning of supply support (System Inventory, Codification,
                       Recommended Spare Parts and Consumables list);
                 (4)   Design Influence:
                       (a) RAMT Programme planning, activities, processes;
                       (b) Logistics Support Analysis planning, activities and processes;
                       (c) Support Case planning, releases and processes.
                 (5)   Support and Test Equipment Lists;
                 (6)   Computer Resources (licences, SWDL etc.);
                 (7)   Manpower and Personnel Requirements;
                 (8)   Technical Documentation (organization, process, inputs, reviews,
                       release schedule);
                 (9)   Planning of packaging, handling, storage, and transportation (PHS&T);
                 (10) Planning of supply chain security;
                 (11) In-Service Support Plan (ISSP).

[SOWG-84]   The Contractor shall provide an In Service Support Plan (ISSP) as an annex
to the ILSP and the ISSP shall cover the following topics at minimum with
practical instructions:
(1)   The Contractor's Support organization, roles, responsibilities,
processes and procedures (until FSA; during warranty and optional
support period);
(2)   Description of the system of interest (SOI) in scope of integrated
support,
(3)   Description of the integrated support concept, including the
maintenance concept, warranty concept, customer support concept,
service management & control concept including but not limited to the
incident, problem management, release and deployment management,
and configuration and change management;
(4)   Description of the parties involved, their responsibilities for the various
levels of support (with indication of start and end dates), interfaces,
response times and POC details;
(5)   Description and allocation of operation, SM&C and corrective and
preventive maintenance tasks required to operate and maintain the
system;
(6)   Description of the Sustainability measures (obsolescence
management, failure reporting, performance monitoring, reliability and
availability assessment and reporting);
(7)   Procedures to follow when any part of the system fails; response times
for analyses and resolution by the Contractor;
(8)   Comprehensive lists (as applicable) of all available software licenses
(SWDL), support software tools, COTS documentation, technical
documentation, training documentation and manuals;
(9)   Description of services during optional Contractor Logistics Support
(CLS) period.

[SOWG-85]   The Contractor shall provide the latest ISSP as part of each release and
finally before FSA milestone achievement.

2.3.3   Maintenance and support concept

2.3.3.1   Definitions

[50]   <u>Level of Support</u>: Level of support indicates a specific extent of technical assistance
in the total range of assistance that is provided by an information technology product
to its customer. The Service management is divided in three different level of
service, which interface each other, in order to activate the proper level of
maintenance in accordance with the event (incident) happened on the system.

[51]   <u>Level of Maintenance</u>: are various echelons at which maintenance tasks are
performed on systems and equipment. The levels are distinguished by the relative
sophistication of skills, facilities and equipment available at them. Thus, although
typically associated with specific organisations and/or geographic locations, in their
purest form, the individual maintenance levels denote differences in inherent
complexity of maintenance capability.

[52]   <u>First Level Support Process</u>: implements the Incident Management process in
accordance with the ISO/IEC 20000 and Information Technology Infrastructure
Library (ITIL) framework or equivalent; As part of the Incident Management, the
Service Desk receives the issue from the user, puts it into a standard format

(Trouble Ticket (TT)), performs an initial assessment and distributes it to the predefined actors to solve it

[53]   Second Level Support Process: implements the Problem Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Problem Management process receives the TT from the Service Desk and performs the following tasks (not limited to):
(1)   (Re-)evaluation of TT category, criticality and priority,
(2)   Identification of the root cause of the issue (e.g. by issue replication testing),
(3)   Identification of workarounds,
(4)   Identification and initial planning of possible short, medium and long-term solutions (e.g. workarounds, patches, or new baseline or CI releases),
(5)   Create Problem Analysis Report and Change Request incl. schedule of implementation, and synchronisation with the Baseline Maintenance process;
(6)   Presentation of the Problem Analysis Report and Change Request to the Change Control Board (CCB) for approval,
(7)   Monitor and Control the approved Change Request during implementation,
(8)   Trigger 3rd Level Support and/or 3rd Level Maintenance process to implement the Change Request, in case the incident cannot be solved at 2nd level;
(9)   Perform the post- Change Request implementation review.

[54]   Third Level Support Process: implements the Deployment and Release Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Deployment and Release Management process receives the approved Change Request from the 2nd Level Support and performs the following tasks (not limited to):
a.   Activating Level 3 maintenance when new solutions shall be developed;
b.   Development of the solution (e.g. new CI Fix, Repair, Replacement, Patch, or Release);
c.   Testing of the solution (e.g. Regression testing, issue/deficiency replication testing);
d.   Update of baseline content and status;
e.   Release of the solution (release unit/record);
f.   Delivery and deployment of the solution.

[55]   First Level of Maintenance: It is responsible for the very basic maintenance activities. It is responsible to activate the second level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding O&M Manual. All 1st Level Maintenance procedures do not require specialised tools and/or specialised personnel.

[56]   Second Level of Maintenance: It is responsible of isolation and resolution of system-level maintenance and management of deficiency reports and repair. It is responsible to activate the third level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding Manual. All 2nd Level Maintenance procedures do not require specialised tools and/or specialised personnel.

[57]   Third Level of Maintenance: It is responsible of any support that involves a change to the system baseline, such as software patches or new releases. It is responsible of specialised hardware repair, if applicable. Third level maintenance is activated by third level support and can be initiated either to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive

maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/ or site specific procedures that are defined in the corresponding Manual. 3rd Level Maintenance procedures can require specialised tools and/ or Personnel

[58]   Fourth Level of Maintenance: It is the hardware vendor or the software original developer. It is activated from the 3rd level of maintenance only when it is needed.

2.3.3.2 General Requirements

[SOWG-86]   The Contractor shall develop and maintain the Maintenance and Support Concept that defines the maintenance and support environment, constraints, locations, procedures, artefacts, roles and responsibilities (Responsible, Accountable, Consulted and Informed (RACI), organisation and personnel skills to maintain the Delivered baselines.

[SOWG-87]   The Contractor shall design/deliver the system/elements and the Operation/Support/Maintenance documentation, training (when applicable), instructions, and resources (skills, tools/test equipment) in order to allow the Purchaser to fully operate the system, to perform Level 1, Level 2 and Level 3 Maintenance and Support from the first SW release.

[SOWG-88]   Until FSA, the Contractor shall be responsible for the Level 2, Level 3 and Level 4 maintenance and support activities for the releases.

[SOWG-89]   Starting from FSA and until the end of warranty period, all maintenance activities beyond Purchaser capabilities/skills (Level 3 and Level 4 maintenance) required to restore the System from a critical failure shall be carried on by the Contractor by dedicated on-site interventions and/or off-site resolutions.

[SOWG-90]   The Contractor shall ensure the Maintenance and Support Concept refers to the functional and non-functional Requirements of the System.

[SOWG-91]   The Contractor shall define the 2nd and 3rd Level Support process interfaces to the other processes, including the existing NCIA Service Desk (1st Level of Support) and various NATO locations, organisations.

[SOWG-92]   The Contractor shall ensure the process interface definition includes the input and output information, its structure, the communication path (i.e., Points of Contact (POC)), the time constraints for sending and receiving information, and quality criteria to evaluate the integrity of the interface. This shall include the related ITIL Processes to be tailored and detailed for the purposes of Support Concept.

2.3.4 Design Influence

2.3.4.1 Reliability, Availability, and Maintainability (RAM) Requirements

[SOWG-93]   The Contractor shall develop its RAM Programme and perform the analysis based on the RAM metrics and requirements outlined in the SRS.

[SOWG-94]   The Contractor shall ensure the design of the system includes sufficient redundancy and other Reliability, Maintainability, Availability and Testability measures to ensure the RAM requirements in this Contract are achieved and attained at an optimal Total Cost of Ownership (TCO), minimising preventive

maintenance, manpower requirement and usage of special-to-type tools and test equipment.

[SOWG-95]   The RAM analysis shall clearly capture and display the RAM characteristics of each main component, aggregated up to the level of sub-system, and subsequently the entire system. System breakdown in line with the configuration item structure shall be used as reference to perform the analysis.

[SOWG-96]   The RAM analysis shall include the reliability prediction based on the proposed design solution and created Reliability Block Diagrams (RBD), as well as the reliability allocation model to include to trigger the design changes

[SOWG-97]   The RAM analysis shall include Failure Modes, Effects and Criticality Analysis (FMECA) in accordance with [MIL-STD-1629A].

[SOWG-98]   The Contractor shall ensure that the first issue RAM analysis is performed and delivered for each increment, to include all relevant data to demonstrate compliance with the SRS and SOW requirements. Such data shall be documented in the Support Case as outlined below.

2.3.4.2 Logistics Support Analysis (LSA)

[SOWG-99]   The Contractor shall conduct a Logistic Support Analysis (LSA) Process, tailored to support the specific scope of the System operation activities.

[SOWG-100]   The Contractor's LSA analysis shall include, as a minimum:
(1)   Task Analysis for identification of operational tasks, SM&C tasks, administration and maintenance tasks (corrective, preventive, adaptive)
(2)   Planning and execution of the O&M Procedures Verification Test with references to the Master Test Plan.
(3)   Total Cost of Ownership Analysis, which shall include the warranty cost and all the operational costs and all the maintenance cost for all the support and Maintenance levels for at least 5 years after FSA

[SOWG-101]   The Contractor shall ensure that Operation tasks are identified through analysis of the functional and non-functional requirements of the new system taking into account mission scenarios and conditions under which the system will be operated.

[SOWG-102]   The Contractor shall ensure that maintenance tasks are identified using the RAM data and results.

[SOWG-103]   For each task in Task Analysis, the Contractor shall determine the properties and physical resources required to execute the task. For that purpose, each task shall be analysed to identify and capture:
(1)   The support level to be assigned;
(2)   Location/ facility involved;
(3)   Personnel skills required;
(4)   Roles;
(5)   Task duration and frequency, reusing Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) data available;

[SOWG-104]   The Contractor shall ensure the data and results of the Task Analysis are used as input to the development of technical publications and the development of training material.

2.3.4.3 Support Case

[SOWG-105]   The Contractor shall develop and maintain the necessary Support Cases in which all LSA and RAM activities shall be documented. The Support Case shall include:
(1)   System description and breakdown down to lowest level of maintenance significant items and in accordance with the CI structure and identifications;
(2)   All COTS equipment datasheets, clearly indicating the reliability and maintainability characteristics which will be used as input for LSA and RAM;
(3)   Availability, Reliability, and Maintainability analysis modelling, calculations and results (complete set of RBDs, FMECA including a list of critical items);
(4)   The complete data set of the Task Analysis, including listings of all operation tasks, administrative tasks, corrective maintenance tasks and preventive maintenance tasks;
(5)   References to deliverable test plans and other relevant testing documentation for RAM requirements verification and validation;
(6)   The results from the O&M Task Procedures Verification Test.

[SOWG-106]   The Contractor's Support Case shall form a body of evidence, providing justification for all data used and sufficient credibility that all LSA and RAM requirements outlined in SOW and SRS have been met by providing credibility to the data used and the results achieved in all calculations and models.

[SOWG-107]   The Contractor shall ensure that the Support Case is delivered before the completion of each increment in accordance with the scope, to include all relevant data to demonstrate compliance with the SRS and SOW requirements.

2.3.5 Training

2.3.5.1 Training Plan

[SOWG-108]   The Contractor shall develop and provide a Training Plan that describes how the Training requirements outlined in this Contract will be met.

[SOWG-109]   The Contractor shall describe in this plan the approach to training, milestones, organization and resource requirements, management structure, interrelationships and other tasks related for training development.

[SOWG-110]   The Contractor shall develop and provide a Training Plan that describes the training documentation for each course including but not limited to the syllabuses, schedules, course prerequisites (both for attendees and physical resources), course descriptions and training materials, method of evaluations (if applicable) and instructors.

[SOWG-111]   The Contractor's Training Plan shall describe the requirement to perform the training in a physical classroom at Purchaser locations, or requirements for performing the training in a virtual classroom as remote training sessions.

[SOWG-112]   The Training Plan shall define training modules and/ or courses required to enable all initially assigned Purchaser personnel to maintain the system at Level 1, 2 and 3, see also [SOWG-229] in section 2.4.5.2.7.

2.3.5.2 Training Material

[SOWG-113]   Each training course material shall be provided for Purchaser review minimum 8 weeks before the start of the training courses.

[SOWG-114]   The Contractor shall generate the following Training Material:
    (1)   Training syllabus;
    (2)   Student manual;
    (3)   Instructor guide and material;
    (4)   Learning guide;
    (5)   Quick reference card.

[SOWG-115]   The Contractor shall include, in the Training presentation materials, all slides/ information to be presented by the instructor during the course.

2.3.5.3 Training the Purchaser's O&M team

[SOWG-116]   The Contractor shall provide all training modules and courses required to enable Purchaser's O&M personnel to maintain the system at Level 1, 2 and 3.

[SOWG-117]   The training courses shall cover all aspects of the Maintenance and Administration Manual (MAM), see section 2.5.4.4.

[SOWG-118]   The Contractor shall provide all the appropriate training documentation to support the Purchaser O&M personnel to test, operate and maintain the system.

[SOWG-119]   The training of the Purchaser's O&M team shall be conducted one time before each release of new Contractor provided software to production. I.e. the Contractor shall deliver this type of training as many times as the Contractor delivered software is made ready for deployment to production.

[SOWG-120]   The training shall normally take place in person at the Purchaser's premises (in the Netherlands or in Belgium at the discretion of the Purchaser), but a video conference might be acceptable.

2.3.6 Supply Support

2.3.6.1 System Inventory

[SOWG-121]   The Contractor shall provide the Purchaser's ILS POC with a System Inventory in electronic Microsoft Excel format at least 14 (fourteen) calendar days before each software release.

[SOWG-122]   The System Inventory shall include, in separate chapters, all items furnished under this Contract, as follows and as applicable:
    (1)   All SW artefacts – i.e. all SW tools, SW test equipment, etc.;
    (2)   All Purchaser Furnished Items (PFI);
    (3)   All documentation, such as manuals, handbooks and drawings;
    (4)   All training materials.

[SOWG-123]   Additionally, the Contractor shall provide a detailed Software Distribution List (SWDL), which shall detail comprehensively all CSCIs and associated software, firmware or feature/performance licenses provided under this Contract. The SWDL shall include, the following data elements:
    (1)   CSCI identification number;
    (2)   Nomenclature;

(3)   Version number;
(4)   License key (if applicable);
(5)   License renewal date (if applicable);
(6)   Warranty expiration date;
(7)   Date of distribution.

[SOWG-124]   The Contractor shall make sure that all licenses are registered with the NCI Agency as end-user.

2.3.6.2   Physical labelling (if applicable)

[SOWG-125]   In case hardware (CD, USB, memory stick, hard drive etc.) is used to deliver or transfer the software by the Contractor, then this hardware shall be physically labelled with the contract information, CLIN, identification, release date and security classification. The label shall be durable and non-erasable to ensure proper identification is warranted at all times.

2.3.6.3   SW shipment (if applicable)

[59]   Note: As all software should be developed in the NSF, the two following requirements only apply to software developed outside of the NSF.

[SOWG-126]   Unless clearly specified otherwise, the Contractor shall be responsible for the delivery of Installation packages (physical/electronic media) of all SW, firmware and modifications provided under this Contract from Contractor's premises to the respective implementation destination.

[SOWG-127]   14 (fourteen) calendar days before each delivery of supplies, the Contractor shall provide the Purchaser with a Notice of Delivery comprising the following details:
(1)   Shipment Date;
(2)   Purchaser Contract Number;
(3)   CLIN;
(4)   Consignor's and Consignee's name and address;
(5)   Number and type of Installation media and/or Packages/Containers;
(6)   Number of 302 Forms used (if applicable).

2.3.6.4   Customs

[SOWG-128]   The Contractor shall be responsible for customs clearance and/or export licences of all deliveries into their destination countries. It is the Contractor's responsibility to take into account delays at customs. The Contractor shall therefore consider eventual delays and arrange for shipment in time. Under no circumstances can the Purchaser be held responsible for delays incurred, even when utilising Purchaser provided Customs Form 302 (if applicable).

2.3.7   Warranty Requirements

[SOWG-129]   The Contractor shall warrant that all software furnished under this Contract and all installation work performed under this Contract conform to the requirements and is free of any defect in code or workmanship for a period starting at date of Final System Acceptance (FSA) to date of FSA plus one (1) year.

[SOWG-130]   The Contractor shall support the system as part of the project implementation scope from the first site activation until FSA milestone is

successfully completed. During this period, the Contractor shall provide on-site and off-site maintenance and support services as required.

[SOWG-131]   The Contractor shall integrate the 3rd Level Maintenance and Support services within its warranty services, to be provided off-site from the Contractor's premises or on-site from the Purchaser premises, as required due to the corrections in SW. If the on-site Level 3 support is requested by the Purchaser for additional technical support or due to the changes in SW environment without any reported SW deficiency, then the Contractor shall provide this on-site support up to 6 times a year without any additional cost to the Purchaser.

[SOWG-132]   The Contractor shall provide a specific Customer POC for all warranty and support requests. The Contractor shall detail all the warranty and support requirements in its ISSP including the roles and responsibilities.

[SOWG-133]   The Contractor shall ensure that the warranty conditions remain valid even if the software is relocated/ redeployed to an equivalent platform during the warranty period.

[SOWG-134]   The Contractor shall fix all software defects as per the Contractor's internal procedures with the highest priority allocated. The Contractor shall provide the workaround within maximum 3 business days and the fixed solution within 20 business days after the Purchaser has provided the failure notification in written. The Contractor shall follow the Configuration and Change Management processes before the release of each fix. For this purpose the Contractor shall identify the changes, propose to the Purchaser, perform the test activities required and perform the Release Management activities.

[SOWG-135]   The Contractor shall provide 3rd Level maintenance, when requested by the Purchaser, to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs.

[SOWG-136]   If the Contractor becomes aware at any time before acceptance by the Purchaser that a defect exists in any Contract deliverables, the Contractor shall coordinate with the Purchaser and promptly correct the defect.

[SOWG-137]   During the warranty period, the Contractor shall be responsible for supplying all COTS software upgrades and updates.

[SOWG-138]   The availability of COTS software upgrades and updates shall be made known to the Purchaser and, if proposed for introduction by the Contractor (including any corrective action for an identified fault), shall always be subject to Purchaser approval. The Contractor shall support the Purchaser to update the CMDB with information on all changes made to CIs in the warranty period.

[SOWG-139]   The Contractor shall provide Technical Assistance, during business hours between 08.30-17.30 CET, to the Purchaser or his representatives during the warranty period. Technical assistance information details shall be indicated in the ISSP.

[SOWG-140]   The Technical Assistance shall provide on-call support in English for requests that correspond to information demands limited to the perimeter of

delivered products, evolution proposals, problem reports, or any information needed by the Purchaser or its representatives, which are not included in the supplied technical documentation. The Contractor shall not be responsible for the correction of defects in Purchaser furnished property, except for defects in installation, unless the Contractor performs, or is obligated to perform, any modifications or other work on such property. In the event described above, the Contractor shall be responsible for correction of defects that result from the modifications or other work.

2.3.7.1   COTS Component Warranty Requirements

[SOWG-141]   The contractor shall warrant the COTS Software components warranty whose duration shall be consistent with the identified Warranty Period.

[SOWG-142]   The Contractor shall coordinate the COTS Software warranty activation with the Purchaser in order to facilitate the system's handover to the Service Provision Authority.

2.3.7.2   Developed Components Warranty Requirements

[SOWG-143]   The Contractor shall be able to extend the warranty for a further period based on Purchaser's request.

[SOWG-144]   The price of the extended warranty shall be consistent with the bid prices, and shall be negotiated at the time of extension.

[SOWG-145]   The Extended warranty shall provide the same coverage as the original warranty and guarantee of the reliability of the Software Component under conditions of ordinary use.

2.4   Work Execution Requirements

2.4.1   NATO Software Factory (NSF)

[60]   The NCI Agency is moving towards a short-cycle capability development approach embracing a high degree of componentization and reuse through services, leading to composite capabilities with a much shorter time to in-service value, cost optimization and transparency. The approach makes use of standardized software engineering processes and common tooling in a test and development cloud DevSecOps Platform (the NSF) shared by NCI Agency, Industry and potentially by Nations.

[61]   The NSF toolchain includes a number of tools that the Contractor can make use of in execution of this work including:
   (1)   Azure DevOps
   (2)   GitLab
   (3)   Jira
   (4)   Jenkins
   (5)   Nexus
   (6)   SonarCube

[SOWG-146]   The Contractor shall, unless otherwise agreed with Purchaser, use the NSF as the platform for all software engineering, implementation work, and testing (including system integration testing).

[SOWG-147]   As the Contractor can only create and maintain engineering artefact at unclassified level on the NSF, the Contractor shall

(1)   On occasions be able to use mock data values (e.g. mock domain values) and/ or data structures to enable work at unclassified level;

(2)   For any module/ component where it is not feasible to do work at unclassified level (using mock data is not feasible), be able to do the work in Contractor's own secure software engineering environment at NATO RΞSTRICTED level.

[SOWG-148]   The Contractor shall when feasible use existing NSF tooling (see list above) for managing the project engineering artefacts. The Contractor may propose additional tooling for managing engineering artefacts on the NSF for Purchaser's approval.

[SOWG-149]   The Contractor shall organize the engineering artefacts in a structured and logical way that will enable the Purchaser to quickly find any artefacts based on context (e.g. work package, increment/ deliverable, etc.) and artefact type.

2.4.2   Meetings – General Requirements

[SOWG-150]   Meetings and phone calls shall be conducted in English.

[SOWG-151]   Unless otherwise specified, at least one week before all meetings required under this Contract, the Contractor shall send an invitation, including:
(1)   Purpose;
(2)   Agenda;
(3)   List of participants;
(4)   Date, hour, place, duration.

[SOWG-152]   The Contractor shall record meeting minutes and provide the minutes to the Purchaser within 3 working days.

[SOWG-153]   The Minutes shall include:
(1)   Date, place, and time of the meeting;
(2)   Purpose of the meeting;
(3)   Name of participants;
(4)   Approval of previous meeting's minutes and all resolutions
(5)   Record of principle points discussed, actions taken, and decisions made;
(6)   Copies of materials distributed at the meeting.

[SOWG-154]   The minutes shall not be used as a mechanism to change the terms, conditions or specifications of the Contract nor as a vehicle to alter the design or configuration of equipment or systems. Such changes shall only be made by agreement, amendment or by authorized mechanisms as set forth in the Contract.

[SOWG-155]   If meeting facilities at a Purchaser location are not available at the specified Purchaser location in the time frame required to support an in-person meeting, the Contractor shall:
(1)   Reschedule the meeting to such time as meeting facilities are available at the Purchaser location, with no further adjustment to schedule or cost; or
(2)   Provide suitable meeting facilities (e.g., hotel meeting facility) for the meeting/review at no additional cost to the Purchaser; or
(3)   Arrange to host the meeting at the Contractor's facility. This facility shall be provided at no additional cost to the Purchaser.

2.4.3 Kick-Off Meeting

[62]   The Purchaser will prior to the Kick-Off Meeting provide the initial MoSCoW prioritization to all the requirements as defined in the SRS. Note: The periodization is used in this contract for scheduling reasons. I.e. at the end of the project all requirements are expected to be fulfilled.

[63]   The MoSCoW priorities for the WP requirements will be updated at regular interval based on the performance and progress of the work delivered by the Contractor.

[64]   The preparation for and the conduct of the Kick-Off meeting is depicted in Figure 2-1.

[SOWG-156]   The Contractor's key personnel shall meet with the Purchaser's Project Manager no later than 1 month after efficient date of contract (EDC). The meeting will normally take place in person at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-157]   The Contractor shall one week prior to the meeting submit to the Purchaser:
(1)   The Project Management Plan (see 2.5.2.1);
(2)   The initial WP Delivery Plans for all of the project work packages (see 2.5.3) that as a minimum shall include the work breakdown structure (WBS) and schedules (see section 2.5.3.1);
(3)   The Risk Register (see 2.5.2.2);
(4)   The Issue Register (see 2.5.2.3).

[SOWG-158]   The Contractor shall be prepared to present the Project Management Plan, the initial WP Delivery Plans for all of the project work packages, the Risk Register, and the Issue Register.

[SOWG-159]   The initial WP Delivery Plans shall include:
(1)   A plan to deliver all requirements as defined in the SRS;
(2)   The start and end time of all work packages where the Contractor's schedule shall be in accordance with the Contractor's bid. Note: This initial schedule will be the basis for progress and performance monitoring. The Purchaser may agree to schedule adjustments and re-baselining progress and performance monitoring milestones at WP start-up pending these adjustment are justifiable.

[65]   The Purchaser will review the PMP for concerns (for instance unacceptable replacement of key personnel where the replacement personnel does not have the skill sets compliant with the requirements set forth in this SOW). If there are concerns with the PMP, then the Purchaser will not give the Contractor the permission to proceed.

[66]   The Purchaser will provide feedback to the Contractor on the WBS and schedule.

[67]   The Purchaser will review the Risk Register and the Issue Register for concerns to the execution of the contract. If the registers are properly initialized with acceptable risks and manageable issues and contains appropriate mitigation/ action plans, the Purchaser will give Contractor permission to proceed.

[SOWG-160]   The Contractor shall verify that the Contractor's key personnel (in particular the SW developers) have access to the NSF.

Figure 2-1   Kick-Off Meeting
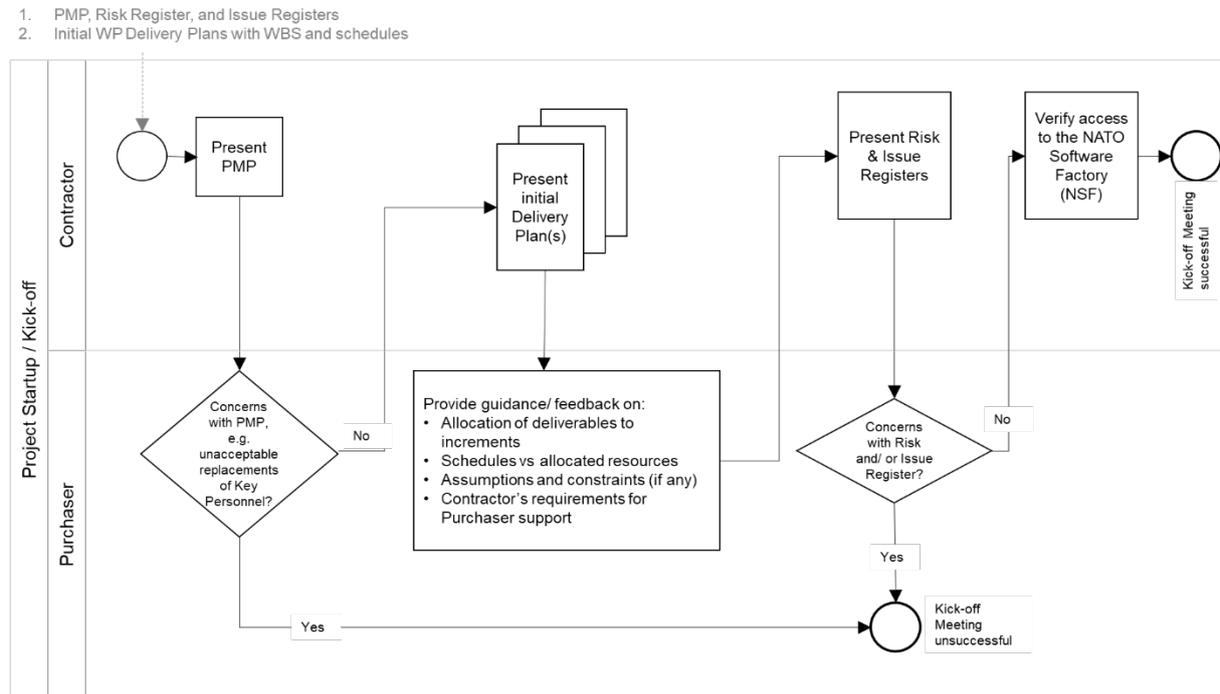
2.4.4   WP Start-up and Execution

2.4.4.1   WP Start-up Meeting

[68]   The preparation for and the conduct of the WP-Start-up Meeting is depicted in Figure 2-2.

[SOWG-161]   The Contractor's key personnel shall meet with the Purchaser's Project Manager. The meeting will normally take place in person at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-162]   The Contractor shall submit a refined WP Delivery Plan (see section 2.5.3) and other supporting material to the Purchaser minimum a week prior to the WP Start-up Meeting. This shall include:
  (1)   An extract of the CMDB, in the form of a Functional Baseline (FBL), that defines all configuration items of relevance for the WP;
  (2)   A work breakdown structure (WBS) defining all increments in time (start and end time) and the deliverables planned for each increment (see section 2.5.3.1);
  (3)   An initial Solution Description Document (SDD) (see section 2.5.3.2) which describes the overall solution design that can justify that the WP functional and non-functional requirements will be fulfilled;
  (4)   The full Deliverable Requirements Traceability Matrix (DRTM) as defined in section 2.5.3.3. I.e. it shall
      (a) Contain all WP requirements;
      (b) Define delivery status for each requirement (NOT_STARTED);
   (c) Specify initial MoSCoW priority for each requirement.

[SOWG-163]   The Contractor shall at the meeting present the refined WP Delivery Plan. The presentation shall be:
(1) Demonstrating that the WP schedule is realistic and that a team of skilled personnel has been allocated that matches the identified resource requirements;
(2) Demonstrating that the solution design will address the SRS requirements;
(3) Demonstrating the initial DRTM;
(4) Demonstrating that the FBL contains all expected CIs.

[69]   The Purchaser will review the Delivery Plan and if agreeing with the plan give Contractor permission to proceed.

[SOWG-164]   In case the Contractor choses to adapt the Delivery Plan to accommodate any Purchaser's recommendation and those changes have an impact of any other work packages, then the Contractor shall update all affected Delivery Plans.

Figure 2-2   WP Start-up Meeting
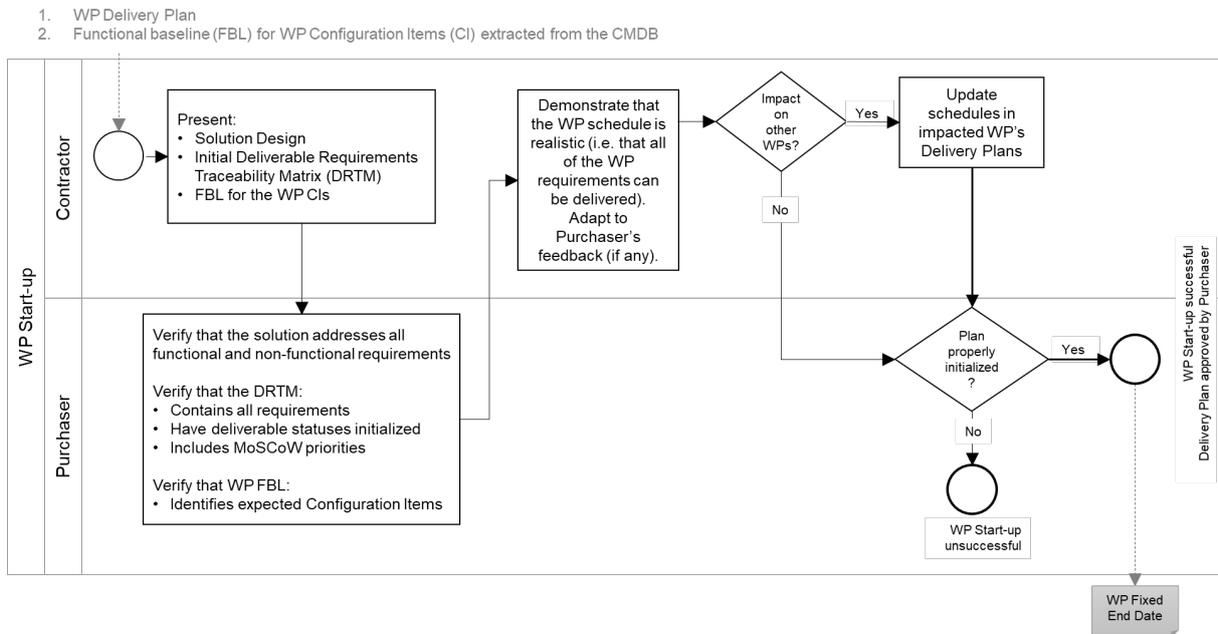
[70]   An outcome of the WP Start-up meeting is the identification of a Fixed WP End-date.

2.4.4.2 WP Execution

[71]   After a successful WP start-up the project will, as shown in Figure 2-3, run through a set of increments, where each increment will consist of a series of sprints where the duration of a sprint should never exceed 4 weeks.

[72]   Each increment will include a delivery acceptance event where the deliverable(s) are scrutinized against the SRS requirements. If the deliverables are not accepted by Purchaser additional work (through added sprints) will have to be performed by the Contractor to reach the acceptance criteria.

[73]   Following a successful delivery acceptance the delivered capability may be released to production.

[SOWG-165]   The Contractor shall be cognisant of the fixed WP End-date and throughout the WP track the progress of implemented deliverables against the fixed WP
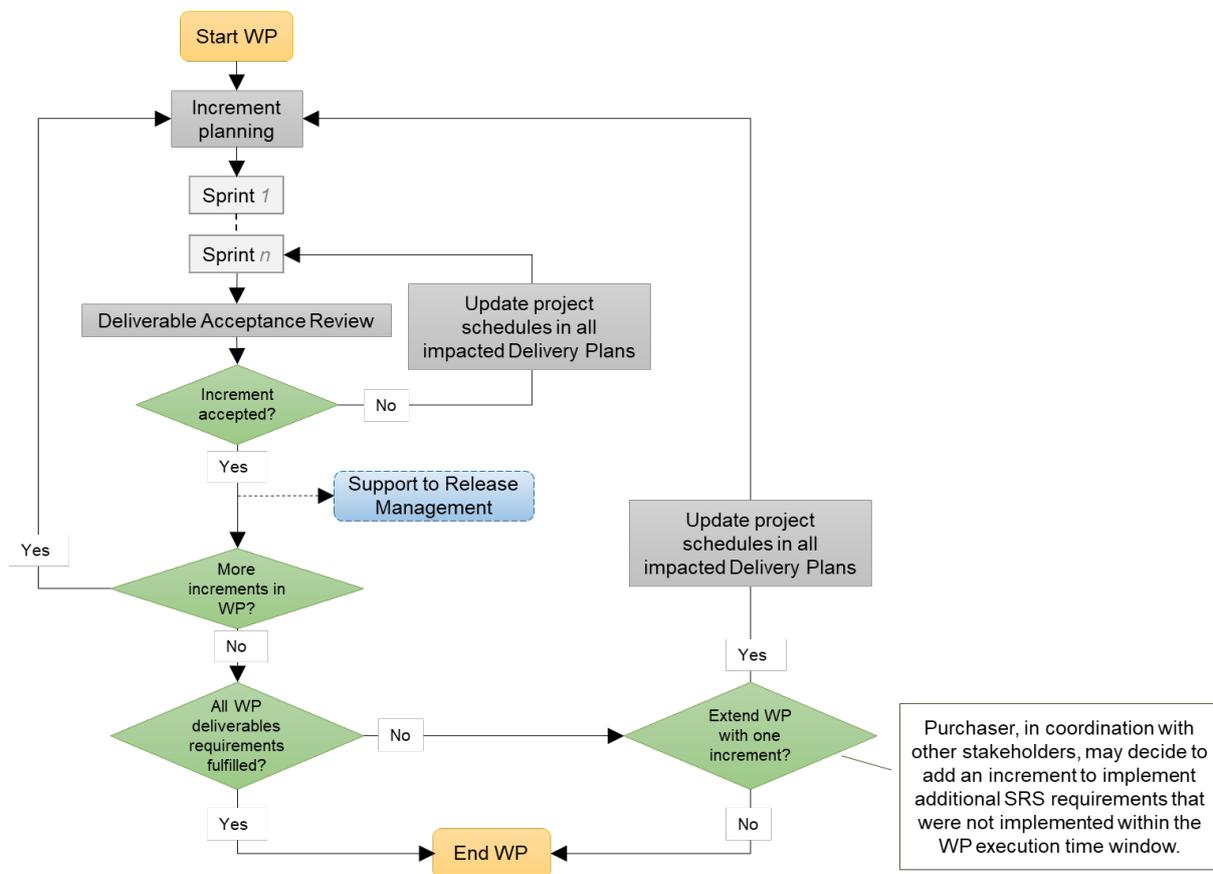
End-date, and whenever a potential schedule slippage is identified take corrective actions to prevent the schedule slippage.

[74]   At the end of the last planned increment in the WP the Purchaser may, in coordination and agreement with other project stakeholders, decide to extend the WP with one or more additional increment(s) to implement unfulfilled requirements.

[SOWG-166]   The Contractor shall, in case the WP is extended with additional increment(s), update the WP's Delivery Plan, and also update Delivery Plan's for WPs if they are impacted by the extension (e.g. if a subsequent WP cannot start before the WP being extended ends).

[SOWG-167]   The Contractor shall for the additional increment(s) implement remaining requirements in an order defined by priorities defined by the Purchaser.

Figure 2-3   WP execution

2.4.5   Increment Start-up and Execution

2.4.5.1   Increment Start-up Meeting

[75]   The preparation for and the conduct of the Increment-Start-up Meeting is depicted in Figure 2-4.

[SOWG-168]   The time and duration of each Increment Start-up Meeting shall be in accordance with the schedule established in the Delivery Plan at the WP Start-up meeting.

[SOWG-169]   The Contractor's key personnel shall meet with the Purchaser's Project Manager. The meeting will normally take place in person at the Purchaser's

facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.

[SOWG-170] The Contractor shall submit the planning artefacts of the Release Package (see section 2.5.4) and supporting material for the increment to the Purchaser minimum a week prior to the Start-up Meeting. This shall include:
(1) A Scope and Requirements Analysis (see section 2.5.4.1). In case the increment deliverable includes any user interface (UI) applications the analysis shall also include UI wireframes[1] for all user interfaces to be implemented;
(2) An Integrated Logistics Support (ILS) Plan (see section 2.5.4.2);
(3) A Test Plan including test cases and test report templates (see section 2.5.4.3);
(4) If applicable, Site Activation Test Plan and Report templates (see section 2.5.4.6);
(5) An extract of the CMDB, in the form of an Allocated Baseline (ABL) that is an enrichment of the FBL that now includes information on third-party components and libraries and their licence costs and/ or constraints.

[SOWG-171] The Contractor shall prior to the meeting provide the Purchaser with the latest version of the Solution Description Document (SDD) with content in accordance with section 2.5.3.2.

[SOWG-172] The Contractor shall prior to the meeting, with a minimum of one week notice to the Purchaser, state the need for:
(1) Prerequisites and required documentation;
(2) Purchaser provision of specific subject matter knowledge transfer.

[SOWG-173] The Contractor shall one week prior to the meeting provide the Contractor with a Schedule Assessment Analysis that:
(1) Report on accumulated schedule slippage over previous WP increments (if any) and the estimated impact on the on the WP Fixed End-date.
(2) Report on mitigations that will be implemented in the starting increment to reduce the schedule slippage with the goal of delivering the WP in accordance with the WP Delivery Plan schedule.

[76] The Purchaser will at the meeting review:
(1) The Scope and Requirements Analysis. If proposed changes are deemed to resolve inconsistencies or ambiguities, or suggests no-cost improvements, the Purchaser may approve the proposed changes. Any accepted changes to requirements will be updated in the relevant contractual documents;
(2) The Schedule Assessment Analysis.

[77] The Purchaser will support the Contractor with:
(1) Prerequisites (if feasible);

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[1] A wireframe is expected to be a low fidelity sketch (sometimes literally a pen and paper sketch) of the UI. The wireframes must convey main features, functions and content of a user interface, without getting into the visual design
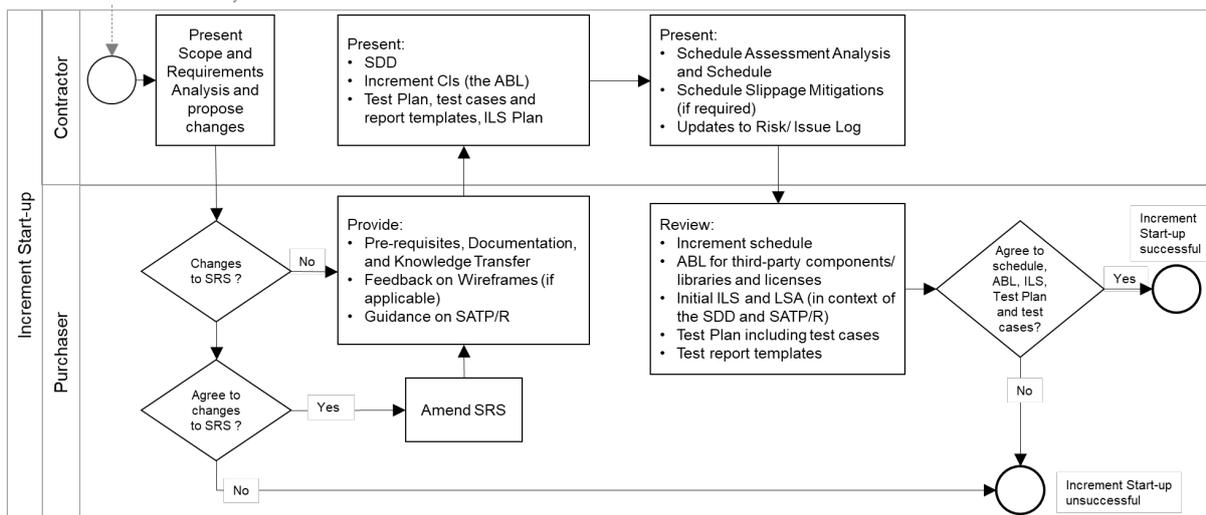
(2)   Documentation that is relevant to the contract and can be provided by the Purchaser at no cost to Purchaser;

(3)   Knowledge Transfer (if requested);

(4)   Guidance on UI Wireframes (if applicable);

(5)   Guidance on the solution design;

(6)   Guidance on the presented plans and report templates.

[78]   The Purchaser will agree to start-up of increment pending acceptable ABL, acceptable quality and completeness of plans, test cases, report templates, and increment schedule.

[SOWG-174]   The Contractor shall at the end of the meeting update the Risk Register or Issue Register to reflect the outcome of the Schedule Assessment Analysis.

Figure 2-4   Increment Start-up Meeting

2.4.5.2   Increment Execution

[79]   After a successful Increment Start-up the project will, as shown in Figure 2-5 run through a number of sprints.

[80]   As features become ready (i.e. the Contractor has tested the features and produced the required test reports), the Purchaser will submit those features for Independent Verification & Validation (IV&V). The IV&V will be conducted by the Purchaser, and the Contractor will have to (upon Purchaser's request) support such IV&V activities at no additional cost to the Purchaser. This support includes:

(1)   Presenting test plans and test cases at Increment start-up meetings;

(2)   Presenting and reporting on test results at sprint review meetings;

(3)   Participating in ad hoc discussions on test results (e.g. in case IV&V identifies potential bugs);

(4)   Supporting Purchaser in setting up additional installations on the NSF (the expectation here is that the SW is easily installable and that Purchaser's personnel will be able to do this without contractor support);

(5)   Providing answers to question the Change Manager may have to the software submitted into the RFC process.

[81]   In case the Contractor is not able to deliver all requirements at Must Have priority before the end of the increment, another sprint is added, and all project schedules are updated.

[82]   Once the increment ends with all Must Have requirement fulfilled, a final Delivery Acceptance Review is conducted where the Deliverable Acceptance Report (DAR) (see section 2.5.4.7) will be used to formally record acceptance of the increment's deliverables. In case of the DAR being incomplete, or not providing sufficient proof of a successful delivery, the delivery will not be approved and another sprint added to address the DAR deficiencies.

[83]   Following a successful Delivery Acceptance Review, the Increment ends, and the Purchaser may decide to proceed with obtaining approvals for deployment to the production environment. With such an approval, the Purchaser will deploy the Increment's deliverables to the production environment. The Contractor will have to provide support to the Purchaser in the release management activities, see section 2.4.5.2.7.

Figure 2-5 Increment execution

[SOWG-175]   The Contractor shall, in case the increment is extended with an additional sprint, update the WP Delivery Plans for all impacted WPs.

2.4.5.2.1   Sprints

[SOWG-176]   The Contractor shall break up the execution of an increment into a sequence sprints where the duration of a sprint is no longer than 4 weeks.

[SOWG-177]   The Contractor shall conduct a Sprint Planning Meeting and a Sprint Review Meeting and invite the Purchaser to take part in these meetings.

[SOWG-178]   The Sprint Planning and Review meetings shall normally take place at the Contractor's premises, but can, upon Contractor's request be conducted at Purchaser's facilities.

[SOWG-179]   The Contractor shall enable the Purchaser to participate remotely in Sprint Planning and Review meetings using video conferencing technology.

2.4.5.2.1.1   Sprint Planning

[SOWG-180]   The Contractor shall after each Sprint Planning Meeting produce a Sprint Work Plan that shall be provided to the Purchaser.

[SOWG-181]   The Sprint Work Plan shall include:
(1)   A list of project implementation tasks (or user stories) with individual priorities;
(2)   Tasks to implement bug-fixes in the case bugs has been discovered in software functionality previously delivered by the Contractor under this contract;
(3)   Updated UI Wireframes (if applicable);
(4)   Recorded request for specific Purchaser support during the sprint (e.g. support to testing, support to assessing User Interfaces, etc.)

[84]   The Purchaser will participate in the Sprint Planning Meeting with Subject Matter Experts to support the Contractor's planning.

2.4.5.2.1.2   Sprint execution

[SOWG-182]   The Contractor shall every day of the Sprint conduct a scrum meeting.

[SOWG-183]   The Contractor shall facilitate participation of the Purchaser in the daily scrum meetings (e.g. by using the Microsoft Teams tool available through the NSF).

[SOWG-184]   The Contractor shall each day of the sprint (typically at the end of the day) commit the implemented software changes to the Git repository in the NSF where the updated software shall pass the CI/ CD build tests.

2.4.5.2.1.3   Sprint Review Meeting

[SOWG-185]   The Contractor shall at the Sprint Review meeting:
(1)   Report the final status of planned tasks, and achievements and progress in the Sprint, to the Purchaser. Note: this report shall include an assessment from the Contractor on the outlook for being able to deliver all the requirements defined for the increment;
(2)   Provide the Purchaser with a new, updated and working, version of the software being developed. I.e. the Contractor shall make sure that the a Sprint always concludes with new working software.

2.4.5.2.2   Contractor's Test Activities

2.4.5.2.2.1   Managing the increment Test Plan, test cases, and test reports

[SOWG-186]   The Contractor shall maintain (i.e. improve and update if required) detailed test cases for how to perform tests that will produce the test report for the deliverable. I.e. there shall be detailed test cases enabling the production of the following reports:
(1)   Software Quality Metrics Report (SQMR), see 2.5.4.3.4;
(2)   Source Code Review Report (SCRR), see 2.5.4.3.5;

(3)   Security Test Report (SecTR), see 2.5.4.3.6;
(4)   Deliverable Functional and Performance Test Report (DFPTR), see 2.5.4.3.7;
(5)   System Integration Test Report (SITR), see 2.5.4.3.8;
(6)   Continuous Delivery Assessment Report (CDAR), see 2.5.4.3.9.

[SOWG-187]   The Contractor shall, when executing automated tests make the output from the tests (i.e. test results) available in the NUnit report XML format.

[SOWG-188]   Test reports shall be uploaded to the Purchaser test reporting tool in the NSF. The report entry in the reporting tool includes shall include an input field reserved for Purchaser's use (to add remarks to the test result).

[85]   Note: The Purchaser is expecting to use Jira tool with a Test Event Management plugin as the test reporting tool.

2.4.5.2.2.2   Defect management process

[SOWG-189]   The Contractor shall record provide a reporting and defect management process to be applied throughout the duration of the Project.

[SOWG-190]   The Contractor shall manage defects in the NSF Jira tool (see [Jira]).

[SOWG-191]   The Contractor shall classify all deficiencies in accordance with the Purchasers' categorization nomenclature for all defects and non-compliances as defined by Table 2-2, Table 2-3, and Table 2-4.

Table 2-2   Definitions for defect categorization

Attribute	Definition
Severity	The severity of a defect is the degree of impact that the failure has on the development or operation of a component, a system or a user function. The severity shall initially be proposed by the tester but shall officially be set in agreement with all the stakeholders. When agreement cannot be reached, the Purchaser's PM will set the severity.
Priority	The priority of a defect defines the order in which defects shall be resolved. The priority of the defect shall initially be proposed by the tester but shall officially be set in agreement with all the stakeholders. When agreement cannot be reached, the Purchase's PM will set the priority.
Category	The type of observation identified during the execution of a test case.

Table 2-3   Classification of defects based on severity

Severity	Definition
Critical	The failure of testing of a requirement. The failure results in the termination of the complete system or one or more component of the system. The failure causes extensive corruption of data. The failed function is unusable and there is no acceptable alternative method to achieve the required results.
Major	A significant failure that causes severely impaired functions but does not prevent operational processing. Applies to conditions under which the complete system or one or more component of the system are partially inoperative, but are still usable by the users. A work around may be available, but it may require manual intervention. Examples: • Absence of expected modules/ object or Unit • Failure of business operational process that affects a large group of users • Complete failure of a module
Moderate	The failure does not result in the termination and all functions are available but causes the system to produce incorrect, incomplete or inconsistent results. When resources are available and budgeted, should be resolved.
Minor	The failure does not result in termination and does not damage the functioning of the system. The desired results can be easily obtained by working around the failure.
Cosmetic	The failure is related to the look and feel of the application, typos in a document or user interfaces (amongst others), and not part of the immediate usability or contractual requirements. The failure does not adversely affect the overall system operation.

Table 2-4   Priorities for defect classification

Priority	Definition
Urgent	The defect shall be resolved as soon as possible. Required to complete independent verification and validation activities.
Medium	The defect shall be resolved in the normal course of development activities. It can wait until a new build or version is created.
Low	The defect is an irritant which should be repaired, but repair can be deferred until after more serious defects have been fixed.

2.4.5.2.2.3   Software Quality Metrics Reporting

[SOWG-192]   The Contractor shall, within the Contractor's continuous integration build pipeline, set up an automated software metrics analysis (e.g. using the NSF SonarQube) which shall provide the required software quality metrics for the Software Quality Metrics Report (SQMR) as defined in section 2.5.4.3.4.

[SOWG-193]   The test coverage reported in the SQMR shall be higher than 80%.

[86]   Note the coverage information can be collected using test runner tools like dotCover (see https://www.jetbrains.com/dotcover) when running unit tests and integration tests etc.

[SOWG-194]   An SQMR shall be produced for the relevant deliverable each time new software is committed back to the deliverable's software repository.

2.4.5.2.2.4   Source Code Review Reporting

[SOWG-195]   The Contractor shall establish routines for peer review of the developed software and produce source code review reports (SCRR) as defined in section 2.5.4.3.5.

2.4.5.2.2.5   Security Tests and Analysis and Reporting

[SOWG-196]   The Contractor shall, within the Contractor's continuous integration build pipeline, set up automated security test that tests security aspects of the implemented software in accordance with the OWASP Testing Guide. The automated security tests shall include:
   (1)   Static Application Security Testing (SAST) (e.g. using the NSF SonarQube);
   (2)   Dynamic Application Security Testing (DAST) (e.g. using OWASP ZAP);
   (3)   Dependency checking (i.e. security scanning of third-party libraries);
   (4)   Security-related unit and integration tests.

[SOWG-197]   The Contractor shall during source code reviews shall also consider security in accordance with the OWASP Code Review Guide.

[SOWG-198]   The Contractor shall document all security test and analysis findings in a Security Test Report (SecTR), see section 2.5.4.3.6.

2.4.5.2.2.6   Functional and Non-functional Tests and Reporting

[SOWG-199]   The Contractor shall whenever feasible develop automated tests, using a BDD and/ or Acceptance Test Driven Development (ATDD) methodologies, which tests functional requirements in the SRS and automatically report the test results to the Purchaser's test reporting tool. For functional requirements in the SRS where automated tests are not feasible, the Contractor shall define manual test cases so that with the combination of automated and manual tests, all functional requirements in the SRS are tested.

[SOWG-200]   The Contractor shall develop automated and/ or manual tests that tests all testable non-functional requirements in the SRS.

[SOWG-201]   The Contractor shall whenever feasible, and when it provides test value, implement unit tests to ensure correct functional and non-functional behaviour of the delivered software.

[SOWG-202]   The Contractor shall perform regression analysis and conduct regression testing against dedicated regression test cases and report the results as regression tests.

[SOWG-203]   The Contractor shall as part of these tests conduct, prepare training material for the Learnability Tests as defined in section 2.4.5.2.3.

[87]   Note: The training material for the Learnability Test will always have to be developed. However, the Purchaser may decide from reviewing the training material that the user interface is intuitive and that the actual Learnability Test event will not be required.

[SOWG-204]   The Contractor shall, if not deemed unnecessary by the Purchaser (see comment above), conduct a Learnability Test event and document the results from this event (see section 2.4.5.2.3 for details).

[SOWG-205]   The Contractor shall update the DRTM (see section 2.5.3.3) and link the DRTM to the functional and non-functional test results.

[SOWG-206]   The Contractor shall document all function, non-functional, and regression tests in the Deliverable Functional and Performance Test Report (DFPTR), see section 2.5.4.3.7.

2.4.5.2.2.7   System Integration Tests (SIT) and Reporting

[SOWG-207]   The Contractor shall in the Test Plan and test cases for the System Integration Tests identify all external interfaces and develop dedicated test cases for each interface.

[SOWG-208]   The Contractor shall, within the continuous integration build pipeline, set up automated testing of all interfaces that the software implements that can be consumed by external systems. The automated test of such interfaces shall:
(1)   Be implemented as a test harness using an appropriate test framework (e.g. using the NUnit framework)
(2)   Test all methods of all services according to documented interface/ service specifications.

[SOWG-209]   The Contractor shall deploy the software to a Purchaser Provided reference environment and verify that the implemented software can consume needed services provided by other Bi-SC AIS systems (e.g. Open Geospatial Consortium (OGC) services provided by the NATO CoreGIS system).

[SOWG-210]   The Contractor shall document all SIT tests results in the System Integration Test Report (SITR), see section 2.5.4.3.8.

2.4.5.2.2.8   Continuous Integration & Continuous Delivery Assessment Report

[SOWG-211]   The Contractor shall, within the continuous integration and continuous delivery (CI/CD) build pipeline, set up automated deployment to a Purchaser provided reference environment and verify that the software functions correctly on a platform running the latest NATO security settings.

[SOWG-212]   For software with a user interface the continuous integration shall include automated tests to verify that users can log on and access the application (e.g. using tools like Selenium Webdriver).

[SOWG-213]   Behavioural aspects of the delivered software shall be tested using behaviour driven development (BDD) testing through usage of Gherkin scenarios with a test runner (e.g. Cucumber).

[SOWG-214]   The Contractor shall report on the tests in the Continuous Delivery Assessment Report (CDAR), see section 2.5.4.3.9.

2.4.5.2.3   Learnability Test

[88]   Any developed software that includes user applications with a graphical user interface will normally have a non-functional requirement on the developed applications Learnability. The purpose of the Learnability requirement is to put a high emphasis on delivering good user experience (UX).

[89]   The Purchaser will select a group of people representing the users that are new to the user application developed by the Contractor. The test will be conducted as follows:

(1)   The Contractor will perform a short training session on the user interfaces for the users;

(2)   The Users will subsequently be given a set of tasks covering most of the user interface's functionality, and will be given a time limit to perform these tasks;

(3)   The result of the users' performance in conducting the selected tasks will be used to assess the Learnability of the user interface.

[90]   The Purchaser will most likely select people that will be responsible for providing training on the new user application as the users for these tests. This means that the Purchaser will use these Learnability Tests as an opportunity to 'Train the Trainers".

[SOWG-215]   The Contractor shall produce training material for any new UI functionality. This training material shall:

(1)   Be in the form of a PowerPoint presentation;

(2)   Be based on screenshots from the application user interface;

(3)   Describe all features of the deliverables user interface.

[SOWG-216]   The Contractor shall develop a Learnability Test to be used for assessing the test-users' performance and efficiency in conducted a representative set of key tasks. The Learnability Test shall:

(1)   Include tasks covering all main features of the user interface;

(2)   Enable a user that is a fast learner to conduct all the test steps in a relatively short time (maximum 10 minutes if feasible);

(3)   Define a time limit for how much time the users will be given to conclude the test. This time limit shall be justifiable (e.g. 1.5 times the time it takes the Contractor to do the tests);

(4)   Be designed such that each user's performance is recorded and can be evaluated (e.g. through recorded screen captures, or expected results entered into the application data set, etc.);

(5)   Be of a binary nature (i.e. pass or fail).

[91]   Note: The Purchaser may from studying the Learnability Training material, and from hands-on experience with the delivered software, decide that it will not be necessary to execute the actual Learnability Test event as described in requirements [SOWG-217] through [SOWG-220] below.

[SOWG-217]   The Learnability Tests shall normally be done in person with the Purchaser's selected user group at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but, if feasible, a video conference might be acceptable.

[SOWG-218]   The Contractor shall train the users using the prepared training material (PowerPoint slides) and, if required, perform some limited demonstrations using the application.

[SOWG-219]   The Contractor shall start the test, time the tests, and stop the tests after an agreed end time.

[SOWG-220]   The Contractor shall review the individual test results for all the test users and calculate the following statistics:

(1)   The percentage of users passing each of the tests;

(2)   The percentage of passed tests versus the total number of tests;

(3)   The percentage of passed tests for 80% of the tests with the highest score (i.e. identify the 20% most difficult tests and remove them from the result set before calculating the statistics).

[92]   The Purchaser will compare the test results and the calculated statistics against the Learnability requirement in the SRS.

2.4.5.2.4   Independent Verification and Validation (IV&V)

[93]   The Purchaser will be conducting IV&V activities that will:
   (1)   Independently repeat tests conducted by Contractor with the aim of recreating the test results reported by the Contractor;
   (2)   Run additional tests. These additional tests may use different data sets, and may include extended system-to-system integration tests;
   (3)   Verify that the software can be installed and maintained as described in the Maintenance and Administration Manual (MAM), see section 2.5.4.4;
   (4)   Verify that the successful site activation can be verified using a Site Activation Test Plan and Report (SATP/R), see 2.5.4.6 (each release will normally be installed at a minimum to one site, the Purchaser production staging environment).

[SOWG-221]   The Contractor shall support the Purchaser in installing the latest version of the software in up to two separate installations after every sprint.

[94]   The installation of the latest software should be so simple that the Purchaser is able to perform the installation without support. The Purchaser will need these installed versions for parallel ongoing IV&V activities.

[SOWG-222]   The Contractor shall, if required, travel to the Purchaser's facility to support such installation.

2.4.5.2.5   UAT

[95]   At the end of each increment the Purchaser will conduct a user acceptance test (UAT) event that will verify that the new features delivered within the increment is able to support operational intelligence processes and is ready for operational use.

[96]   The UAT will be organized by the Purchaser and it will be conducted from the Purchaser's facility using an installation on the Purchaser's production staging environment.

[SOWG-223]   The Contractor shall be physically present at the first UAT event with the right personnel to be able to support the UAT event. For all other UAT events the Contractor shall provide remote support (e.g. through video conferences) to discuss UAT findings.

2.4.5.2.6   Deliverable Acceptance Review

[97]   The Deliverable Acceptance Review serves as an Increment Close-out Meeting.

[98]   The Deliverable Acceptance Review can take place when all Must Have requirements defined for the increment deliverables have been delivered, and there are no recorded defects with a severity above "Minor" (see section 2.4.5.2.2.2).

[SOWG-224]   At the end of each Increment, the Contractor shall by default meet, in person, with the Purchaser's Project Manager and Purchaser's subject matter experts (SME) at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser) for a

Deliverables Acceptance Review. If agreed between Purchaser and Contractor, the meeting could be done as a video-conference meeting.

[SOWG-225] The Contractor shall one week prior to the Deliverables Acceptance Review provide the Deliverable Acceptance Report (DAR) as defined in section 2.5.4.7.

[SOWG-226] The Contractor shall at the Deliverables Acceptance Review Meeting present:
  (1) The updated Deliverable Requirements Traceability Matrix (DRTM) (see section 2.5.3.3) that reflect the deliverables and tests produced/ reported in this release;
  (2) A calculation for the total value of the invoice to be submitted for the release. The invoice value shall be calculated as the sum the individual cost value of all successfully delivered requirements in the release

2.4.5.2.7 Supporting the release to production

[99] Following a successful Deliverable Acceptance Review the Purchaser may proceed with the release management process to obtain the approval to deploy the implemented capability to the production environment. The result of this approval process will be that the implemented capability is included on the NATO Approved Fielded Product List (AFPL).

[100] With the implemented capability on the AFPL list, the Purchaser will seek to deploy it onto the production environment.

[SOWG-227] The Contractor shall support the security testing (penetration tests) of the release management process.

[SOWG-228] The Contractor shall support the Purchaser in meetings, and other communication, with the Change Advisory Board.

[SOWG-229] The Contractor shall, prior to deployment to production, provide Administrator training for the Purchaser's O&M support staff, see section 2.3.5.3.

[SOWG-230] The Contractor shall support the Purchaser in deploying the implemented capability to the production environment.

2.4.6 Final System Acceptance (FSA)

[101] The FSA requirements are defined in the Contract Special Provisions document, see [INTEL-FS2-Special-Provisions].

2.5 Documentation Requirements

2.5.1 Cross-cutting (General) Document Requirements

[102] The Purchaser's default software packages for managing projects are:
  (1) Microsoft Office Professional;
  (2) Microsoft Project.

2.5.1.1 Formatting and Naming Conventions

[SOWG-231] The Contractor shall use filenames for all documentation deliverables in compliance with the following filename convention [NU|NR]_[Contract

number]_[Name of document]_[v0.x|v1.0].[filename extension] and the fields used in the filename convention shall be used as follows:

(1)   [NU|NR] is the classification of the document: NATO Unclassified or NATO Restricted;

(2)   [Contract number] is the official Purchaser contract number;

(3)   [Name of deliverable] is the Contractor proposed, Purchaser agreed designation of the deliverable;

(4)   [v0.x|v1.0] is the version number in the range (v0.1, v0.2, …, v0.9, v0.10, v0.11, …) for drafts not eligible for acceptance and with v1.0 only for the final deliverable;

(5)   [filename extension] is the standard filename extension, but ".zip" may be used to aggregate multiple files.

[SOWG-232]   COTS documents, such as a vendor supplied user manual, shall retain their original filenames and shall hence not be renamed according to the above filename convention.

[SOWG-233]   All documentation produced under this contract shall adhere to the same presentation style (cover pages, approval pages, headers, footers, headings and paragraphs, font types and sizes within headings and paragraphs), irrespective of the source of the document within the Contractor's team, including any subcontractors except COTS equipment documentation.

[SOWG-234]   All documentation (including source code comments) shall be written in UK English.

[SOWG-235]   The first page shall show the document title, project title, contract number as well as version number and issue date, if applicable, and which shall also be shown on each subsequent page bottom. The first page shall also include the classification headers and footers with the highest classification of information contained in the entire document (including annexes and appendices).

[SOWG-236]   Header and Footer Marking shall show the NATO classification, normally —NATO UNCLASSIFIED — or — NATO RESTRICTED —.

[SOWG-237]   Developed documentation shall contain a Table of Contents. It shall be noted that depending on the type of document, a Table of Content might not be required. This shall be agreed between the Purchaser and Contractor beforehand.

[SOWG-238]   All documents shall contain a preface, containing details of related documents and information on how to navigate the document.

[SOWG-239]   All documents produced under this Contract shall use sans-serif fonts (e.g. Arial, Helvetica, Calibri, etc), and obey the following principles:

(1)   Headings shall be numbered and use bold font-types of sizes higher than the body text (the higher the Heading in the document hierarchy, the larger the font-size);

(2)   No document shall use Headings below level 6 (i.e. 1.1.1.2.3.1 Heading Text);

(3)   Body text (under the headings) shall not use fonts smaller than Arial 10 pt (or equivalent size if another font type(s) is (are) selected);

(4)   Any graphic material generated under this Contract, including network diagrams, shall not use font sizes smaller than Arial 8 (or equivalent size if another font type(s) is (are) selected).

[SOWG-240]   Larger font sizes than those specified above shall be selected if the corresponding text or drawing is to be reduced in size when embedded in the document, in order to guarantee that the PDF output keeps the font size as specified.

[SOWG-241]   All documentation developed in Microsoft Word shall be printable if required and therefore the page format shall be A4, printable in loose-leaf form, and possible to be presented bound in stiff backed covers with 4-ringed binders which permit the removal and insertion of individual pages and drawings

[SOWG-242]   The convention to be used for numbers appearing in textual documents is for a comma to be the thousands separator and a period to be the decimal separator (e.g., 1,365,276.24).

[SOWG-243]   The convention to be used for dates appearing in free text (e.g., quoting dates of meetings) is day-month-year and not month-day-year.

[SOWG-244]   Where documents contain many complex specialized or strongly domain oriented terminologies these shall be defined in a glossary.

2.5.1.2   Distribution

[SOWG-245]   Documentation shall not contain warnings limiting the rights to use or reproduce the document. The Purchaser reserves the right to make additional copies of any documentation provided under this contract for his internal use.

[SOWG-246]   All contractual documentation (e.g., change proposals, invoices, etc.) shall be delivered electronically unless specified otherwise by the Purchaser Contracting Officer.

[SOWG-247]   All electronic copies shall be delivered in a format which is best suited for review and maintenance by the Purchaser. In general the following guidelines shall be used:
(1)   Microsoft Word shall be used for generating text document;
(2)   Microsoft Excel shall be used for tabular or matrix data;
(3)   Microsoft Project shall be used for schedule; and
(4)   Microsoft PowerPoint shall be used for briefings.

[SOWG-248]   The Contractor shall submit documentation, intended for review by the Purchaser in electronic formats compatible guidelines in [SOWG-247].

[SOWG-249]   The Contractor shall submit all final and accepted versions of documentation deliverables in electronic format, as PDF. For non-COTS documentation, the documentation shall also be delivered in an editable Microsoft Office format.

[SOWG-250]   Documentation shall be distributed as follows:
(1)   For all documents unless otherwise instructed: an electronic copy to the Purchaser's Project Manager;
(2)   For contractual documents: an electronic copy to the Purchaser's Contracting Officer and if required and additional hard copy.

2.5.1.3   Review and Updates

[103]   The Purchaser will when reviewing a document provide comments, corrections, and suggested changes to the Contractor within two weeks of receipt, unless specified differently in this Contract.

[104]   The Purchaser reserves the right to return without review a document that has significant deficiencies.

[SOWG-251]   All documentation is subject to Purchaser approval.

[SOWG-252]   The Contractor shall not rely on the Purchaser review to fill in deficiencies or obtain missing Purchaser information.

[SOWG-253]   The Contractor shall resubmit the document as a revised draft incorporating the Purchaser's comments within two weeks after receipt, unless specified differently in this SOW.

[SOWG-254]   If there is a change to an already delivered deliverable, then the Contractor shall be responsible for updating all documentation pertaining to the specific deliverable where the deliverable documentation is affected by the change.

2.5.2   Project Management Documentation Package

2.5.2.1   Project Management Plan (PMP)

[SOWG-255]   The PMP shall identify all major Contractor operating units and any Subcontractors involved in the work and a description of the portion of the overall effort or deliverable item for which they are responsible.

[SOWG-256]   The PMP shall cover all aspects of the project implementation, including the Contractor's project management methodology, project control processes, personnel assignments, and external relationships necessary to provide the deliverables as required by this Contract.

[SOWG-257]   The PMP shall be sufficiently detailed to ensure that the Purchaser is able to assess the Contractor plans, capabilities, and ability to satisfactorily implement the entire project in conformance with the requirements as specified in this SOW.

[SOWG-258]   The PMP shall identify key personnel in the project organization, their qualifications, and their responsibilities.

[SOWG-259]   The PMP shall describe the Contractor's, and Subcontractors', approach to security management, including personnel and facility security.

[SOWG-260]   The PMP shall identify Assumptions and Constraints.

[SOWG-261]   The PMP shall describe methodology used for cost and schedule estimation

[SOWG-262]   The PMP shall include a master schedule that defines the project start-up, all major milestones (to include increment start-up and increment end dates), the project durations (in months from the start-up), and the project end-date.

[SOWG-263]   The PMP shall define all expected Purchase involvements and all expected Purchaser Furnished Items (PFI) and associated timelines.

2.5.2.2   Risk Register

[SOWG-264]   The Risk register shall list all project risks, and indicating for each risk the following information (but not limited to):
(1)   Risk identifier: unique code to allow grouping of all information on this risk;
(2)   Description: brief description of the risk;
(3)   Risk category (e.g. management, technical, schedule, quality and cost risks);

(4) Impact: effect on the project if this risk were to occur;
(5) Probability: estimate of the likelihood of the risk occurring;
(6) Risk rating (High, Medium, Low);
(7) Proximity: how close in time is the risk likely to occur;
(8) Response strategy: avoidance, mitigation, acceptance, transference
(9) Response plan(s): what actions have been taken/will be taken to counter this risk;
(10) Owner: who has been appointed to keep an eye on this risk;
(11) Author: who submitted the risk;
(12) Date identified: when was the risk first identified;
(13) Date of last update: when was the status of this risk last checked;
(14) Status: e.g. closed, reducing, increasing, no change.

[SOWG-265]   It shall be possible to export the Risk Register to Microsoft Excel.

2.5.2.3 Issue Register

[SOWG-266]   The Issue Register shall comprise the following information (but not limited to):
(1) Issue Number or Trouble Ticket Number (in case the issue is received through 1st Level Support Service Desk);
(2) Issue Type (Request for change, Schedule slippage, 2nd Level Support, general issue such as a question or a statement of concern);
(3) Author;
(4) Date identified;
(5) Date of last update;
(6) Description;
(7) Criticality;
(8) Resolution Analysis;
(9) Status.

[SOWG-267]   It shall be possible to export the Issue Register to Microsoft Excel.

2.5.2.4 Configuration Management Plan (CMP)

[SOWG-268]   The CMP shall in general comply with the requirements of a CMP as defined in [ACMP-2009-SRD-41], and shall be in the format defined by section 2.1 in [ACMP-2009-SRD-41].

[SOWG-269]   Any requirements in the [ACMP-2009-SRD-41] deemed by the Contractor to be not applicable for this contract shall in the CMP be specifically defined as not applicable (N/A) followed by a short justification why the requirement is not applicable.

[105]   Note: Requirements in [ACMP-2009-SRD-41] that are expected to be declared N/A for a SW acquisition contract are found in:
(1) Paragraph 3.2.1 - Hardware Configuration Item (HWCI) Identification;
(2) Paragraph 3.7 - Drawing library;
(3) Paragraph 5.1.3 - Interface Control Working Group (ICWG).

[SOWG-270]   The CMP shall define the CM organisation including the Configuration Manager role and any other supporting CM personnel. Note: CM personnel shall have sufficient knowledge, experience, responsibility, authority, organisational freedom, organisation independence and security clearance to review and evaluate activities, identify problems and initiate or recommend corrective actions.

[SOWG-271]   The CMP shall be tailored to the requirements of the technical solution, specifically addressing how CM shall be achieved in an Agile project.

[SOWG-272]   The CMP shall be maintained as a living document subject to revisions and updates, as required.

[SOWG-273]   The CMP shall be placed under configuration control throughout the period of performance the Contract.

[SOWG-274]   The CMP shall identify and define all top-level configuration items (CI) to be delivered under this Contract and where these top-level CIs are traced to deliverables as defined in the SSS

[SOWG-275]   The CMP shall define the format for Engineering Change Proposals (ECP) to be used during this Contract.

[SOWG-276]   The CMP shall defined the format for Request for Deviation (RFD)/ Request for Waiver (RFW) to be used during this Contract.

[SOWG-277]   The CMP shall describe how the Configuration Management Database (CMDB) will be implemented.

[SOWG-278]   The CMP shall define the format for the human readable Configuration Status Accounting (CSA) Report.

2.5.3   WP Delivery Plan

[106]   This section identifies documentation artefacts that are specific to the planning and execution of a work package (WP).

[107]   As shown in Figure 2-6 the WP Delivery Plan consists of:
   (1)   A Functional Baseline (FBL) extract from the CMDB;
   (2)   A Work Breakdown Structure (WBS) identifying all WP deliverables and schedule information for when the individual deliverable is planned to be delivered;
   (3)   A Solution Description Document (SDD) describing the solution design, solution decisions, and service specifications for implemented services;
   (4)   A Deliverable Requirements Traceability Matrix (DRTM);
   (5)   A number of Release documentation sets (see section 2.5.4).

Figure 2-6   WP Delivery Plan
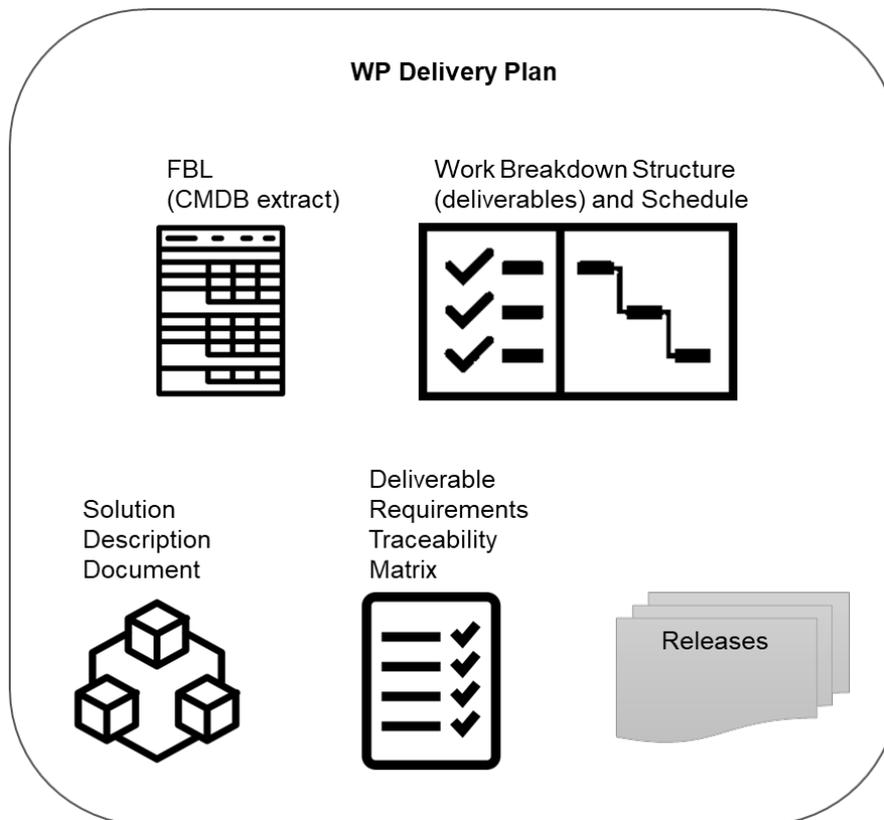
[108]   The requirements defined for a deliverable will each have a Contractor defined cost assigned to it prior to starting an increment and prior to the final prioritization of the deliverable's requirements.

[109]   The requirements defined for a deliverable will be prioritized using the MoSCoW prioritization scheme where the Purchaser prior to starting the increment work, decides the individual priorities of the deliverable's requirements.

[110]   A deliverable will be accepted at the end of an increment pending all of the defined Must Have requirements have been fulfilled, and the deliverable passes all the required tests (see section 2.5.4.7).

[111]   The cost of the implemented deliverable will be calculated as the sum of the individually fulfilled requirements.

2.5.3.1 Work Breakdown Structure (WBS) with Schedule (WBS/ Schedule)

[SOWG-279]   The WBS/ Schedule shall identify each of the deliverables (e.g. applications, services, etc.) using the deliverables identifying code from the CLIN number in the SSS.

[SOWG-280]   The WBS/ Schedule shall group the deliverables by Increment where each Increment is identified by a unique number.

[SOWG-281]   The Level-of-Effort (LOE) in number of person-days shall be defined for each of the deliverables in the WBS/ Schedule.

[SOWG-282]   It shall be possible to view the WBS/ Schedule as a Gantt chart where the start and end time of the increment is depicted. I.e. it shall from this schedule

be possible to identify the time window when a particular deliverable will be delivered.

[SOWG-283]   The WBS/ Schedule shall show all key events within the Work Package. The key events shall include:
(1)   All Increment Start-up and Increment Review meetings;
(2)   All Sprint Planning and Review meetings (where the duration of a sprint is expected to be 3 or 4 weeks);
(3)   All Test Events.

[SOWG-284]   The WBS/ Schedules for each of the Delivery Plans shall be placed under configuration control throughout the period of performance the Contract.

2.5.3.2 Solution Description Document (SDD)

[112]   The purpose of the SDD is to describe solution decisions to a level of detail that the enable the Purchaser to assess the solution's feasibility and ability to fulfil the requirements as defined by the SRS.

[SOWG-285]   The SDD shall include a design that includes:
(1)   Diagrams identifying key components and services and how they relate to each other;
(2)   Description of purpose of each of the identified components/ services and a short description of the business logic it will implement;
(3)   Identification of key technologies and frameworks to be used;
(4)   Identification of all 3rd party components and/ or libraries to be used and including licensing information on these;
(5)   Assessment of the proposed solution against the non-functional requirements as defined in the SRS.

[SOWG-286]   The SDD shall record all fundamental solution decisions. Each such decision shall include:
(1)   An Issue or Problem Statement paragraph/ subsection, that describes the issue/ problem and including motivation for change, and a reference to SRS requirements, if applicable;
(2)   An Assumption paragraph/ subsection, that provides background information on (external) context, expected future situations, etc.;
(3)   An Alternatives paragraph/ subsection, that describes the alternatives that have been considered, and their implications. These considerations shall include assessment of the alternative against non-functional requirements (including RAMT), risk of obsolescence, lifecycle costs, licensing constraints, and compute resources requirements (processing power and memory);
(4)   A Decision and Justification paragraph/ subsection, that identifies the recommended solution and justifies why this is the preferred solution.

[SOWG-287]   The SDD shall identify all COTS and FOSS components and libraries to be included in the solution where this identification shall include Vendor Name, Product Name, SW version, and the full details of the component/ library's lifecycle cost and constraints (license/ subscription fee, licence type, etc.)

[SOWG-288]   The SDD shall include detailed information on all aspects of the Contractor's Continuous Integration (CI) and Continuous Delivery (CD) pipeline. This shall include information on the tooling planned to be used, the approach to automated testing in general, automated integration testing, and automated security testing.

[SOWG-289]   The SDD shall, if required, include an Annex for documenting user interface wireframes or mock-ups.

[SOWG-290]   The SDD shall include annexes that documents implemented server-side services (if any), see section 2.5.3.2.1 below.

[SOWG-291]   The SDDs for each of the Delivery Plans shall be placed under configuration control.

2.5.3.2.1   Service Specifications

[113]   The purpose of a Service Specification is to document the service such that:
  (1)   SW developers implementing functionality that consumes the service have sufficient information to build functionality that can successfully interact with the service;
  (2)   Maintenance of the service is possible as the SW maintenance team will have sufficient information to enable them to understand the inner workings of the service.

[SOWG-292]   Service Specifications shall include machine-readable interface files, in a standardized format/ representation (e.g. OpenAPI for describing RESTful services, Web Services Description Language (WSDL) files for SOAP services, etc.)

[SOWG-293]   Service Specifications shall, when applicable, include documentation of, or reference to, an underlying information model.

[SOWG-294]   Service Specifications shall include documentation of the business logic and business rules implemented by the service.

[SOWG-295]   Service Specification shall include documentation on the service non-functional/ performance characteristics (e.g. response times).

2.5.3.3   Deliverable Requirements Traceability Matrix (DRTM)

[114]   The DRTM will be used to track the progress on all the individual requirements of the WP deliverables as defined in the SRS.

[115]   The Purchaser will provide the contracted requirements as an extract from the Purchaser's requirement management system (see [DOORS]) in a format that can be imported into Jira (see [Jira]).

[SOWG-296]   The DRTM shall be integrated with (or if feasible fully implemented in) the Jira tool (see [Jira]) on the NSF (the Jira tool will be provided as PFI in the NSF.

[SOWG-297]   The DRTM shall record the delivery status for all requirements. The delivery status of a requirement shall be {NOT_STARTED, IN_DEVELOPMENT, COMPLETE}.

[SOWG-298]   The DRTM shall for each requirement record references to the location(s) in the software where the requirement is implemented (e.g. file(s), package(s), classes).

[SOWG-299]   The DRTM shall for each requirement include the verification method based on the SRS. The verification methods are defined in Table 2-5.

Table 2-5   Verification methods

Method	Description
Analysis	The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results; analysing the performance of design by running simulations. This method can be used if a test scenario cannot be created at the Test Environment.
Test	The operation of the software element or component, using instrumentation or other special test equipment to collect data for later analysis. Controlled condition, configurations, and inputs are used in order to observe the response. Results are quantified and analysed. This method can be used where user interaction is involved and when computations with input data are necessary.
Demonstration	The operation of the software element or component, that relies on observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis. This method is used to demonstrate a capability to be provided by the requirement.
Inspection	The visual examination of software code, documentation, etc. This method can be used where testing is not possible (e.g. the maximum number of items used as a limitation inside the code).
Special Case	Any special qualification methods for the software element, such as special tools, techniques, procedures, facilities, and acceptance limits.

[SOWG-300]   The DRTM shall for each requirement, in the COMPLETE state, record a reference to the requirement test result within the Deliverable Functional and Performance Test Report (DFPTR) (see section 2.5.4.3.7).

[SOWG-301]   The DRTM shall include a comments field with the test results records that shall be reserved for the Purchaser's use (the Purchaser will use this comments field to raise comments to the test results).

[SOWG-302]   The DRTM shall for each requirement, in addition to recording the individual test result for the requirement, also include a reference to the Deliverable Acceptance Report (DAR) (see section 2.5.4.7), identifying the requirement was formally accepted by the Purchaser.

[SOWG-303]   The DRTM shall for each requirement record that a requirement has been invoiced by providing a reference number to the invoice where the Contractor requested payment for the requirement.

[SOWG-304]   The DRTM shall for each invoiced requirement record the invoice number and date.

[SOWG-305]   The DRTM shall record the current MoSCoW priorities for all requirements in the work package {M, S, C, W}.

[SOWG-306]   The DRTM shall for each requirement record the date for the last change to the requirement's tracking information.

[SOWG-307]   The Contractor shall be able to provide the DRTM in Excel format to the Purchaser where the information is organized in accordance with the following rules:

(1)   The Excel spreadsheet shall contain the complete DRTM where each attribute of the DRTM is represented by a column, and where each row represents a requirement;

(2)   The Excel spreadsheet shall be sortable by column values;

(3)   It shall be possible to organize the information around the individual deliverables for the work package. I.e. all requirements pertaining to a deliverable can be grouped together in subsequent rows in the matrix.

[SOWG-308]   The DRTM shall be placed under configuration control throughout the period of performance the Contract.
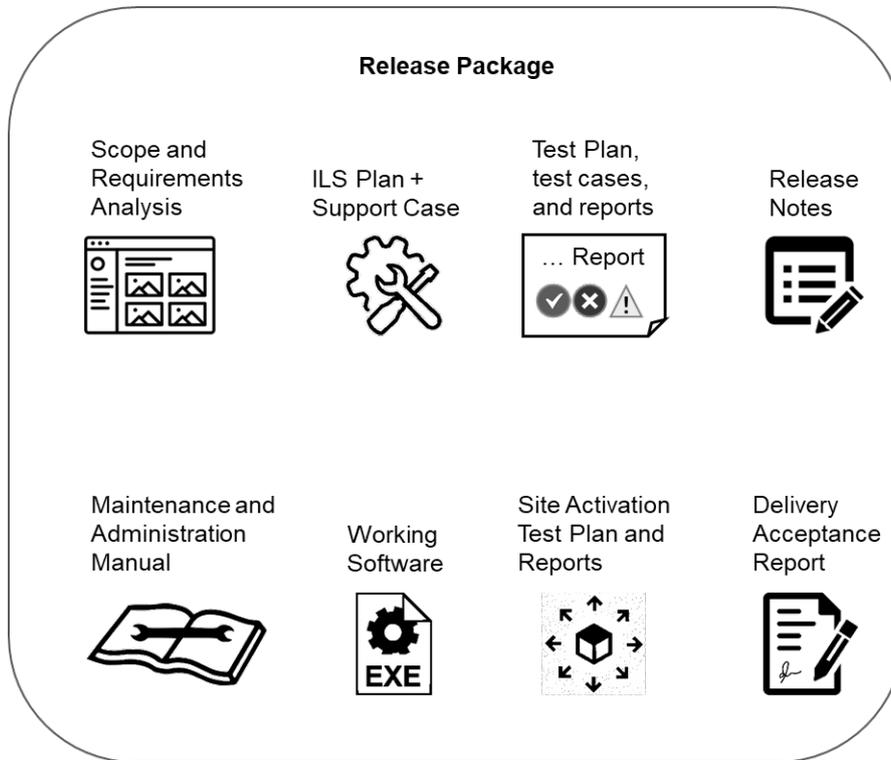
2.5.4 Release Package

[116]   This section identifies documentation artefacts that are specific to the planning and execution of the work required to produce a software release (where the release could be deployed to production). Each WP increment will result in a release; i.e. working software including a set of deliverables.

[117]   As shown in Figure 2-7 the Release Package consists of:

(1)   A Scope and Requirements Analysis (SRA);

(2)   An Integrated Logistics Support (ILS) Plan (ILSP) and a Support Case;

(3)   A Test Plan including test cases and Reports (TP/R);

(4)   A Release Note;

(5)   A Maintenance and Administration Manual;

(6)   A working software component;

(7)   Site Activation Test Plans and Reports (SATP/R);

(8)   A Deliverable Acceptance Report (DAR).

Figure 2-7   Release Package

2.5.4.1 Scope and Requirements Analysis (SRA)

[SOWG-309]   The SRA shall include an analysis of all requirements pertaining to the deliverables planned for the next release where this analysis shall:
     (1)   Identify potential issues with the requirements for the planned release;
     (2)   Propose changes to the requirements definitions to resolve inconsistencies or ambiguities, or to suggest no-cost improvements.

[SOWG-310]   The SRA shall identify any pre-requisites, documentation, and knowledge transfer required for implementation of the Increment's deliverables.

[SOWG-311]   The SRA shall provide UI wireframes (e.g. using Balsamiq Wireframes) or mock-ups for any deliverables in the release that includes user interface (UI) components (the UI wireframes or mock-ups shall also be recorded in the SDD).

[SOWG-312]   The SRA shall identify all documentation artefacts required for the release (to be configuration controlled with the PBL). This list shall include Release Notes, Maintenance and Administration Manual, and Service Specifications (if applicable), etc.

[SOWG-313]   The SRA shall include a general Site Activation Test Plan & Report (SATP/R) that shall defines how the deliverables can be deployed to production, and define the test steps to verify a successful deployment.

[SOWG-314]   Each release shall as a minimum plan for deploying to a staging server on the production environment where the Contractor shall support the Purchaser in the installation and activation at the site.

[SOWG-315]   The SRA and all its individual artefacts shall be placed under configuration control throughout the period of performance the Contract.

2.5.4.2 Integrated Logistic Support Plan (ILSP) and Support Case

[118]   See section 2.3.2 and section 2.3.4.3.

2.5.4.3 Test Plan and Reports (TP/R)

[119]   The purpose of the TP/R is to plan for and record the results of all tests, verification and validation activities for the deliverables of the release.

2.5.4.3.1 General

[SOWG-316]   The TP/R shall be structured in accordance with the deliverable configuration items and the TP/R also shall form configuration items. I.e. the TP/R shall be included in the PBL.

[SOWG-317]   The TP/R shall include:
(1)   Overall Test Plan;
(2)   All test cases for the deliverables planned for the release;
(3)   Software Quality Metrics Report (SQMR);
(4)   Source Code Review Report (SCRR);
(5)   Security Test Report (SecTR);
(6)   Deliverable Functional and Performance Test Report (DFPTR);
(7)   System Integration Test Report (SITR);
(8)   Continuous Delivery Assessment Report (CDAR).

[SOWG-318]   Whenever feasible the test reports shall be automatically generated (e.g. through the NUnit report XML format).

[SOWG-319]   All manually written test reports (in a document format) shall on their front page show how many tests cases that passed, failed or were not run.

2.5.4.3.2 Overall Test Plan

[SOWG-320]   The Overall Test Plan shall describe the Contractor's approach to testing. I.e. how the Contractor will conduct tests that will collect the results to populate the individual reports as defined in section 2.5.4.3.4 through 2.5.4.3.9 below.

[SOWG-321]   The Overall Test Plan shall include templates for all the individual test reports.

2.5.4.3.3 Test cases

[SOWG-322]   The test cases shall document and describe all the test steps that meet or demonstrate Purchaser's requirements with an expected Test Result and pass/fail result.

[SOWG-323]   Whenever feasible, the test cases shall be defined, documented and implemented as executable test code (e.g. as Gherkin scenarios) to enable fully automated tests.

2.5.4.3.4 Software Quality Metrics Report (SQMR)

[SOWG-324]   The SQMR shall be auto-generated from full SonarCube (see [SonarCube]) static code analysis and dependency checking.

[CO-325]   The SQMR shall include an analysis on the test coverage achieved.

2.5.4.3.5   Source Code Review Report (SCRR)

[120]   Source code reviews is expected to be produced as a result of peer review of implemented source code. However, tool-based source code analysis (e.g. HP Fortify) could be used instead or in combination to the manual reviews.

[SOWG-326]   The SCRR shall document the source code review findings, and record any action items (or issues) resulting from such reviews, and the latest status of these action items (or issues). The SCRR shall include assessments on:
(1)   Readability of developed code;
(2)   Level of, and quality of, comments embedded in the source code. E.g.:
  (a) Comments explaining the purpose of a class;
  (b) Comments explaining what a function does, including descriptions of input parameters and return values;
  (c) Comments explaining member variables; what the variable means (including unit of measure where appropriate;
  (d) Comments on type definition explaining what the type represents;
(3)   Compliance with programming style guides and naming conventions;
(4)   Security vulnerability analysis against the Open Web Application Security Project (OWASP) identified vulnerabilities.

2.5.4.3.6   Security Test Report (SecTR)

[SOWG-327]   The SecTR shall record the results of source code analysis of security vulnerabilities, of manual security tests, and of automated security tests.

[SOWG-328]   The SecTR shall describe any security measures that aim to mitigate security issues identified in the SecTR.

2.5.4.3.7   Deliverable Functional and Performance Test Report (DFPTR)

[SOWG-329]   The DFPTR shall report the results of tests that verifies that the deliverable's functional and non-functional requirements (as defined in the SRS) are fulfilled.

[SOWG-330]   The DFPTR shall include test results from a test environment mimicking the actual production environment. This means:
(1)   Test results from the PBL release executing in a reference environment with all the same security constraints, compute resources, etc.;
(2)   Test results from using real operational data in the same volume, size, and quality (or "flaws") as in the production environment.

[SOWG-331]   The DFPTR shall include references to the SRS requirements being tested.

[SOWG-332]   Each individual test record in the DFPTR shall include a unique identifier, a date for when the test was recorded, and an identification of the PBL being tested.

[SOWG-333]   The DFPTR shall include regression testing as required and specifically report on, and record, the results of regression tests performed.

[SOWG-334]   In case a feature has been discontinued and no regression tests has been performed for this feature, this shall be explicitly called out and recorded.

[SOWG-335]   The DFPTR shall, in accordance with section 2.4.5.2.2.2, identify and describe defects found during testing.

2.5.4.3.8   System Integration Test Report (SITR)

[121]   The purpose of this report is to record of testing interfaces used for communicating with external applications and services. Such tests could be done through usage of test harnesses executed as part of the build process (Continuous Integration), or by direct test with the external application and services, or by a combination of the two approaches.

[SOWG-336]   The SITR shall be organized around the interfaces implemented in the PBL release.

[SOWG-337]   The SITR shall record results of integration tests for each of the identified interfaces in the PBL release.

2.5.4.3.9   Continuous Delivery Assessment Report (CDAR)

[122]   The purpose of the CDAR is to track the maturity and quality of the Continuous Integration & Continuous Delivery (CI/CD) processes implemented.

[SOWG-338]   The CDAR shall describe in detail setup of the CI/CD pipeline to include details on:
(1)   The steps in the pipeline;
(2)   What tools are being used;
(3)   What tests are being run.

[SOWG-339]   The CDAR shall describe the main or high-level GitHub activities (Git flows, branches, commits, pull-requests, etc.) for the work of implementing the PBL release.

[SOWG-340]   The CDAR shall include identified weaknesses in the current CI/CD setup and proposal for possible improvements to the CI/CD pipeline.

2.5.4.4   Maintenance and Administration Manual (MAM)

[SOWG-341]   The Contractor shall develop, provide and maintain the System Maintenance and Administration Manual.

[SOWG-342]   The Contractor shall detail all Scheduled and Unscheduled maintenance procedures and all Administration procedures in accordance with the Task Analysis.

[SOWG-343]   The Contractor shall test and validate the procedures and resources described in the MAM and in original equipment manufacturer (OEM) manuals.

[SOWG-344]   The Contractor's MAM shall provide product breakdown list (with CIs), functional descriptions and specifications, screenshots from the software with the procedures required for: deployment, installation, configuration and settings, use of LOG files, security procedures, disaster recovery, backup/restore, BIT/condition monitoring, troubleshooting techniques, test remove/ replace.

[SOWG-345]   The MAM shall describe in detail how to install a new baseline, including description on how to recover the old baseline if the new baseline installation must be aborted. If data migration is needed between baseline versions, the MAM shall describe how to migrate data form the previous baseline to the new baseline.

[SOWG-346]   The Contractor's Maintenance Manual shall provide the description for the usage of all third-party applications needed to configure, manage and maintain the system.

[SOWG-347]   The Contractor's Maintenance Manual shall define the in-depth, step-by-step procedure how to perform the 1st, 2nd and 3rd level corrective and preventive maintenance tasks and SM&C tasks.

[SOWG-348]   The MAM shall include troubleshooting guidance with details on how to solve a full range of potential problems or on how to provide workarounds for potential problems.

[SOWG-349]   The Contractor shall ensure that each and every procedure include as a minimum the following information:
(1)   The support level to be assigned;
(2)   Location/facility involved (if the operation is performed remotely, it has to be specified);
(3)   Personnel skills required;
(4)   Task duration and frequency (if applicable), reusing MTBF and MTTR data available;
(5)   Manpower required;
(6)   Tools, test equipment and special tools required (if any);
(7)   The steps needed to perform the procedure.

2.5.4.4.1   OEM Manuals for COTS products

[SOWG-350]   The Contractor shall provide original OEM manuals for all COTS software installed.

[SOWG-351]   The Contractor shall be responsible to keep the COTS OEM manual under configuration control and to assure that all the COTS OEM Manuals will be always coherent with the operational configuration deployed.

2.5.4.5   Release Note

[SOWG-352]   The Release Note shall identify and explain new features provided in the PBL release.

[SOWG-353]   The Release Note shall identify all Configuration Items in the PBL release that has changed since the previous release.

[SOWG-354]   The Release Notes shall, for the deliverables in the release, identify all known issues and limitations, and workarounds for these.

2.5.4.6   Site Activation Test Plan and Report (SATP/R)

[SOWG-355]   The SATP/R shall describe how the deployment of the new PBL release to the site is tested and verified to be successful.

[SOWG-356]   The SATP/R shall include tests that verifies that the PBL release is fully functional at the site which includes:
(1)   Verifying that the users of the PBL release (if any) can correctly access it and its data;
(2)   Verifying that PBL release's interfaces to external systems is properly configured and functional.

2.5.4.7 Deliverable Acceptance Report (DAR)

[123]   The purpose of the DAR is to serve as a record of the Purchaser's formal acceptance of a PBL release and through the PBL the SRS requirements it fulfils

[SOWG-357]   The DAR shall include a summary describing the PBL release, a sheet for the sign-off of the formal acceptance of the PBL, and then include the following reports as annexes:
   (1)   A Configuration Status Report for the PBL;
   (2)   ILSP with the Logistics Support Analysis;
   (3)   Software Quality Metrics Report;
   (4)   Source Code Review Report;
   (5)   Security Test Report;
   (6)   Deliverable Functional and Performance Test Report;
   (7)   System Integration Test Report;
   (8)   Maintenance and Administration Manual;
   (9)   Release Notes;
   (10)   Site Activation Test Plan/ Reports (if applicable).

[SOWG-358]   The Contractor shall provide the DAR in a PDF format.

[124]   The Purchaser will sign off the DAR pending that:
   (1)   All requirements with a Must Have priority for the defined deliverable(s) have been fulfilled;
   (2)   All relevant test reports have been provided and the tests are successful.

[SOWG-359]   The Contractor shall place the Purchaser-approved DAR under configuration control.

3   Project-Specific Requirements

3.1   Contractor's Technical Personnel Qualifications

[125]   This section specifies special skills for individuals of the Contractors project team that are deemed required for this project in particular. The skills for generic project management roles are defined in section 2.1.1.

3.1.1   Technical Lead

[SOWG-360]   The Contractor shall designate a Technical Lead for the project; who shall lead the efforts in analysis, design, development, integration, and follow-on enhancement efforts of the Contractor.

[SOWG-361]   The Contractor's Technical Lead shall meet the following qualifications:
(1)   Have a master's degree in Computer Science, or related/ equivalent studies;
(2)   Have seven years of experience in leading technical roles in projects similar to this project in technical scope;
(3)   Have documented expert knowledge and experience in OData REST API, OWASP, Web-applications, Graph Databases, modern search engines, service-oriented architectures, enterprise integration;
(4)   Have a NATO SΞCRET clearance.

3.1.2   Software Architect

[SOWG-362]   The Contractor shall designate a Software Architect for the project; who shall maintain the INTEL-FS Spiral 2 Information Model in IBM Rational Software Architect (RSA).

[SOWG-363]   The Contractor's Software Architect shall meet the following qualifications:
(1)   Have a bachelor's degree in Computer Science, or related/ equivalent studies;
(2)   Have three years of experience of information modelling in Unified Modeling Language (UML) in projects similar to this project in technical scope;
(3)   Have documented expert skills in usage of modelling tools like IBM RSA, or Sparx Enterprise Architect, or similar UML modelling tools;
(4)   Have a NATO SΞCRET clearance.

3.1.3   Scrum Master

[SOWG-364]   The Contractor shall designate a Scrum Master for the project; who shall manage and assist the SW development team in planning and executing their work so that the expected delivery goals are achieved.

[SOWG-365]   The Contractor's Scrum Master shall meet the following qualifications:
(1)   Have a bachelor degree in Computer Science, or related/ equivalent studies;
(2)   Have five years of experience in leading technical roles in projects similar to this project in technical scope;
(3)   Have a minimum of two years of experience in the role of a Scrum Master;
(4)   Have a NATO SΞCRET clearance.

3.1.4 Test Director

[SOWG-366]   The Contractor shall designate a Test Director for all test activities conducted under this Contract; who shall direct the test planning and test implementation/ execution.

[SOWG-367]   The Contractor's Test Director shall meet the following qualifications:
(1)   Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
(2)   Have seven years of experience working on SW intensive projects;
(3)   Have documented expert knowledge and experience with automating testing and test reporting (e.g. using the NUnit framework, Gherkin test-scenarios, SpecFlow and/ or Cucumber, etc.) for Azure DevOps;
(4)   Have documented expert knowledge and experience with OData REST API, OWASP, Web-applications, graph databases, search engines, service-oriented architecture, enterprise integration;
(5)   Have documented expert knowledge in implementing continuous integration build pipelines, testing of SOA services, and automated security testing;
(6)   Have a NATO SΞCRET clearance.

3.1.5 Software Developers

[SOWG-368]   The Contractor shall designate a team of SW developers experienced with high performance and scalable backend services including search and graph query/ analytics services, and with enterprise integration activities

[SOWG-369]   The Contractor's backend Software Developers shall meet the following qualifications:
(1)   Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
(2)   Have five years of documented expert knowledge and experience with software implementation of OData REST API, Web-applications, graph databases, search engines, enterprise integration and mediation services;
(3)   Should have experience of working with Docker, Kubernetes, Kafka, Elasticsearch, and the Apache Camel framework;
(4)   Have a NATO SΞCRET clearance.

3.2 Augmentation of SOW General Requirements

3.2.1 Additional requirements for increment start-up

[SOWG-370]   The Contractor shall at the increment start-up meeting (see section 2.4.5.1) identify the user stories that the deliverable(s) for the increment will support and the Contractor shall demonstrate that the solution for the deliverable(s), as described in the SDD, will provide sufficient functionality in the backend services to fully support all aspects of the identified user stories.

3.2.2 Additional requirements to the Deliverable Acceptance Review

[126]   The Purchaser will use the Deliverable Acceptance Review to verify that there is a consistency between the [INTEL-FS2-InformationModel] and the implementation of the deliverables.

[SOWG-371]   The Contractor shall at the Deliverable Acceptance Review demonstrate that
(1)   Forward-transformations from the information model has been used (to
the maximum extent possible) for database schemas (if applicable),
data access layer, application programming interfaces, domain value
tables, and documentation, etc.;
(2)   If applicable, the information model has been updated to reflect the
increment deliverable implementations;
(3)   That the information model is properly managed as a configuration
item.

[SOWG-372]   The Contractor shall at the Deliverable Acceptance Review through the
System Integration Tests (SIT) and Reporting (see section 2.4.5.2.2.7)
demonstrate that the backend services fully supports the relevant user
stories and acceptance criteria as defined in [INTEL-FS2-UserStories]. This
means all required backend functionality to fulfil the user story acceptance
criteria is provided (where backend functionality means anything that is not
user interface related and that normally would run on the client side).

[SOWG-373]   The Contractor shall at the Deliverable Acceptance Review demonstrate that
the any API implemented as part of the deliverable is fully documented.

3.2.3   Additional requirements for supporting release to production

[SOWG-374]   The Contractor shall, starting immediately after the first release to production
(see 2.4.5.2.7) until the Final System Acceptance (FSA), provide support to
ensure that the software running in production fulfils its availability
requirements. This support shall, for all releases to production include:
(1) 2nd level support by performing problem analysis to identify the cause
of reported issues with the software in production
(2) 3rd level support by implementing bug fixes to identified issues and to
subsequently produce a new PBL Release
(3) 4th level support by obtaining and including new versions of 3rd party
components and libraries when this is required to resolve issues in
production

[SOWG-375]   The Contractor shall, after FSA, in the Warranty period, continue to provide
the 3rd level and 4th level support.

3.3   WP2.1 Service-oriented backend and integration services

3.3.1   Deliverables

[127]   Table 3-1 below show an extract of the SSS for WP 2.1 identifying the high-level
CLIN numbers for the deliverables of the WP (for further breakdown and details of
deliverables, see the SSS spreadsheet).

Table 3-1   WP 2.1 SSS high-level CLIN numbers

CLIN	Description	Delivery at increment number
1	Backend services – Phase 1	
1.1	IIE to IIE Association Service	1
1.2	Geospatial and Features Service	1
1.3	Intel-FS Spiral 1 Geospatial and Features Migration Service	1

1.4	Products Management Service	1
1.5	Intel-FS Spiral 1 Products Migration Service	1
1.6	Collation Tasking Management Service	2
1.7	Battlespace Object (BSO) Management Service	2
1.8	ORBAT Management Service	2
1.9	Intel-FS Spiral 1 BSO Migration Service	2
1.17	Search Service	2
1.10	ISR Organization Service	3
1.13	Overlays Service	3
1.14	Intel-FS Spiral 1 Overlays Migration Service	3
1.18	Named Collections Service	3
1.11	Targets Service	4
1.12	Intel-FS Spiral 1 Target Data Migration Service	4
1.15	Intelligence Requirements (IR) Management (IRM) Service	4
1.16	Intel-FS Spiral 1 IRM Data Migration Service	4
1.19	Notification Service	4
2	Backend services – Phase 2	
2.1	IIE to IIE Synchronization Service	6
2.2	Presentation-conditioning Service	6
2.4	Collection Requirement (CR) Management (CRM) Service	6
2.3	Data Analytics Service	7
2.6	JIPOE Service	7
2.7	Terrain & Mobility Analysis Service	7
2.5	Collection Operations Management (COM) Service	8
3	System Administration (SysAdm) tool	
3.1	Configurations and setup management functions	5
3.2	Domain-values management functions	5
3.3	Content management functions	5
3.4	Diagnostics functions	5
3.5	Notification function	5
4	Integration services - I2BE destination	
4.1	Central Card Catalogue (CCC) Import Service	5
4.2	ETEE Import Service	8
4.15	Asset Lists Import Service	8
4.17	BM Firing Event Import Service	8
4.10	Air ORBAT Import Service	9
4.11	Land ORBAT Import Service	9

4.12	Maritime Task Organization Import Services	9
4.3	NATO CSD IPL Import Service	10
4.4	NATO CSD Geospatial and Features Import Service	10
4.5	NATO CSD ISR Organizations Import Service	10
4.6	NATO CSD IRM Data Import Service	10
4.7	NATO CSD CRM Data Import Service	10
4.8	NATO CSD COM Data Import Service	10
4.13	NJTS Import Service	11
4.14	MIDB Import Service	11
4.16	Electronic Order of Battle (EOB) Import Service	11
4.9	APP11-D Reports Import Service	12
5	Integration services – I2BE source	
5.1	Central Card Catalogue (CCC) Export Service	5
5.4	Emulated INTEL-FS Spiral 1 Web Services	6
5.2	NATO CSD Export Service	10
5.3	APP11-D Reports Export Service	12

3.3.2   Additional Requirements for Site Activations

[128]   Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.

[SOWG-376]   In addition to the regular support for deployment of every release to the production staging environment (see [SOWG-314]) the Contractor shall also provide support for up to 15 installations and site activations on actual servers in production.

[SOWG-377]   The Contractor shall, if deemed required to achieve successful activation, provide the key personnel to be present in person at the installation and activation event.

[129]   Note: The installation and activation to production is normally executed from Purchaser's facility in Mons-Belgium.

[SOWG-378]   The Contractor shall also during this work package be responsible for corrective maintenance of software produced by the Contractor.

[SOWG-379]   The Contractor shall factor in the cost of the site installation and activation support, and for corrective maintenance of Contractor's developed software, into the cost of the software deliverables as defined in the SSS. I.e. the Contractor shall not expect any additional compensation for this support.

3.4   WP 2.2 Optional 3rd and 4th Level Maintenance and Support

[130]   This optional Work Package identifies a 3rd and 4th Level Maintenance and Support deliverable (see section 2.3.3.1) that can be exercised within the Contract for delivery after the Warranty period expires.

[SOWG-380]   The Contractor shall provide one year of 3rd Level and 4th Level Maintenance and Support for the I2BE capability where this support includes:

(1) Support to NCI Agency's 2nd Level Support process with identification of the root cause of the issue (e.g. by issue replication testing);
(2) Implement the software corrections as identified in (1);
(3) Test the corrections in accordance with the testing activities as defined in section 2.4.5.2.2;
(4) Support the IV&V testing in accordance with section 2.4.5.2.4;
(5) Support the UAT testing in accordance with section 2.4.5.2.5;
(6) Define a new PBL in the CMDB and create a Release Note in accordance with section 2.5.4.5;
(7) Support the Deliverable Acceptance Review in accordance with section 2.4.5.2.6;
(8) Support the Release Management in accordance with section 2.4.5.2.7.

[SOWG-381] If the Purchaser activates the optional support package, the Contractor shall be fully compliant with section 2.3.7 Warranty Requirements and provide all the services described under aforementioned section without any additional cost.