ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Μόνιμη Αντιπροσωπεία της Ελλάδος
στο ΝΑΤΟ

Stavros Tsakonas
26.02.2021 14:53

ΑΔΙΑΒΑΘΜΗΤΟ
ΕΠΕΙΓΟΝ

Αρμόδιος: Ασμχος (ΜΕ) Δημήτριος Κανταρτζόγλου Βρυξέλλες, 26 Φεβρουαρίου 2021
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ΠΡΟΣ: ΥΠΕΘΑ/ΓΔΑΕΕ/ΔΑΕΤΕ (μ. ΓΕΕΘΑ)

ΚΟΙΝ.:
ΥΠΕΞ/Δ' Γεν. Δ/ντη
ΥΠΕΞ/Δ2 Δ/νση
ΓΕΕΘΑ/Γ2 (μ. ΓΕΕΘΑ)
Υπουργείο Ανάπτυξης /Γενική Γραμματεία Εμπορίου Πλ.Κάνιγγος (μ.η.)
Υπουργείο Ανάπτυξης /Γενική Γραμματεία Βιομηχανίας /Δνση Διεθνών Βιομηχανικών Σχέσεων Πλ.Κάνιγγος (μ.η.)
Τεχνικό Επιμελητήριο Ελλάδος /Δνση Ε Επαγγελματικής Δραστηριότητας, Νίκης 4 (μ.η.)

ΘΕΜΑ: 2η 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, 2η 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. 8 τροποποιήσεως).

4. Παρακαλούμε για τις ενέργειές σας.

ΛΑΜΠΡΙΔΗΣ

Συν. Σελ: 121

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

Acquisition Directorate

Boulevard Léopold III
B-1110 Brussels, Belgium

NCIA/ACQ/2021/6574
11 February 2021

To: All Nominated Prospective Bidders List and Distribution List

Subject: Invitation For Bid IFB-CO-14783-INTELFS2 Amendment 2

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

Dear Prospective Bidders,

1. The purpose of this Amendment 2 is to:

   a. Publish Release 2 of IFB Bidders' questions and NCI Agency responses;

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

2. NCI Agency responses to Bidders' questions received by 10 February 2021 are hereby published with this IFB Amendment 2, listed as Attachment 1. A subsequent IFB amendment will be issued after the Bidders' Conference (11 February 2021) answering any additional questions.

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

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

5. Revised bidding documents provided with this IFB Amendment 2 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.

6. 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.

NATO Communications and Information Agency
Agence OTAN d'information et de communication
Avenue du Bourget 140
1110 Brussels, Belgium
www.ncia.nato.int

7. 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.

8. 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: 2021.02.10 21:03:32 +01'00'

Daniel K. Gaertner
Senior Contracting Officer

Attachments:

1) Responses to Clarification Requests, Release Number 2

2) Revised IFB Documents :
   2.1 File # 07: Book II – Part II, Special Provisions
   2.2 File # 12: Book II – Part IV, SOW I2BE

NCIA/ACQ/2021/6574

Distribution List for IFB-CO-14783-INTELFS2 Amendment 2

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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

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Strategic Commands

HQ SACT Attn: R&D Contracting Office

ACO Liaison Office

All NATEXs

Attachment 1: Responses to Clarification Requests, Release Number 2

Index no. NCI Agency	IFB Ref.	Bidder's Question	NCI Agency 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	ook II - Part IV - SOW I2BE - 3.	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	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	N/A	Can you disclose the Spiral 1 ICD document.	The Spiral 1 ICD has been uploaded to the IFB portal under Supporting Documents.
CR49	N/A	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	N/A	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	N/A	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 14*b_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."

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

IFB-CO-14873-INTELFS2
Amendment 2

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

BOOK II

PART II
CONTRACT SPECIAL PROVISIONS

Introduction

The Contract Special Provisions for the User Applications (UA) contract and the Back-end Data Management and Integration (BE) contract will be almost identical.

There are some sections in this document that contain a note to *"delete whichever does not apply".* For example, in Section 4, Scope:

> *4.1 The purpose of this contract is to upgrade the current Intelligence Functional Services (INTEL-FS) User Applications / Back-end Data Management capabilities [delete whichever does not apply]. All of the technical details and requirements of this project are explained in Part IV – Statement of Work, and its annexes, the System Requirements Specification and User Stories.*

This simply means that either the reference to "User Applications" or "Back-end Data Management" will be removed prior to contract award, and the remaining content of that section will remain unchanged.

Bidders shall not make any changes to these Contract Special Provisions as part of their bid.

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1 ALTERATIONS, MODIFICATIONS AND DELETIONS OF THE NCIA CONTRACT GENERAL PROVISIONS

1.1 Article 2 “Order of Precedence” modifies Clause 1 “Order of Precedence” of the Contract General Provisions.

1.2 Article 3 “Interpretations, Definitions and Acronyms” supplements Clause 2 “Definitions of Terms and Acronyms” of the Contract General Provisions.

1.3 Article 5 “Contract Type and Consideration” replaces Clause 7 “Firm Fixed Price Contract” of the Contract General Provisions.

1.4 Article 9 “Acceptance Procedures – Agile Development” augments Clause 21 “Inspection and Acceptance of Work” and Clause 22 “Inspection and Acceptance of Documentation” of the Contract General Provisions.

1.5 Article 10 “Final Systems Acceptance” augments Clause 21 “Inspection and Acceptance of Work” and Clause 22 “Inspection and Acceptance of Documentation” of the Contract General Provisions.

1.6 Article 11 “Termination for Default” augments Clause 39 “Termination for Default” of the Contract General Provisions.

1.7 Article 12 “Termination for Convenience of the Purchaser” delimits Clause 40 “Termination for Convenience of the Purchaser” of the Contract General Provisions.

1.8 Article 13 “Liquidated Damages” replaces Clause 38 “Liquidated Damages” of the Contract General Provisions.

1.9 Article 15 “Participating Countries” augments Clause 9 “Participating Countries” of the Contract General Provisions.

1.10 Article 16 “Security” augments Clause 11 “Security” of the Contract General Provisions.

1.11 Article 17 “Intellectual Property” augments Clause 30 “Intellectual Property” of the Contract General Provisions.

1.12 Article 19 “Systems Warranty” augments Clause 27 “Warranty of Work (Exclusive of Software)” and Clause 30 “Software Warranty” of the Contract General Provisions.

1.13 Article 21 “Purchaser Furnished Items” augments Clause 13 “Purchaser Furnished Property and Services” of the Contract General Provisions.

1.14 Article 23 “Pricing of Changes, Modifications, Follow-on Contracts and Claims” augments Clause 19 “Pricing of Changes, Amendments and Claims” of the Contract General Provisions.

1.15 Article 24 “Acceptance of Design Documentation” augments Clause 22 “Inspection and Acceptance of Documentation” of the Contract General Provisions.

1.16 Article 26 “Place and Terms of Delivery” replaces sub-Clause 20.1 of Clause 20 “Notice of Shipment and Delivery” of the Contract General Provisions.

1.17 Article 29 “Purchaser Right to Contract with Third Parties in Case of Contractor Default” supplements Clause 39 “Termination for Default” of the Contract General Provisions.

2 ORDER OF PRECEDENCE

2.1 Clause 1 of the Contract General Provisions is modified to read as follows;

"In the event of any inconsistency in language, terms or conditions of the various parts of this Contract, precedence will be given in the following order:

2.1.1 The signature page

2.1.2 Part I – Schedule of Supplies and Services

2.1.3 Part II – Contract Special Provisions

2.1.4 Part III – Contract General Provisions

2.1.5 Part IV – Statement of Work

2.1.6 Part IV – Statement of Work Annex A, System Requirements Specification

2.1.7 Part IV – Statement of Work Annex B, User Stories *(UA contract only)*

2.1.8 Part IV – Statement of Work Annex B, Information Model *(BE contract only)*

2.1.9 Part V – Abbreviations and Acronyms

2.1.10 Any sections of the Contractor's proposal (Technical or Price Volumes) in response to IFB-CO-14873-INTELFS2, dated [date to be inserted at contract award] and any clarifications thereto, specifically incorporated by reference.

3 INTERPRETATIONS, DEFINITIONS AND ACRONYMS

3.1 This Article supplements Clause 2 (Definitions of Terms and Acronyms) of the NATO Communications and Information Agency (NCI Agency) Contract General Provisions.

3.2 As used throughout this Contract, the following terms shall have the meanings specified below unless otherwise specified in the Contract:

3.2.1 **"Application"**: the working software products that will be delivered by the Contractor on the User Applications (UA) contract.

3.2.2 **"Activity"**: the periods in which the Services on the Back-end (BE) contract are organized in the SSS. The BE contract has two activities.

3.2.3 **"BE"**: the abbreviation for the Back-end, Data Management contract.

3.2.4 **"CLIN"**: Contract Line Item Number, as shown in the Schedule of Supplies and Services (SSS). For example, 1.0, 2.0, etc.

3.2.5 **"Compliance"**: strict conformity to the requirements and standards of the Prospective Contract.

3.2.6 **"Contractor"**: the awardee which shall be responsible for the fulfilment of the requirements established in the Prospective Contract.

3.2.7 **"Days"**: calendar days.

3.2.8 **"Deliverables"**: the items, features or services to be delivered by the Contractor at a Milestone Date or at any other stage during the performance of this Contract as listed in Part I (Contract Schedules) and as more particularly described in the Statement of Work (SOW), the System Requirements Specification (SRS), the Technical Solution or any other relevant Contract document.

3.2.9 **"EDC"**: Effective Date of Contract.

3.2.10 **"FSA"**: Final Systems Acceptance.

3.2.11 **"Increment"**: is expected to be, on average, about three months in duration. At the end of each Increment, acceptance testing will be performed on any requirements that have been completed. The planning on prioritization of requirements will be managed per Increment.

3.2.12 **"Initial Acceptance"**: this is granted for an Application/Service when all of the Must-have Requirements for that Application/Service, as noted in the SSS, have been delivered and accepted.

3.2.13 **"MoSCoW Prioritization"**: the Agile method of prioritizing specific contract requirements per Increment. Please note the terms "Must have", "Should have" and "Could have" refer to the priority of a requirement for a specific Increment; these terms do not mean that any requirements listed in the SSS are optional.

3.2.14 **"NATO Participating Country"**: any of the 29 NATO nations that have undertaken to share the cost of the project, namely, (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 of America.

3.2.15 **"Phase"**: the periods in which the Applications on the UA contract are organized in the SSS. The UA contract has three phases.

3.2.16 **"Purchaser"**: the current NCI Agency or its legal successor.

3.2.17 **"SPI"**: the Schedule Performance Index, measured at the end of each Increment as the value of the Requirements delivered divided by the value of the Requirements planned for that Increment.

3.2.18 **"SSS"**: the Schedule of Supplies and Services.

3.2.19 **"Service"**: working software products that will be delivered by the Contractor on the Back End Data Management contract.

3.2.20 **"SubCLIN"**: Sub Contract Line Item Number that falls under a CLIN. These are listed in the SSS, for example, 1.2, 1.3, 1.4, etc. for the Applications/Services; and 1.2.1.1 or 1.4.1.3 for the Requirements.

3.2.21 **"UA"**: the abbreviation for the Front-end, User Applications contract.

4 SCOPE

4.1 The purpose of this contract is to upgrade the current Intelligence Functional Services (INTEL-FS) User Applications / Back-end Data Management capabilities *[delete whichever does not apply]*. All of the technical details and requirements of this project are explained in Part IV – Statement of Work (SOW), and its annexes, the System Requirements Specification, the User Stories, and the Information Model.

4.2 This contract will be managed using elements of the Agile methodology. The following paragraphs provide a high-level overview, which is then further explained in the SOW and its annexes.

4.3 The technical work to be performed under this contract is organized into **Applications** (for the User Application contract) or **Services** (for the Back End Data Management contract). Each Application/Service is then broken down into specific **Requirements**.

4.3.1 The Schedule of Supplies and Services (SSS) lists all of the Applications/Services at the CLIN X.1 level. For example CLINs 1.1, 2.1, 2.2, 3.6, etc. are all considered Applications/Services.

4.3.2 The SSS lists all of the Requirements at the CLIN X.1.2.3 level. For example, CLIN 1.1.1.1, CLIN 2.1.4.1, CLIN 3.6.2.1, etc. are all considered individual Requirements.

4.4 Within each Application/Service, the Requirements are assigned a **priority**: Must-have, Should-have or Could-have. The **Must-have** requirements collectively represent the minimum set of deliverables that will provide a working Application. All of the Must-have requirements must be completed before the Initial Acceptance will be granted by the Purchaser for that Application. If the Must-have requirements have not been completed by the end of the Increment, the Increment will be extended by additional Sprints until the Increment has been completed. The SSS notes which Requirements must be delivered for the Initial Acceptance to be granted in the column “Required for Initial Acceptance.”

4.5 Applications/Services may contain **Should-have** and/or **Could-have** requirements. It is important to note that these are not “optional” requirements. While they are not required to be completed for the Initial Acceptance of the Application/Service, all of these requirements are an important part of the contract scope and required to be delivered.

4.6 Quarterly Increments: The delivery of the requirements and Applications/ Services will be spread over **Increments**, which are expected to be, on average, three months in duration. Acceptance testing will be performed at the end of each Increment for any requirement completed during that Increment, as explained further in Section 8.

4.7 Monthly Sprints: Each Increment is typically comprised of three **Sprints**.

4.8 This contract includes two Incentive payments for early and complete delivery, as explained in Section 6.

5 CONTRACT TYPE AND CONSIDERATION

5.1 This Article replaces Clause 7 of the Contract General Provisions.

5.2 This is a Fixed Price Incentive Fee contract.

5.3 The Schedule of Supplies and Services (SSS) of this Contract, organized into Contract Line Items (CLINs), lists all services and/or deliverables, their priority, and their fixed price.

5.4 Included in the prices shown in the SSS are all costs for activities not specifically listed on the SSS, but that are considered necessary by the Contractor to execute the Statement of Work, included but not limited to:

- All travel, per diem and accommodation costs;
- All executive management, administrative or other support effort;
- All facility or other overhead costs;
- All other direct costs.

5.5 In addition to the prices shown in the SSS, the contract includes an incentive fee as further explained in Section 6.

6 INCENTIVE FEE

6.1 The Contract allows for additional payments to recognize early delivery of all requirements of an Application/Service. This incentive is in addition to the normal payment following acceptance of each Application/Service and its Requirements.

6.2 The maximum amount of any earned incentive shall be 5% of the value of that Application/Service as specified in SSS Section 2, Payments.

6.3 There are two Incentive Milestones dates:

6.3.1 For the Front-end (UA) contract, the first incentive milestone will be EDC+18 Months for all deliverables listed under CLIN 1 and CLIN 2 of that contract.

6.3.2 For the Back-end (BE) contract, the first incentive milestone will be EDC+12 months for all back-end services listed under CLIN 1 of that contract.

6.3.3 The second Incentive Milestone will be four weeks prior to the respective FSA, as defined in Section 10.

6.4 The incentives will be applied as follows:

6.4.1 Step 1: For any incentive to be earned, all Applications/Services must have passed the Initial Acceptance – that is, all of the Must-have Requirements for all of the Applications/Services have been accepted. If there are any Must-have Requirements that have not been accepted, thereby preventing the Initial Acceptance of any Application/Service, no incentive will be paid.

6.4.2 Step 2: If all of the Applications/Services have passed the Initial Acceptance in Step 1 above, then for any Application/Service which has had all requirements (Must-have, Should-have and Could-have) accepted by the Incentive Milestone date, the incentive will be calculated as 5% of the total price of those Applications/Services. If one or more Should-have or Could-have requirements have not yet been accepted for a particular Application/Service, the Contractor will not earn the incentive for that Application/Service.

6.4.3 The Purchaser's determination of this Incentive Fee is not subject to the Disputes clause.

7 INVOICING AND PAYMENT

7.1 This Clause augments Clause 25 of the Contract General Provisions.

7.2 No payment shall be made with respect to Requirements that have not been accepted, and/or incorrectly submitted invoices.

7.3 Each invoice shall correspond to the successful completion of an Application/Service or Requirement, shall contain evidence of the acceptance of that Application/Service or Requirement, and shall reference the appropriate sub-CLIN.

7.4 The accumulated invoices for any CLIN cannot exceed the value of that CLIN as stated in the SSS.

7.5 Payment Schedule:

7.5.1 Upon the successful achievement of the Initial Acceptance for each Application/Service – that is, all of the Must-have Requirements have been accepted – the Contractor may submit the first invoice for that Application/Service, in accordance with Part I, Schedule of Supplies and Services, Section 2, *Payment Schedule*. The Requirements that must be accepted for the Initial Acceptance are identified in the SSS, in the column "Required for Initial Acceptance".

7.5.2 The Contractor may also invoice the value of any accepted Should-have and Could-Have Requirements for Applications/Services that have already passed the Initial Acceptance. Payment for Should-have and Could-have Requirements will not be made until all of the Must-have Requirements have been accepted for that Application/Service.

7.5.3 The amount of the invoices – both following the Initial Acceptance for each Application/Service and the acceptance of subsequent Requirements – will equal 90% of the value of the accepted Requirements. The remaining 10% will be paid during the one-year warranty period following FSA.

7.5.4 The total amount of the warranty payment will be 10% of the total value of the accepted Requirements. It will be paid in four quarterly payments of 25% of the total warranty amount upon approval of a quarterly status report.

7.6 As explained in Section 6, the Contractor can earn an incentive fee for timely and complete delivery. Following notification by the Purchaser of the amount of the incentive earned, the Contractor may submit an invoice for this incentive. The earned incentive, if any, will be fully paid at the time it is earned; no amount will be withheld to be paid during the warranty.

8 OPTIONS

8.1 The contract includes options for annual maintenance for up to five years following FSA, which are available for unilateral exercise by the Purchaser at any time and in any combination from Effective Date of Contract until two months before the end of the contract. The total value of these optional CLINs is not included in the initial contract value stated on the signature page of the Contract.

8.2 These optional CLINs are 5.1 – 5.5 for the Front-end (UA) contract; and 6.1 – 6.5 for the Back-end (BE) contract. *[delete whichever does not apply]*

8.3 The Purchaser's liabilities and obligations under this Contract at the time of its signature, and unless a formal Contract Amendment is issued in accordance with the terms of this Clause and Clause 16 (Changes) of the Contract General Provisions, are limited in scope and amount to performance and deliverables associated to the base contract as described in the SSS and SOW.

8.4 The Contractor understands that there are no obligations under this Contract for the Purchaser to exercise any of the Options and that the Purchaser bears no liability should it decide not to exercise them (either totally or partially).

8.5 Further, the Purchaser reserves the right to contract with another company (or the same), to perform the tasks described in the Options of the current Contract through a new Contract with other conditions.

8.6 Any optional CLINs may be exercised unilaterally by the Purchaser, and confirmed by written amendment to the Contract which will establish the payment terms.

8.7 The exercised optional CLINs will be paid in four quarterly payments of 25% of the CLIN amount upon approval of a quarterly status report. The exercised options can be invoiced following successful delivery and acceptance.

8.8 The delivery dates for the options will be specified in the amendment, and Acceptance of the items delivered under this Contract will be made according to Clause 21 - "Inspection and Acceptance of Work" and Clause 22 – "Inspection and Acceptance of Documentation" of the Contract General Provisions and the Statement of Work.

9 ACCEPTANCE PROCEDURES – AGILE DEVELOPMENT

9.1 “Acceptance” is the action by which the Purchaser formally acknowledges that the Contractor has fully demonstrated that the Increment releases are “complete” in accordance with the criteria and definitions in Section 2 and Section 3 of the Statement of Work, and that Contract Deliverables are complete or have been performed according to the requirements set forth.

9.2 Contract payment milestones, as designated in the Schedule of Supplies and Services, shall only be considered as complete and eligible for payment when all milestone entry and exit criteria, and any works or events as defined in this contract as associated and underlying the payment milestone has been formally delivered in the Increment release package (as defined in the SOW) and acknowledged as completed by the Purchaser. Payment milestones shall only be considered as confirmed and fully achieved when the Purchaser has advised the Contractor formally in writing that all conditions necessary for milestone completion (as defined in the Delivery Acceptance Report in the SOW) have been successfully met. All documents and data shall be prepared by the Contractor and approved by the Purchaser.

9.3 Purchaser review and acceptance procedures specific to contract documentation to be submitted by the Contractor are as described in Section 2.5.4.8 of the Statement of Work, “Deliverable Acceptance Report”.

10 FINAL SYSTEMS ACCEPTANCE (FSA)

10.1 This Clause modifies Clauses 21 and 22 of the Contract General Provisions.

10.2 The final contracted Increment for the Front-End UA contract shall end at EDC+32 months. The final contracted Increment for the Back-end BE contract shall end at EDC+36 months.

10.3 Within two weeks after the Deliverable Acceptance Review (as defined in SOW 2.4.5.2.6) for the final contracted Increment, for any Requirements not yet completed the Purchaser shall inform the Contractor whether:

10.3.1 These Requirements will be removed from the contract, with a 10% penalty assessed as explained in paragraph 13.4, or;

10.3.2 The contract will be extended with one or more Increments, with liquidated damages assessed as described in paragraph 13.3, to allow the Contractor to complete specific Requirements.

10.4 After the final contracted Increment has been accepted by the Purchaser, the Contractor shall request FSA in writing to the Purchaser, supported by an FSA Report, which shall document:

10.4.1 The completion status of all Requirements listed in the SSS;

10.4.2 All outstanding defects recorded through the Contractor's Defect Management Process as per SOW 2.4.5.2.2.2, with a correction action plan for addressing these defects under Warranty.

10.5 Within 3 weeks of the receipt of a request for FSA, the Purchaser will schedule FSA meeting.

10.6 The FSA meeting will be chaired by the Purchaser with the objective to verify that all contract Requirements (except warranty) have been met and that the Purchaser may grant the FSA.

10.7 The Contractor shall prepare a written report of the FSA meeting in the form of meeting minutes that shall be reviewed and signed by the representatives of the Contractor and Purchaser respectively.

11 TERMINATION FOR DEFAULT

11.1 This Article augments Clause 39 of the Contract General Provisions.

11.2 Beginning at the end of the second Increment, the Purchaser will monitor the Contractor's Schedule Performance Index (SPI). The SPI is calculated by dividing the value of the Requirements delivered by the value of the Requirements planned according to the baseline delivery schedule. The baseline delivery schedule, initially proposed by the Contractor in its bid, is specifically included in the contract in Part I, *Schedule of* Supplies and Services, Section 3, *Project Schedule*. This baseline delivery schedule may be updated upon the agreement of both parties at the start of each Work Package. The values are based on the prices listed for each Requirement in the SSS.

11.3 The SPI will be used to mathematically measure the "failure to make progress as to endanger performance", as stated in Clause 39.1.2 of the General Contract Provisions. It does not obviate the other basis upon which the Termination for Default clause may be invoked. If the SPI falls below 0.70, the Purchaser will consider that the Contractor is "failing to make progress as to endanger performance."

12 TERMINATION FOR CONVENIENCE OF THE PURCHASER

12.1 This Article delimits Clause 40 of the Contract General Provisions.

12.2 Notwithstanding the provisions of the Termination for Convenience clause in the Contract General Provisions, the maximum liability of the Purchaser in the event the Purchaser terminates the Contract pursuant to this Clause will not exceed the value of that amount already paid under the contract to the point of termination, the outstanding unpaid invoices for deliveries accepted and the next two planned Increments following the current one. For example, if the Purchaser terminates the contract for convenience in Increment 5, the maximum liability of the Purchaser will equal the value of Increments 6 and 7. The value of the Increment is calculated based on the values of the Application/Services and Requirements, as stated in the SSS, scheduled for those two Increments.

12.3 This does not imply the Contractor is automatically due the value of the next two Increments following a Termination for Convenience; this simply limits the liability of the Purchaser in this situation.

13 LIQUIDATED DAMAGES

13.1 This Article replaces Clause 38 of the Contract General Provisions.

13.2 If the Contractor fails to obtain acceptance of the delivered Requirements prior to the completion of Phase 1 and/or prior to FSA, the actual damage to the Purchaser for the delay or non-delivery will be difficult or impossible to determine. Therefore, in lieu of actual damages the Contractor shall pay to the Purchaser liquidated damages as explained below.

13.3 For any Requirement listed in the SSS that has not been accepted at two designated points: 1) Four weeks after the Incentive Milestone date; and 2) FSA; the Purchaser may asses liquidated damages in the amount of one-tenth of one per cent (0.1%) of the value of that sub-CLIN as set forth in the SSS per day of delinquent delivery/performance.

- For example, if a Requirement has not been accepted by one of the two designated points (as described above) which has a stated value of €10,000 in the SSS, the Purchaser could allow the Contractor to complete work on this Requirement. If this Requirement was accepted 60 days after Phase 1 and/or FSA, the liquidated damages would be calculated as: €10,000 x 0.1% x 60 days = €600. Following Acceptance, the payment due to the Contractor for that Requirement would then be €10,000 – €600 = €9,400.

13.4 Alternatively, at FSA, the Purchase may declare that Requirement permanently "non-delivered" and asses liquidated damages of 10% of the value of that Requirement. This Requirement would then no longer be required and would no longer be eligible for Acceptance.

- For example, for a Requirement that was not accepted at FSA, which has a stated value of €10,000 in the SSS, the Contractor would be obligated to pay to the Purchaser €1,000 and that Requirement would no longer be eligible for acceptance and payment.

13.5 In addition, the Purchaser may terminate this Contract in whole or in part, as provided in paragraph 39.1 of Clause 39 – "Termination for Default" of the Contract General Provisions and in that event the Contractor shall be liable to pay the excess costs provided in paragraph 39.5.

13.6 The Contractor shall not be charged with liquidated damages when the delay arises out of causes beyond the control and without the fault or negligence of the Contractor as defined in paragraph 39.6 of Clause 39 – "Termination for Default" of the Contract General Provisions. In such event, subject to the Disputes and Arbitration Clause, the Purchaser shall ascertain the facts and extent of the delay and shall extend the time for performance of the Contract when in his judgement the findings of fact justify an extension.

13.7 The amount of Liquidated Damages and/or Penalty due by the Contractor shall be recovered by the Purchaser in the following order of priority:

13.7.1 By deducting such damages from the amounts due to the Contractor against the Contractor's invoices.

13.7.2 By proceeding against any surety, such as a performance guarantee.

13.7.3 By reclaiming such damages through appropriate legal remedies.

13.8 Liquidated damages shall be payable to the Purchaser from the first day of delinquency and shall accrue at the rate specified in Clause 13.3 up to 20% of the value of each line item individually and an aggregate sum of all delinquent items not to exceed 15% of the value of the total Contract. These liquidated damages shall accrue automatically and without any further notice being required.

13.9 The rights and remedies of the Purchaser under this clause are in addition to any other rights and remedies provided by law or under this Contract.

14 CONTRACT ADMINISTRATION

14.1 The Purchaser is the NATO Communications and Information Agency (NCI Agency). The Purchaser is the Point of Contact for all Contractual and Technical issues. The Contractor shall accept Contract modifications only in writing from the Purchaser's Contracting Authority

14.2 Formal letters and communications shall be sent by email, or delivered in person, by registered mail, courier or other delivery service, to the official points of contact quoted in this Contract.

14.3 Informal notices and informal communication may be exchanged by any other means, including telephone.

14.4 All notices and communication shall be effective upon receipt.

14.5 Official Points of Contact are:

Purchaser	
Contractual Issues	**Technical Issues**
NCI Agency Boulevard Léopold III B-1110 Brussels, Belgium *Name* *Phone* *Email*	NCI Agency Oude Waalsdorperweg 6 2597 AK The Hague, The Netherlands *Name* *Phone* *Email*
Contractor	
Contractual Issues	**Technical Issues**
Company *Address* *Address* *Name* *Phone* *Email*	*Company* *Address* *Address* *Name* *Phone* *Email*

15 PARTICIPATING COUNTRIES

15.1 This Article augments Clause 9 of the Contract General Provisions.

15.2 The Contractor may issue sub-contracts to firms and purchase from qualified vendors in any of the following 29 NATO participating nations: 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 of America. None of the work, including project design, labour and services, shall be performed other than by firms from and within participating countries as per NATO policy.

15.3 The Contractor shall notify in writing to the Purchaser immediately upon being informed of any change in the nationality of its Sub-contractor(s) which would prevent the Contractor from further complying with Clause 15.2 above. Upon receipt of this information from the Contractor, the Purchaser may, within three months from this notification, require the Contractor to find an alternate subcontractor, complying with the requirements set out in Clause 15.2 above.

15.4 Unless authorised by NATO Policy, no material or items of equipment down to and including identifiable sub-assemblies delivered under this Contract shall be manufactured or assembled by a firm other than from and within a participating country.

15.5 The Intellectual Property Rights to all designed documentation and system operating software shall reside in NATO member countries, and no license fee, or royalty charges shall be paid by the Contractor to firms, individuals or governments other than within the NATO member community.

16 SECURITY

16.1 This Article augments Clause 11 of the Contract General Provisions.

16.2 The Contractor is responsible, in accordance with NATO and National Security regulations, for the proper handling, storage and control of any classified documents and information as may be furnished to the Contractor in relation to the performance of this contract. As such, the Contractor's premises shall be able to handle information up to NATO Restricted.

16.3 The security classification of this contract and its annexes is "NATO UNCLASSIFIED". However, the Contractor's technical personnel working on the Contract will need to access NATO SECRET data and therefore shall hold a valid NATO SECRET security clearance for the duration of the Contract. This access to NATO SECRET data shall occur only at NATO premises and never at the Contractor's own premises.

16.4 Contractor's personnel visiting or working at Purchaser's facilities in connection with this Contract shall hold a NATO SECRET security clearance valid for the duration of the Contract. This requirement applies to all subcontracts issued by the Contractor for the effort under this prime Contract.

16.5 It is the responsibility of the Contractor to ensure that its personnel obtain the required security clearances and transmit this information to the sites to be visited in adequate time that the site may perform the appropriate administration.

16.6 The Contractor is advised that the personnel security process may be lengthy. The Purchaser bears no responsibility for the failure of the Contractor to secure the required clearances for its personnel within the necessary time.

16.7 Failure of the Contractor to obtain proper security clearances to have access to any NATO sites, and any attendant delay in the project which results from this access refusal, is not the basis for excusable delay under the terms of the contract concerning default. The Contractor bears full responsibility and liability under the contract for delays arising from the failure of the Contractor to adhere to the security requirements.

16.8 If during the performance of the Contract, Contractor's personnel need to be escorted because of non-availability of the security clearance required by the Site, the Contractor shall pay to the Purchaser a compensatory fee of 800 Euro per day of escort.

16.9 In the absence of valid security clearances for the Contractor's personnel at contract signature, the Purchaser reserves the right to terminate the Contract for "Default".

16.10 Reserved.

17 INTELLECTUAL PROPERTY

17.1 This Clause supplements Clause 30 (Intellectual Property) of the Contract General Provisions.

17.2 All Foreground IPR is the property of the Purchaser. Consequently, no statement shall be made restricting the rights of the Purchaser. All Foreground IPR are immediately and exclusively transferred and assigned to the Purchaser as from their coming into existence or, as the case may be, as from the conclusion of this Contract for rights already in existence at the time of execution of this Contract.

17.3 Any use by the Purchaser of Contractor Background IPR for the purpose of carrying out work pursuant to the Contract shall, subject to any obligation on the part of the Contractor to make payments to any third party in respect of IPR which is licensed from such third party, be free of any charge to Purchaser. The Contractor hereby grants to the Purchaser a non-exclusive, royalty-free and irrevocable licence throughout NATO, NATO operations (including out of area operations) and/or among NATO member nations to use and authorise others to use any Contractor Background IPR for the purpose of exploiting or otherwise using the Foreground IPR for any purpose.

17.4 The Purchaser retains the right to redeploy the Software provided under the Contract within NATO for NATO purposes, and/or among NATO Nations for NATO purposes.

17.5 This licence shall also allow the Purchaser and its member nations to use and authorise others to use the software for further adaptation, integration, modifications and future procurements.

17.6 The Contractor intends to use the Background IPR stated in Contract Special Provisions - Annexes B and C hereto for the purpose of carrying out work pursuant to this Contract.

17.7 The Contractor warrants, undertakes, and represents that any derivative product created under this Contract from the stated Background IPR shall be considered as Foreground IPR and, therefore, shall be governed by the terms and conditions specified in Clause 30.3 (Foreground IPR) of the Contract General Provisions.

17.8 In addition, regarding the Contractor’s Background IPR, the Purchaser shall have the right to further re-transfer this software (source code excluded) and associated documentation necessary and/or useful for use and integration, to companies eligible for other NATO procurements, subject to an appropriate license agreement. There shall be no additional charges or fees associated with this license agreement beyond the Firm Fixed Price of this contract.

17.9 Any use of Contractor and Third Party Background IPR as stated in Annexes B and C, and unless specifically applicable to COTS items, is not limited to the number of users or the number of licenses required by the Contract for use of the system. With the exception of COTS items, the Purchaser reserves the right to use or authorise NATO members to use the Background IPR as stated in Annexes B and C for any number of users and number of licenses as required, at no additional cost to the Purchaser.

17.10 All Software, except COTS, delivered under this Contract shall not be marked with corporate logos, proprietary information or contain warnings limiting the rights to use or reproduction nor shall those markings be included in the operating and/or maintenance manuals or instructions accompanying such software.

18 KEY PERSONNEL

18.1 The individuals listed in ANNEX B are considered to be key to the performance of this contract and may not be replaced by the Contractor with substitute personnel without the prior written approval of the Purchaser.

18.2 In such cases where the services of the Key Personnel are lost to the Contractor beyond the reasonable control of the Contractor, the Contractor must nominate a substitute(s) of equivalent or higher qualification and experience within 15 working days of the date at which the Contractor has knowledge of the loss of service of such key personnel. The replacement personnel shall be in place within 7 days of Purchaser approval.

18.3 If the Contractor is unable to nominate and/or replace the lost personnel within the timeframe mentioned in 18.2 above, the Purchaser may conclude that the loss of the Key Personnel endangers progress under the Contract to the extent that the Purchaser may resort to the Clause 39 – “Termination for Default” of the Contract General Provisions for redress of the situation.

18.4 The Purchaser shall approve the dedicated personnel, as well as the replacement personnel. The Purchaser has the right to refuse any proposed substitution as not meeting the qualifications and request the Contractor to offer another qualified individual in lieu thereof.

18.5 The Purchaser reserves the right to reject a Contractor’s staff member after acceptance of a Contractor’s staff member on the basis of his/her CV if the individual is not providing the required level of support. The Purchaser will inform the Contractor in writing in case such a decision is taken and the Contractor shall propose and make another staff member available within three working days after the written notification.

18.6 A Contractor’s staff member assigned to this Contract shall remain working on the Contract for as long as required by the terms of the Contract. However, in the event where the Contractor has no control over the individual’s non-availability (e.g., resignation, sickness, incapacity, etc.), the Contractor shall notify the Purchaser of a change of key personnel within working 3 days of the date of knowledge of the prospective vacancy and offer a substitute with equivalent qualifications.

18.7 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.

19 SYSTEMS WARRANTY

19.1 This Article augments Clauses 27 and 31 of the Contract General Provisions.

19.2 Following FSA, the Contractor shall provide a one-year warranty for the supplies and services delivered under this Contract in accordance with the terms and conditions stipulated in Part IV - Statement of Work, Section 13, and Clauses 27 and 31 of the Contract General Provisions.

19.3 In the event of any inconsistency in language, terms or conditions with regards to warranty, the terms or conditions stipulated in Part IV - Statement of Work, Section 13 shall have precedence over Clauses 27 and 31 of the Contract General Provisions.

20 SOFTWARE WARRANTY

20.1 The Clause augments Clause 31 of the Contract General Provisions.

20.2 For each Software delivered under this Contract, the Contractor warranties stated in paragraph 31.1 of the Contract General Provisions shall extend to all defects discovered within twelve (12) months from Final System Acceptance declared in writing by the Purchaser's Contracting Authority.

21 PURCHASER FURNISHED ITEMS

21.1 This Clause supplements Clause 13 (Purchaser Furnished Property and Services) of the General Contract Provisions.

21.2 The Purchaser will provide the Contractor with the property and services for the performance of the Contract as specified in Section 1.5 of the SOW.

21.3 As specified in Section 2.4.1 of the SOW, the Contractor shall develop software in the NATO Software Factory (NSF). The Purchaser will provide the Contractor with a set of user accounts in the NSF.

22 SOFTWARE LICENSES

22.1 Any software licenses purchased on behalf of or provided to the Purchaser by the Contractor shall be perpetual licenses. In the event a perpetual license model is not available for a particular software product, the Contractor shall request written approval from the Purchaser in advance.

22.2 Any software licenses the Contractor purchases on behalf of the Purchaser, and/or transfers or provides to the Contractor shall provide the same usage rights as required by Article 17. The Contractor shall ensure that any software licenses that will ultimately need to be assigned to the Purchaser can be done so at no additional cost.

22.3 The Purchaser reserves the right to exclude from the awarded Contract the purchase of software licenses which the Purchaser may procure through centralized Contracts. In this case, the contract terms, schedule and prices will be modified accordingly, and the software licenses will be provided to the Contractor in the form of "Purchaser Furnished Items".

23 PRICING OF CHANGES, MODIFICATIONS, FOLLOW-ON CONTRACTS AND CLAIMS

23.1 This Article augments Clause 19 of the Contract General Provisions.

23.2 The Purchaser may at any time, by written order designated or indicated to be a change order, and without notice to the sureties, if any, make changes within the scope of any Contract or Task Order, in accordance with Clause 16 (Changes) of the Contract General Provisions.

23.3 Changes, modifications, follow-on Contracts of any nature, and claims shall be priced in accordance with Clause 19 (Pricing of Changes, Amendments and Claims) of the Contract General Provisions, and with the "Purchaser's Pricing Principles" as set out in the Annex to the Contract General Provisions.

23.4 Contractor price quotations for Contract changes or modifications shall be provided at no cost to the Purchaser and shall have a minimum validity period of six (6) months from submission.

23.5 The pricing information contained in the cost breakdown sheets submitted with the Bidding sheets, as part of the Contractor’s proposal, and especially the forward labour rates provided, will constitute the basis for any future negotiations related to possible future amendments to this Contract.

24 ACCEPTANCE OF DESIGN DOCUMENTATION

24.1 This Article augments Clause 22 of the Contract General Provisions.

24.2 The acceptance by the Purchaser of the Contractor's design documentation required by this Contract signifies that the documents delivered appear logical and consistent. The acceptance does not constitute an endorsement or approval of the design by the Purchaser and does not relieve the Contractor of the obligation to meet the performance requirements of this contract in the event that the design eventually proves to be non-compliant at the testing.

25 INDEMNITY

25.1 The Contractor will indemnify and hold harmless NATO, its servants or agents, against any liability, loss or damage arising out of or in connection of the Supplies and Services under this Contract.

25.2 The parties will indemnify each other against claims made against the other by their own personnel, and their sub-Contractors (including their personal representatives) in respect of personal injury or death of such personnel or loss or destruction of or damage to the property of such personnel.

25.3 NATO will give the Contractor immediate notice of the making of any claim or the bringing of any action to which the provisions of this Article may be relevant and will consult with the Contractor over the handling of any such claim and conduct of any such action and will not without prior consultation and without the consent of the Contractor settle or compromise any such claim or action.

25.4 In the event of an accident resulting in loss, damage, injury or death arising from negligence or wilful intent of an agent, officer or employee of NATO for which the risk has been assumed by the Contractor, the cause of the accidents will be investigated jointly by the Parties and the extent to which NATO will be liable to recompense the Contractor will be determined together.

26 PLACE AND TERMS OF DELIVERY

26.1 This Article replaces Clause 20.1 of the Contract General Provisions.

26.2 All deliverables under this Contract shall be delivered DDP ("Delivered Duty Paid") as defined by the INCOTERMS published by the International Chamber of Commerce (Publication No. 560) to the places and at such times as stipulated in the Schedule of Supplies and Services. The Contractor shall note that the Purchaser is exempt from customs duties and Value Added Tax as per Clause 26 – "Taxes and Duties" of the Contract General Conditions.

27 SUPPLEMENTAL AGREEMENT(S), DOCUMENTS AND PERMISSIONS

27.1 The Contractor has submitted all relevant draft supplemental agreement(s), documents and permissions prior to contract award, the execution of which by the Purchaser is/are required by national law or regulation. If any supplemental agreements, documents and permissions are introduced after contract award, and it is determined that the Contractor failed to disclose the requirement for the execution of such agreement from the Purchaser prior to contract signature, the Purchaser may terminate this contract for default in accordance with Clause 29 – "Termination for Default" of the Contract General Conditions.

27.2 Supplemental agreement(s), documents and permissions, the execution of which by the Purchaser is/are required by national law or regulation and that have been identified by the Contractor prior to the signature of this contract, but have not yet been finalised and issued by the appropriate governmental authority, are subject to review by the Purchaser. If such supplemental agreement(s), documents and permissions are contrary to cardinal conditions of the signed contract between the Parties, and the Purchaser and the appropriate governmental authority cannot reach a mutual satisfactory resolution of the contradictions, the Purchaser reserves the right to terminate this contract and the Parties agree that in such case the Parties mutually release each other from claim for damages and costs of any kind, and any payments received by the Contractor from the Purchaser will be refunded to the Purchaser by the Contractor.

28 COMPREHENSION OF CONTRACT AND SPECIFICATIONS

28.1 The Contractor warrants that he has read, understood and agreed to each and all terms, clauses, specifications (including drawings) and conditions specified in the Contract and that this signature of the Contract is an acceptance, without reservations, of the said Contract terms within their normal and common meaning.

28.2 The specifications set forth the performance requirements for the Contractor's proposed work as called for under this Contract. Accordingly, notwithstanding any conflict or inconsistency which hereafter may be found between achievement of the aforesaid performance requirements and adherence to the Contractor's proposed design for the work, the Contractor hereby warrants that the work to be delivered will meet or exceed the performance requirements of the said specifications.

28.3 The Contractor hereby acknowledges that he has no right to assert against the Purchaser, its officers, agents or employees, any claims or demands with respect to the aforesaid specifications as are in effect on the date of award of this Contract:

- based upon impossibility of performance, defective, inaccurate, impracticable, insufficient or invalid specifications, implied warranties of suitability of such specifications, or;

- otherwise derived from the aforesaid specifications, and hereby waives any claims or demands so based or derived as might otherwise arise.

28.4 Notwithstanding the "Changes" Clause or any other Clause of the Contract, the Contractor hereby agrees that no changes to the aforesaid specifications which may be necessary to permit achievement of the performance requirements specified herein for the Contractor's proposed work shall entitle the Contractor either to any increase in the fixed price as set forth in this Contract or to any extension of the delivery times for the work beyond the period of performance in the Schedule of Supplies and Services.

29 PURCHASER RIGHT TO CONTRACT WITH THIRD PARTIES IN CASE OF CONTRACTOR DEFAULT

29.1 This Clause supplements Clause 39 (Termination for Default) of the Contract General Provisions.

29.2 In the event that the Contractor fails to deliver or make progress on the provision of any components of this project in accordance with the milestones and delivery dates stipulated in the SSS and SOW, and is notified by the Purchaser in writing that the Contractor is in a state of default in accordance with Clause 39 of the Contract General Provisions (Termination for Default), the Purchaser reserves the right to enter directly into contracts with any third party, including commercial entities, and Contractor's Subcontractors for provision of the Contract Work Package.

29.3 The provisions of this Article are in addition to and in no way limit the rights of the Purchaser contained in other applicable clauses of this Contract, including but not limited to, Clause 21 (Inspection and Acceptance of Work) and Clause 39 (Termination for Default) of the Contract General Provisions.

30 EXPORT AGREEMENT AND LICENSE

30.1 It is the Contractor's responsibility to ensure compliance with all relevant or necessary national export provisions in executing the work under this contract. Copies of the documentation will be supplied to the Purchaser on request.

31 INDEPENDENT CONTRACTOR

31.1 The Personnel provided by the Contractor are at all times employees of the Contractor and not the Purchaser. In no case shall Contractor personnel act on behalf of or as an agent for NATO or any of its bodies. In no way shall the Contractor personnel claim directly or indirectly to represent NATO in an official capacity or claim themselves to be NATO employees.

31.2 The Purchaser shall not be responsible for securing work permits, lodging, leases nor tax declarations, driving permits, etc., with national or local authorities. Consultants employed under this Contract are not eligible for any diplomatic privileges or NATO employee benefits.

32 FORCE MAJEURE

32.1 If the performance of this Contract, or any obligation hereunder is prevented, restricted or interfered with by reason of fire, flood, earthquake, explosion or other casualty or accident, strikes or labour disputes, war or other violence, including acts of terrorism, any law, order, proclamation, regulation, ordinance, demand or requirement of any governmental agency, or any other act, event or condition whatsoever beyond the reasonable control of the affected Party, the Party so affected, upon giving prompt notice to the other Party, shall be excused from such performance to the extent of such prevention, restriction or interference, provided, however, that the Party so affected shall take all reasonable steps to avoid or remove such cause of non-performance and shall resume performance hereunder with dispatch whenever such causes are removed.

ANNEX A. RESPONSIBILITY OF THE CONTRACTOR TO INFORM EMPLOYEES OF WORK ENVIRONMENT

A.1. The Contractor shall inform his employees under this Contract of the terms of the Contract and the conditions of the working environment.

A.2. Specifically, personnel shall be made aware of all risks associated with the performance under this Contract, the conditions of site in which the performance is to take place and living conditions while performing within the boundaries of the Contract. The selection of adequate personnel shall remain sole responsibility of the Contractor.

ANNEX B. KEY PERSONNEL

a. The following Key Personnel shall be subject to the stipulations contained in Clause 18 (Key Personnel) of the Contract Special Provisions for the period of designation indicated below:

Position	SOW Reference	Labour Category	Name	Designation Period
Project Manager	2.1.2	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Quality Assurance Manager	2.1.2	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Configuration Manager	2.1.2	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Technical Lead	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Scrum Master	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Software Architect *(applies only to the Back-end contract)*	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Test Director	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Lead SW Developer 1	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract
Lead SW Developer 2	3.1	*[To be inserted prior to Contract award]*	*[To be inserted prior to Contract award]*	EDC through End of Contract

ANNEX C. CONTRACTOR BACKGROUND IPR

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

Item	Description / IP Ownership	Indicate if COTS[1]

b. The Contractor represents that it has and will continue to have, for the duration of this Contract, all necessary rights in and to the IPR specified above necessary to meet the Contractor's obligations under the Contract.

c. The Contractor Background IPR stated above complies with the terms specified in Clause 17 of the Contract Special Provisions and shall be licensed to the Purchaser according to the terms and conditions specified therein and in Clause 30 of the Contract General Provisions.

ANNEX D. SUBCONTRACTOR AND THIRD PARTY IPR

a. The Subcontractor and Third Party Background IPR specified in the table below will be used for the purpose of carrying out work pursuant to the Contract.

Item	Description / IP Ownership	Indicate if COTS[1]

b. The Contractor represents that it has and will continue to have, for the duration of this Contract, all necessary rights in and to the IPR specified above necessary to meet the Contractor's obligations under the Contract.

c. The Subcontractor and Third Party Background IPR stated above complies with the terms specified in Clause 17 of the Contract Special Provisions and shall be licensed to the Purchaser according to the terms and conditions specified therein and in Clause 30 of the Contract General Provisions.

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 1.2

09/02/2021

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Document Revision History

Date	Version	Changes
21 Dec 2020	1.0	IFB package release version
29 Jan 2021	1.1	Amendment 1: Minor typographical fixes
9 Feb 2021	1.2	Amendment 1: Minor clarification

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.

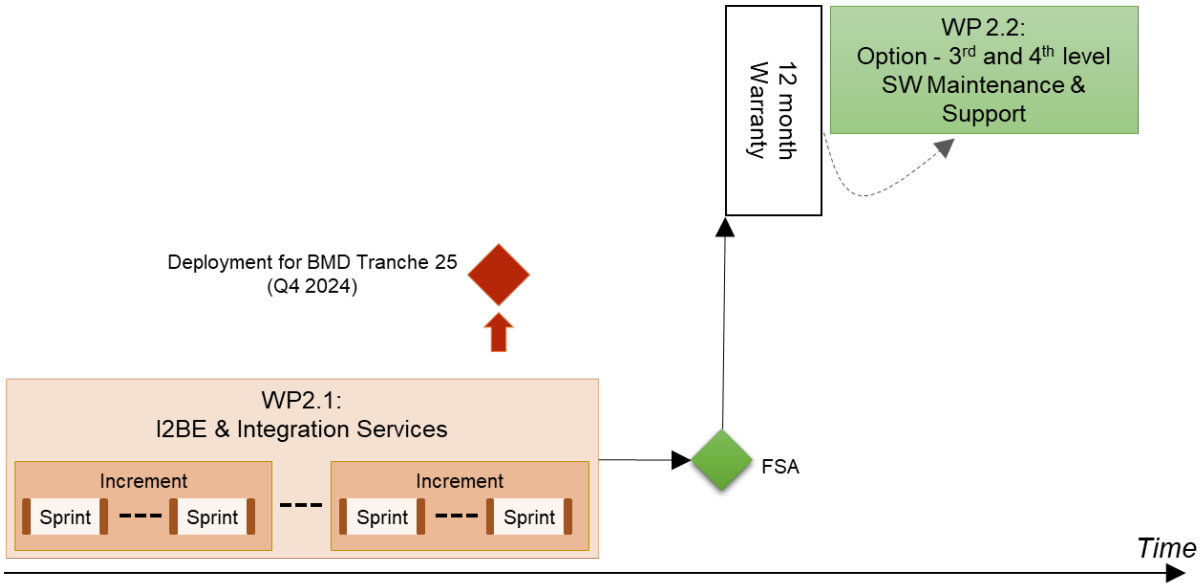
[7] The I2BE system requirements is defined in the Annex A to this SOW.

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] Level of Support: 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] Level of Maintenance: 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] First Level Support Process: 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.

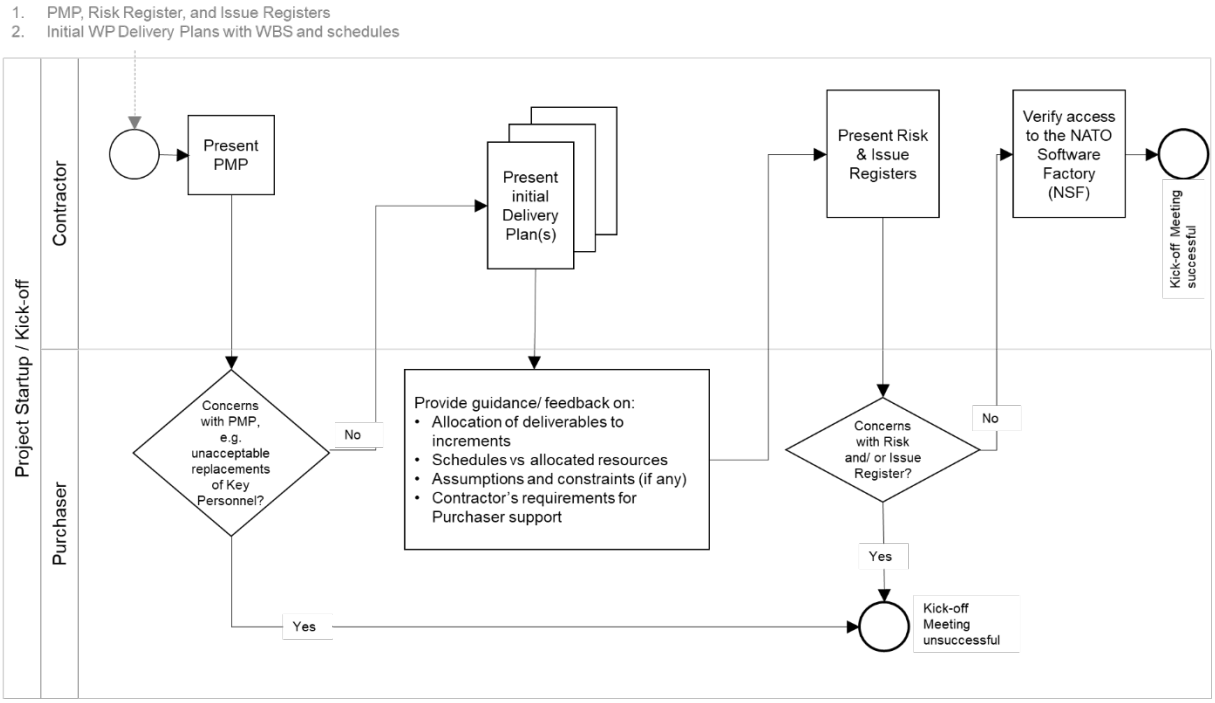
[65] The Purchaser will review the PMP for concerns (for instance unacceptable replacement of key personnel where the replacement personnel does not have the skill sets compliant with the requirements set forth in this SOW). If there are concerns with the PMP, then the Purchaser will not give the Contractor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

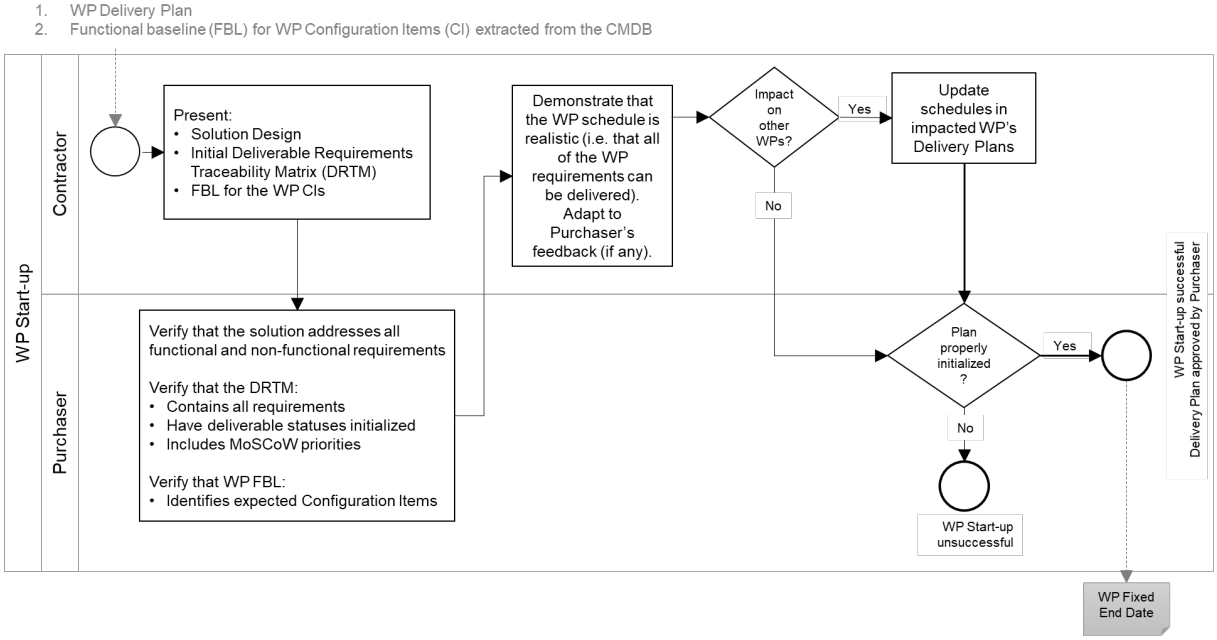
[SOWG-163] The Contractor shall at the meeting present the refined WP Delivery Plan. The presentation shall be:

(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

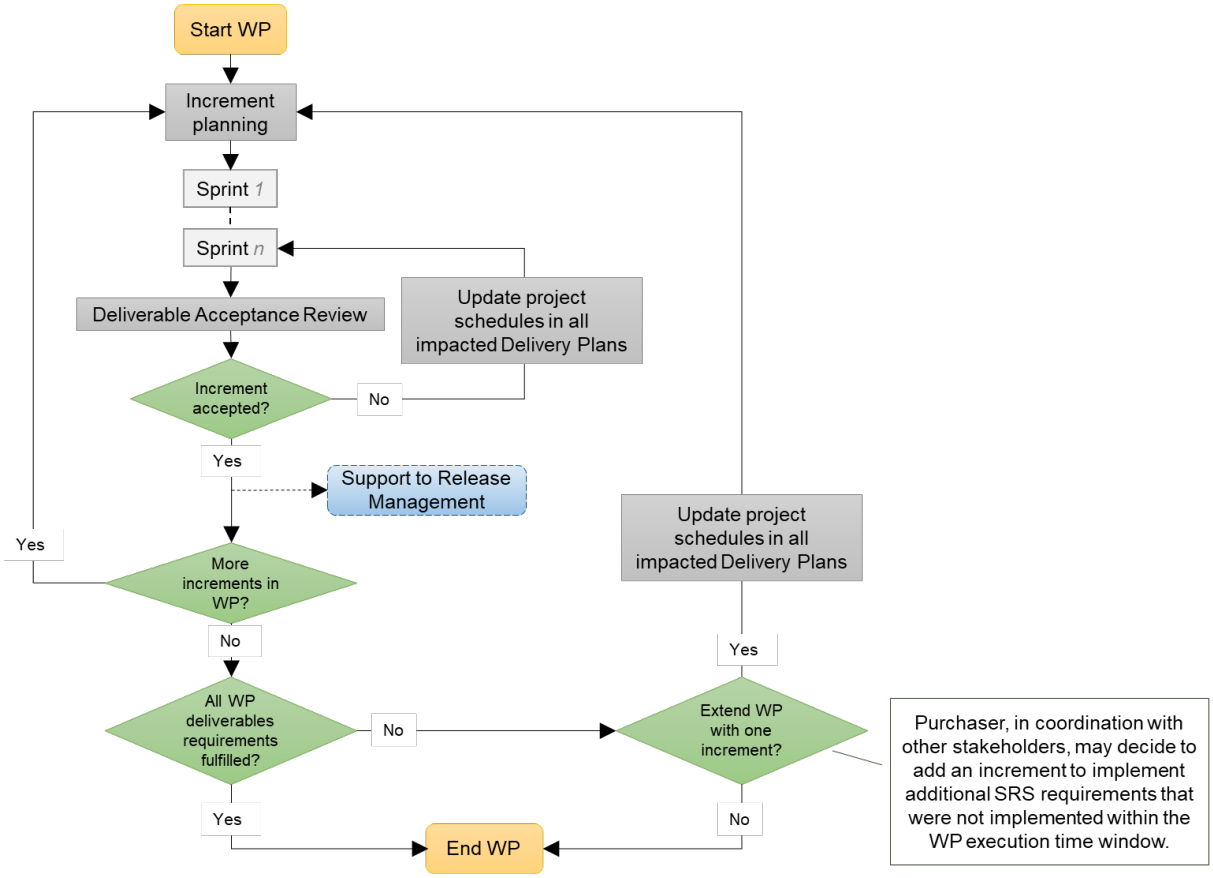
End-date, and whenever a potential schedule slippage is identified take corrective actions to prevent the schedule slippage.

[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);

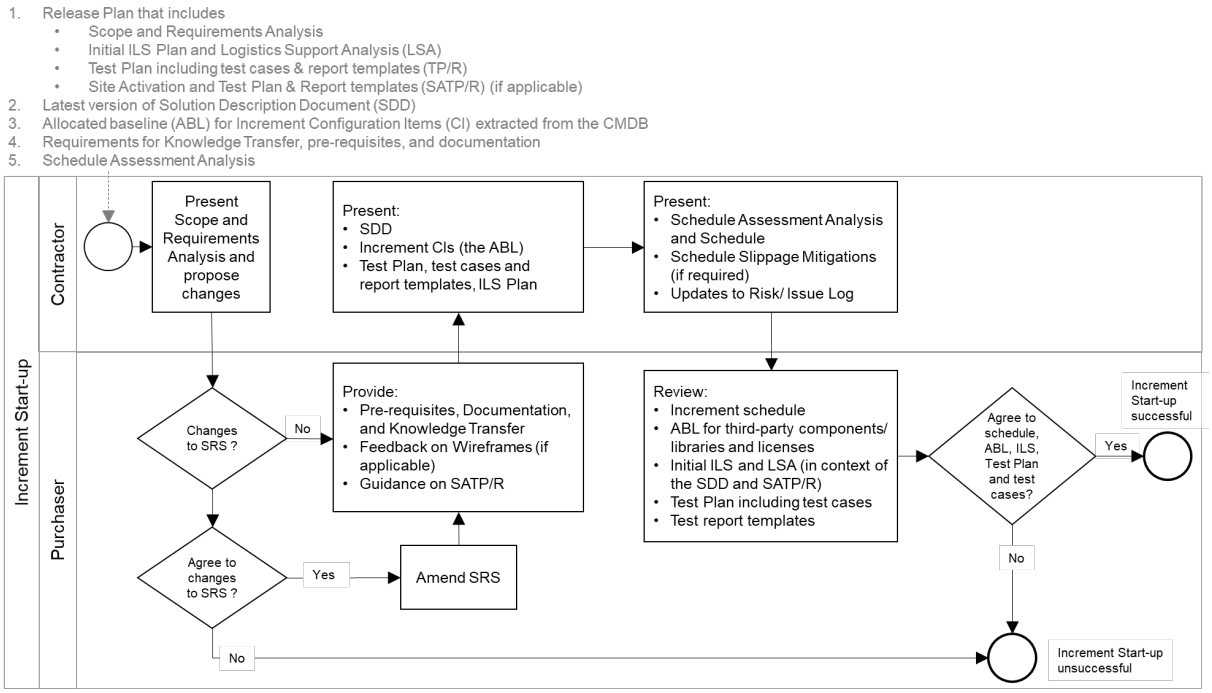
[1] A wireframe is expected to be a low fidelity sketch (sometimes literally a pen and paper sketch) of the UI. The wireframes must convey main features, functions and content of a user interface, without getting into the visual design

(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.

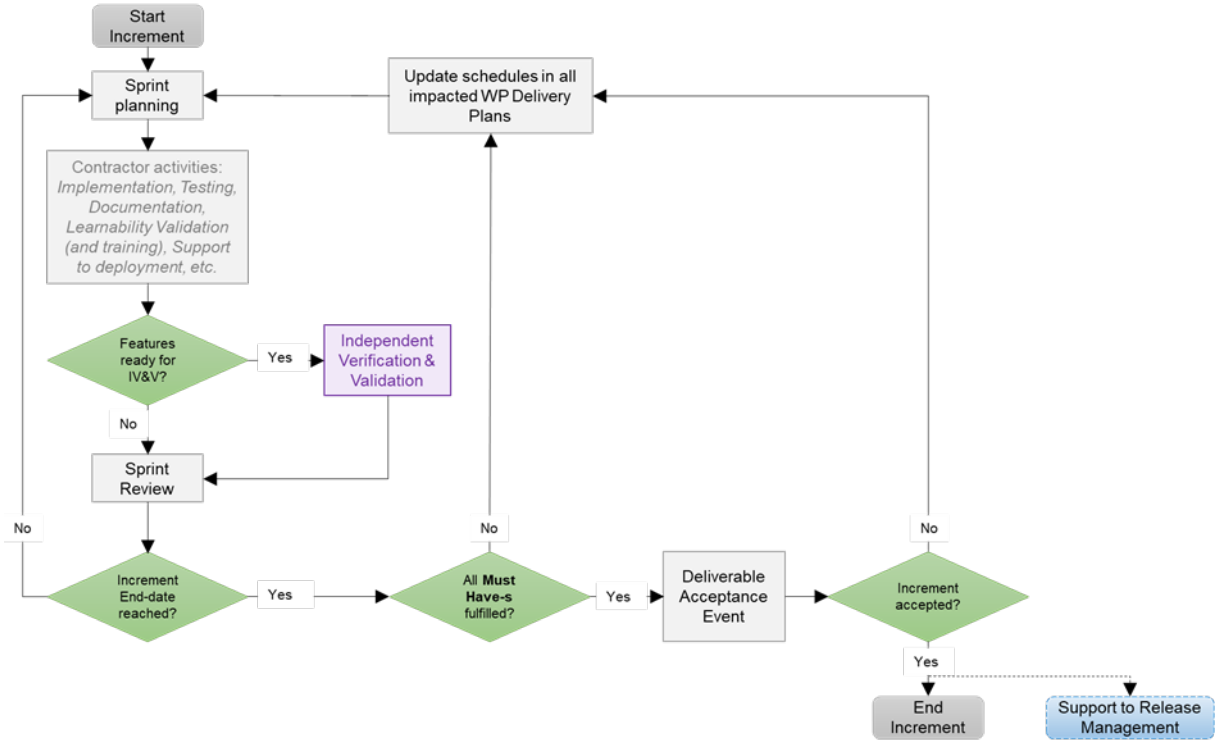
[81] In case the Contractor is not able to deliver all requirements at Must Have priority before the end of the increment, another sprint is added, and all project schedules are updated.

[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 UAT with the right personnel to be able to support the UAT event.

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.

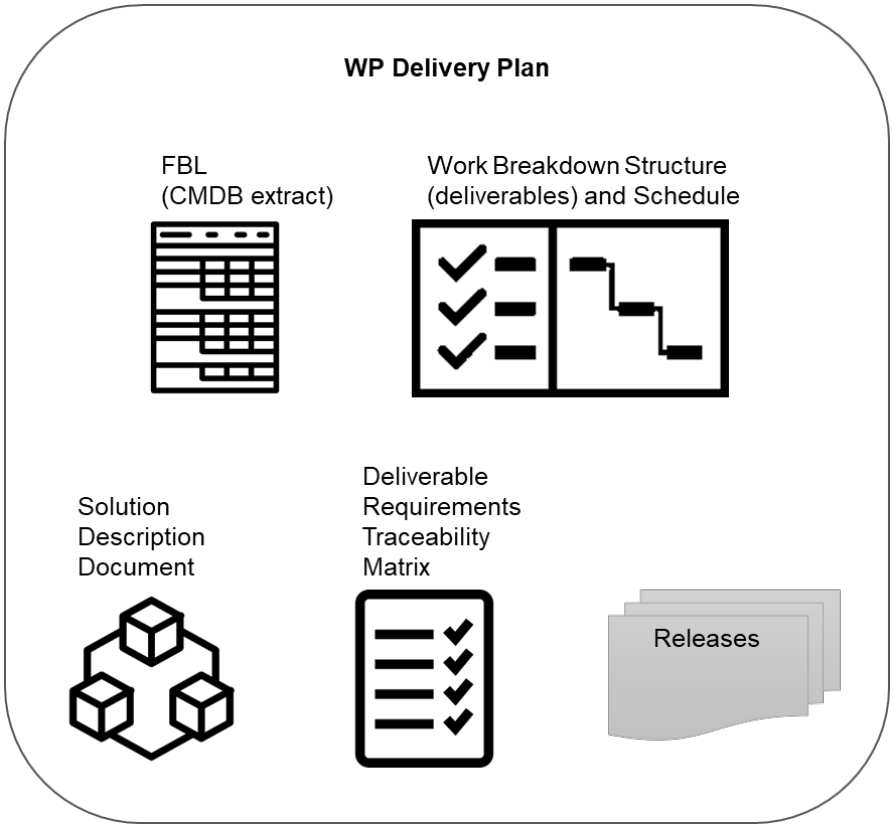
2.5.3 WP Delivery Plan

[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.

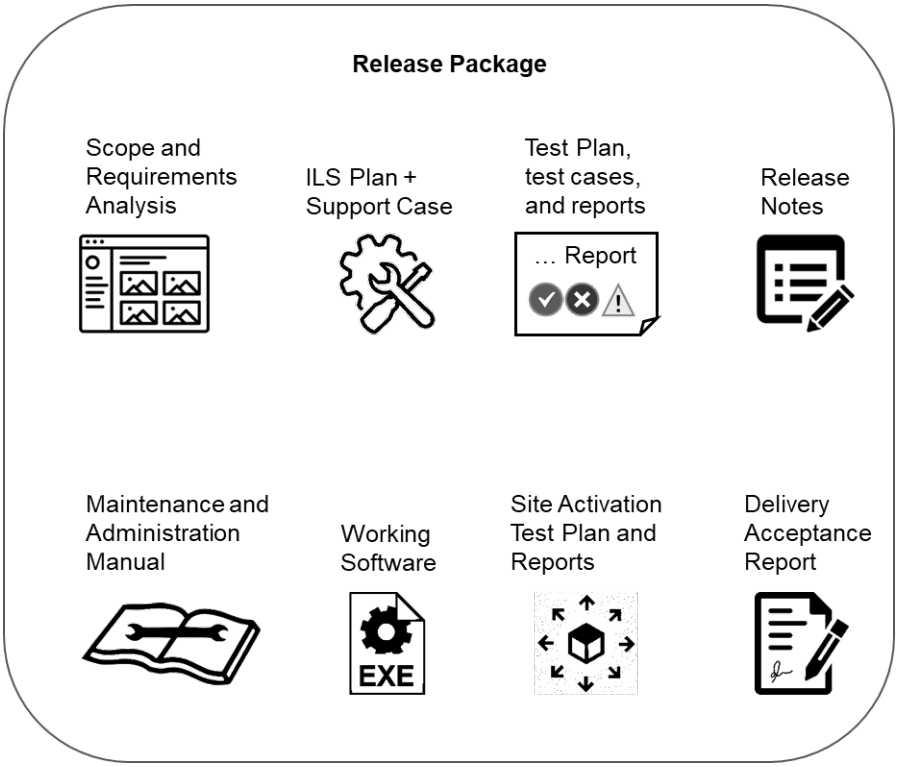
[SOWG-308] The DRTM shall be placed under configuration control throughout the period of performance the Contract.

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.

[SOWG-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.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