ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Μόνιμη Αντιπροσωπεία της Ελλάδος
στο ΝΑΤΟ

Stavros Tsakonas
12.03.2021 10:16

ΑΔΙΑΒΑΘΜΗΤΟ
ΕΠΕΙΓΟΝ

Αρμόδιος: Ασμχος (ΜΕ) Δημήτριος Κανταρτζόγλου
Τηλ.: +32 2 707 6734
Ηλεκ. Δνση: **d.kantartzoglou@grdel-nato.be**

Βρυξέλλες, 11 Μαρτίου 2021
Α.Π.: 1252

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 (μ.η.)
Πλ.Κάνιγγος
Υπουργείο Ανάπτυξης
/Γενική Γραμματεία Βιομηχανίας
/Δνση Διεθνών Βιομηχανικών Σχέσεων (μ.η.)
Πλ.Κάνιγγος
Τεχνικό Επιμελητήριο Ελλάδος
/Δνση Ε Επαγγελματικής Δραστηριότητας, (μ.η.)
Νίκης 4

ΘΕΜΑ: 5η 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, 5η Τροποποίηση Πρόσκλησης Υποβολής Προσφορών (Invitation for Bids/IFB), για διαγωνισμό εν θέματι έργου, εκ μέρους NCIA, ως φιλοξενούντος έθνους.

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

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

4. Παρακαλούμε για τις ενέργειές σας.

ΛΑΜΠΡΙΔΗΣ

Συν. Σελ: 218

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

NCI AGENCY

Acquisition Directorate

Boulevard Léopold III
B-1110 Brussels, Belgium

NCIA/ACQ/2021/6660
5 March 2021

To: All Nominated Bidders and Distribution List

Subject: Invitation For Bid IFB-CO-14783-INTELFS2 Amendment 5

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 Amd. 1, NCIA/ACQ/2021/6475, dated 29 January 2021
E. IFB-CO-14783-INTELFS2 Amd. 2, NCIA/ACQ/2021/6574, dated 11 February 2021
F. IFB-CO-14873-INTELFS2 Amd. 3, NCIA/ACQ/2021/6587, dated 22 February 2021
G. IFB-CO-14873-INTELFS2 Amd. 4, NCIA/ACQ/2021/6624, dated 24 February 2021

Dear Prospective Bidders,

1. The purpose of this Amendment 5 is to :

   a. Publish Release 5 of Bidders' questions and NCI Agency responses;

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

2. Clarification Requests and their respective responses that were released in IFB Amendments 1 – 4 have been greyed out for your convenience.

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

4. Revised bidding documents provided with this IFB Amendment 5 are listed as Attachment 2 and replace the previous versions in their entirety. Potential Bidders are strongly advised to carefully review these revised bidding documents.

5. With the exception of the revisions made in these documents, all other IFB documents remain unchanged from their original version as issued on 22 December 2020, unless updated in Amendments 1 – 4 (References D – G).

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

NATO OTAN

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

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

FOR THE DIRECTOR OF ACQUISITION:

Daniel Gaertner

Digitally signed by Daniel Gaertner
Date: 2021.03.05 08:37:09 +01'00'

Daniel K. Gaertner
Senior Contracting Officer

Attachment:

1) Responses to Clarification Requests, Release Number 5

2) Revised IFB Documents:
   2.1 File # 02: Book I – Bidding Instructions
   2.2 File # 10: Book II – Part IV, SOW I2UA, Annex A, SRS

Distribution List for IFB-CO-14783-INTELFS2 Amendment 5

NATO Delegations (Attn: Infrastructure Adviser):

Albania
Belgium
Bulgaria
Canada
Croatia
Czech Republic
Denmark
Estonia
France
Germany
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United Kingdom
United States

NATO HQ

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

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

SACTREPEUR, Attn: Infrastructure Assistant

SHAPE, Attn: J3 & J2

Strategic Commands

HQ SACT Attn: R&D Contracting Office

ACO Liaison Office

All NATEXs

Attachment 1: Responses to Clarification Requests, Release Number 5

Index no. NCI Agency	IFB Ref.	Bidder's Question	NCI Agency Response
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	ok II - Part IV - SOW I2BE -	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 I2B	Does the distribution of price to the requirements affect the price bid evaluation or technical bid evaluation? Is it used as an indication of the level of understanding of the Bidder for the requirements?	The technical bid evaluation is done without any knowledge of any price information. As part of the price evaluation, if the distribution of price to requirements appears to be intentionally unbalanced, NCIA may ask the contractor to clarify.
CR20	General	Is there any limitation or preference of the Purchaser for the programming language for development of BE?	See backend SRS section 2.1.2 for SOA & IdM Platform compliancy. .Net and/ or Java are both supported by the SOA & IdM Platform
CR21	Book I-Bidding Instructions - 3.7 & 4.5.2.2.14. & 3.6.4.2.	Is Draft Delivery Plan for all WPs is the part of the Part-I Engineering Package or Part-II Management Package. In the table 3.7 it seems to be Management Pacakge, but in the other sections, it is in the Engineering Package.	It is part of the Enginering package. The table in Section 3.7 of the Bidding Instructions is corrected by IFB Amendment 1.
CR22	Book II-Part IV-SOW I2UA Annex A SRS	How will the non-functional requirements (i.e. Response time, Capacity) be verified for only UA without taking the BE into consideration? (I2UA SRS: NFR-2, NFR-3, NFR-4)	The BE NFRs are defined by the BE SRS and those can be verified through testing against the BE API. That means the BE performance will be known, and the UA performance can then be assessed (relative to the BE performance).

CR23	N/A	In Bidding Instructions, Draft Delivery Plan is included in Management Section of Volume-3 but is recommended to be moved to Engineering Section.	That was an error; the Delivery Plan is part of the Enginering package. The table in Section 3.7 of the Bidding Instructions is corrected by IFB Amendment 1.
CR24	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 5.4.1	Req ID: NFR-15 & NFR-16 Q// how verification analyze can be performed? There will be no “idealized” network conditions for latencies as stated in [127] and [128].	The purpose of *Inherent* is to take all factors that are not related to the quality of the delivered SW out of the equation for calculating availability. The deployed solution will then be observed under operation and the *Inherent* availability can be assessed.
CR25	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 5.4.2	Req ID: NFR-17 Q// is term “without loss of data” relates to persistent data only? Or also includes transient or session data at time of failure as well?	Persistent data only. The SRS in Amendment 1 clarifies this.
CR26	13_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex A SRS section 4.1.15	Req ID: FBE-294 & FBE-295 Q// ICD for assets of AirC2IS is required to be able to make a cost estimation on requirements	The AirC2IS ICD is available in the Referenced Documents folder on the IFB portal (see file AirC2IS_SDS_Annex_04_ICD)
CR27	N/A	In WP1.1, 1.2 and 1.3 sheets of SSS I2UA (and Bidding Sheets I2UA) and WP2.1 sheet of SSS I2BE (and Bidding Sheets I2BE), the price is required to be broken down into the given requirements (capabilities). In addition to the capability development, there are other activities (requirements) to be performed in this project. Some examples are listed below. We consider distributing the prices of those activities into the SSS requirements proportionally. If some of those SSS requirements are needed to be deleted throughout the execution of the project, the total price from the below activities will decrease by an amount which is equal to the price portion distributed to the deleted SSS requirements. We assess that the total effort/price of the below activities should not change linearly according to SSS requirements changes. Please advise how to formulate this subject in the price calculations. • Contractor support to Purchaser IV&V as given in I2UA SOW [84] and I2BE SOW [80] • Contractor attendance to UAT as given in I2UA SOW [SOWG-223] and I2BE SOW [SOWG-223] • Contractor attendance to Deliverable Acceptance Review I2UA SOW [SOWG-224] and I2BE SOW [SOWG-224] • Contractor support to Purchaser’s accreditation activities as given in I2UA SOW [SOWG-227], [SOWG-228] and [SOWG-230], and I2BE SOW [SOWG-227], [SOWG-228] and [SOWG-230] • Contractor support site installation as given in I2UA SOW [SOWG-378] and [SOWG-379], and I2BE SOW [SOWG-376] and [SOWG-377] • Training material development and training delivery to Purchaser and /or End User Personnel as given in I2UA SOW Section 2.3.5 and I2BE SOW Section 2.3.5	* IV&V: Contractor should maximize the use of test automation as indicated in the SOW (BDD and ATDD) with integration with IV&V test recording system. IV&V resources will participate in the SOW defined events. The Contractor will have to respond to enquiries from IV&V. * UAT: As each increment results in a deliverable that can be submitted in a UAT, i.e. the expected number of UATs are known. * Deliverable Acceptance Review: Same as for UAT, the expected number of DARs are known. * Support to RFC: The RFC process will be mostly handled by NCIA. If the Contractor delivers SW (by increments) that is easily installed, has no major defects, and is documented in accordance with the Contract, then the Contractor's involvement with the RFC process will be low. The assistance will be required in the case when there are problems (e.g. with installation and with SW issues) * The training requirement is for the purchaser's O&M team, and training material needs to be delivered for each increment. No end user training is required, beyond what is defined for the Learnability Tests The bidder needs to estimate the costs of the non-developmental activites and factor them into the cost of individual impementation requirements. It is not anticipated that any potential deletion of requirements would significantly impact the non-developmental activities.

CR28	Book I – Bidding Instructions Annex B-C-D	Can you provide bidders with an editable document templates for all of these annexes B1-16 + C + D ?	Appendix B through D from the Bidding Instructions has been uploaded to the IFB portal in the Supporting Documents folder
CR29	N/A	What measures do you have in place to prevent the builder of SPIRAL 1 to benefit from its current incumbent provider position and ensure transparency of competition ?	There is no Contractor currently working on INTEL-FS Spiral 1. Since the handover and end of the warranty, INTEL-FS Spiral been maintained by NCIA. All bids will be evaluated against the criteria stated in the IFB, and will only be made available for review to the NCIA evaluators. The source code of INTEL-FS Spiral 1 will be provided to the contractor at contract award.
CR30	N/A	By reading the documentation and analyzing the functional requirements and user stories, we understand that our software is able to fulfill an important amount of these requirements and to integrate with specialized third parties for the parts that are not covered. Since our user interfaces are based on Angular and HTML5, would it be acceptable for NATO to be proposed highly configurable COTS (commercial off the shelf software, out of the box) products instead of bespoke development? By using software that is covering both AU and BE in an integrated manner, implementation risks are lowered, time to market shortens and maintenance is more efficient.	There is no restriction preventing a contractor from proposing highly configurable COTS, as long as all of the requirements are fulfilled. However, please note that: 1. It is important the back-end is separated from the front-end, and that the only interaction between the two happens through the BE API. 2. The bids for the back-end and front-end must be submitted separately from one another, with no caveats that NCIA must accept both bids together. A bid that deviates from these two points will be considered non-compliant.
CR31	N/A	Is NATO providing the infrastructure to meet the non-functional requirements (performance, recovery time, up time, concurrency, etc.) ?	The Purchaser will provide the infrastructure to meet the NFR. However when not ideal, the NFR measurements/ assessment will remove/ subtract the impact of the NATO infrastructure.
CR32	N/A	If T2 (above) answer is yes, is NATO open to receive our recommendations regarding the types, sizing, etc. of the hardware, operating system and possible virtualization layers?	This is a pure SW acquisition project that will rely on NATO PaaS and IaaS. The proposed solution will have to work with existing NATO PaaS and IaaS.
CR33	N/A	Can NATO indicate which of the requirements are already met in Spiral 1 and current technology used for it ?	The functionality that exists in Spiral 1 can be seen from the INTEL-FS Spiral 1 User Manual and Administrator Manual that is available under 'Supporting Documents' on the IFB portal. Also, the IFB Information model (document 14a and 14b) documents the information model for what has been implemented in Spiral 1 (see section on NATO::_Conventions and Migration::_INTEL-FS Spiral 1 Reference). However, as Spiral 1 does not meet the implementation requirements as defined by this IFB (neither for frontend, nor backend), the potential for code reuse from Spiral 1 in Spiral 2 will be limited. An "exception" to the limited SW reuse is identified in the I2UA SRS paragraph [49]: "*Note: NCI Agency is already in possession of a software (SW) tool, and its source code, that has implemented functionality in Angular 9 that interfaces with a REST abstraction layer in INTEL-FS Spiral 1 as depicted Figure 1-1. This UI software (that is also compliant with [HMI-C4ISR]) fulfils many of the acceptance criteria of several of the user stories below including [US-18], [US 21], [US 23], [US 24], [US 25], [US 26], and [US 27]. This source code will be available with the INTEL-FS Spiral 1 software* ".

CR34		Are the mentioned technologies fixed or contractor can provide technology recommendations e.g. Angular, Neo4J has been mentioned as the framework?	NCIA is striving towards SW reuse and componentization across applications and functional area services (FAS). In this effort Angular should be the UI framework chosen by most new FASes, and Angular will be the preferred framework INTEL-FS. The IFB specifies backend functional and nunfunctional requirements like advance graph queries (with fast response times) and link analysis / social nework analysis and a solution including a graph database should be able to fulfil those requirements. The choice of a graph databse (e.g. Neo4J) is not fixed and the Contractor can propose a different databases with graph support, or a different solution architecture that can fulfill the functional and non-functional requirements of the IFB. Note: Angular and Neo4J are both already used with the INTEL-FS SW.
CR35		NSF is recommended as the foundation toolchain (DevOps based) for custom software development lifecycle. Does this toolchain need to be leveraged both for Application and Backend Service development and deployment as a standard?	Yes
CR36		Please confirm the deployment preference for both I2UA (Application) and I2BE (Backend) systems viz. on-premises / private secured cloud	As stated in the I2BE SRS, the backend services shall run on the SOA & IdM Platform. The I2UA shall be able to run in a browser on any computer connected to the NATO network.
CR37		Per our understanding, there will be an transient / intermediate release for new application pointing to old backend and then a following release for new application with new backend services: a. Are the migration timelines flexible and what is the business impact in case of delays? b. There is a mention of existing REST Abstraction /API services layer (section 1.3 of I2UA SRS) which can be leveraged to support the transient state (I2UA Phase 1). Please provide the REST API, business logic and system architecture documentation.	a. The roll-out for the new backend that involves migration, will be done incrementally for a limited number of users at the time. The legacy capability will need to be available until the new capability is deemed robust and stable. The impact to the business must be minimal/ zero. b. This is still work in progress with an expected deployment to production in Q2 this year, the abstraction layer API is not stable and available yet. INTEL-FS Spiral 1 architecture information is provided through the INTEL-FS Spiral 1 System Design Specification that has been uploaded to the IFB portal under Supporting Documents.
CR38		We can see that some parties on the bidders list have been involved in INTEL-FS Spiral 1 and/or in the design of Spiral 2. Will these parties be excluded from bidding? If not, in what way will NATO guarantee a level-playing field?	No bidders will be excluded from bidding. The INTEL-FS Spiral 2 solution will architecturally be very different from Spiral 1. No Industry has been involved in the design of Spiral 2; the design of the Spiral 2 solution is solely done by NCIA.
CR39		Could you please provide the details (documentation reference) covering INTEL-FS Spiral 1 application system architecture and technology landscape	The INTEL-FS Spiral 1 System Design Specification has been uploaded to the IFB portal (file name: *INTEL-FS_-_System_Design_Specification_-_62789015_424_-_V0.14*)

CR40		How many business domains, processes, services and workflows are in scope of the target state application landscape?	The number of services can be enumerated from the IFB I2BE SRS in the sections listing the Functional Services and the Integration Services. It should be noted that some of the services are intended to perform migrations from Spiral 1 - these are idetified as "xxxx Migration Service". There are four principal processes/ workflows: Dissemination, Colation, Request and Task. In terms of Business Domains (and depending on the interpretation of "Business Domain") the target application state will provide support to the standard Intelligence Procedures found in the Allied Joint Doctrine AJP-2.1. At the highest level, these include all phases of the Intelligence Cycle; Intelligence Requirements Management; Collection Management; Intelligence Support to Targetting; The JISR Cycle; Support to Ballistic Missile Joint Intelligence Preparation of the Operating Environment; Support to Electronic Order of Battle Management; Support to IED Incident Mangement. All of these higher level procedures are supported by some or more of the services defined in the I2BE SRS.
CR41	VC-ICD 1-3	Section 3 of VC-ICD 1-3 document provides an overview of Geo-View Visualization Components (GIS, File Import/Export, NMAPI for user applications, Media services, GeoView online help, Symbology service). Please provide the approx. number of visualization component services and users for the new application platform?	NCIA foresees one VC to be used with each instantiation of the Web Client (i.e. the different UI applications as defined in the I2UA SRS will share the one instantiation of the VC). The main reason for that is that each instance of the VC will require a high amount of memory. The number of users will be several thousand.
CR42		14 loosely coupled applications are mentioned in scope. Are there any dependencies in terms of data and domain services across these applications?	There should be no need for any intra-client dependencies between these User Applications beyond the sharing of a single VC.
CR43	INTEL-FS User Manual	In the INTEL-FS User Manual (INTEL-FS 1.5.0 build cb0514b) there is a mention of IIE (Intelligence Information Entity) management workflows supported by the front end application. How many business subject areas/Intelligence Information Entity domains are in scope?	From the INTEL-FS Spiral 2 information model, in documents 14A and 14B, it can be seen that there are 172 Intelligence Information Entities in the Spiral 2 *Domain of Discourse* . There are four principal processes/ workflows: Dissemination, Colation, Request and Task. All IIEs are subject to the Dissemination Worfklow. *ProductIIEs* in conjunction with *BattlespaceIIEs* are subject to the Colation workflow. Within the IRMCM staff function, RFIs and ISRRs are the subjects of *Request* workflows; CollectionTasks and ExploitationTasks are the subject of *Task* workflows.
CR44	I2UA SRS document	Section 2.1.1 – I2UA SRS document : “[INTEL-FS2-InformationModel] implicitly includes the information managed by Spiral 1 because it extends from the principal components of Spiral 1.” Please provide the Intelligence Information Entity data model documentation as per INTEL-FS2-InformationModel	IFB Documents 14A and 14B contain a complete specification of the INTEL-FS Spiral 2 Information Model. These documents both contain a section *_Conventions and Migration::INTEL-FS Spiral Reference* which shows the principal information aspects of Spiral 1: Battlespace Object Management (including support to Counter-IED); Intelligence Requiements Managment (including RFIs and Indicators); Intelligence Support to Targetting and ISR Product catalogue Management.

CR45		Could we have more information on GeoView? • On what software is this build? • If needed can an alternative be proposed or is GeoView the basis that should be used? • is GeoView an "as is" and the basis that should be used?	Information on the usage of GeoView is provided through the ICD that has been provided in the Reference Document section on the IFB portal (see document *VC ICD 1-3*). The 2D parts of the VC (which is what will be used in INTEL-FS) is implemented in OpenLayers. An alternative GeoView solution is not an option. The VC GeoView is a standardized component that will be used in multiple FASes to lower overall CAPEX and OPEX to NATO. The aim is to use the GeoView "as is", no feature gap has yet been identified in the VC.
CR46		The overall project is split in 2 contracts that can be under the leadership of 2 separate companies. Who is responsible of the overall integration and the entire function?	As defined in the I2BE SRS, the Backend Contractor is responsible for delivering backend services that support the User Stories through the API. An initial API will be provided by NCIA as a configuration item, it will be maintained and improved by the backend contractor. NCIA will be the approving authority for changes to the API (see also answer to CR6)
CR47		Can you define what is an "Apparent Successful Bidder" . Is there an additional step to go from the status of "Apparent Successful bidder" to " successful bidder"	The term "apparent" successful bidder is used, as the contract award will not be made until: a) the debrief period for unsuccessful bidders has been completed; and b) a successful pre-award meeting has been held with apparent successful bidder. The purpose of the pre-award meeting is to ensure a complete understanding of the technical requirements, schedule and contract terms and conditions, and to clarify any minor ambiguities that remain following the evaluation phase.
CR48		Can you disclose the Spiral 1 ICD document.	The Spiral 1 ICD has been uploaded to the IFB portal under Supporting Documents.
CR49		Where do the Acceptances take ? Can it be done virtually?	As stated in SOW section 2.4.5.2.6 on the Delivery Acceptance Review *"If agreed between Purchaser and Contractor, the meeting could be done as a video-conference meeting"* .
CR50	Book I Bid Instruction Section 1.2.2	Could you provide clarification or the concept, with examples, in regards to Book I Bid Instruction Section 1.2.2 "… on a fixed Price Incentive Fee (FPIF) basis" as to what would constitute the eligible targets to receive the Incentive?	The incentive fee is described in Book II, Part II, Contract Special Provisions, Section 6. There are two incentive milestone dates for each contract (CSP, Section 6.3). If all Applications/Services have passed the Initial Acceptance by this milestone date, the earned incentive will be 5% of the value of the Applications/Services for which all Requirements have been accepted.
CR51	Book I Bid Instruction Section 1.2.3	Could you define what you consider as an "Agile Methodology" in Book I Bid Instruction Section 1.2.3 and provide amplification as to what a contractor can expect during the contract period. For example how would changes in design and/or delivery using this "Agile Methodology" from the as bid FFP baseline be funded?	What some might consider as "fully agile" - a high level scope with significant room for ongoing changes - will not be implemented on INTEL FS 2. The elements of Agile methodology that apply to these contracts are defined by the DSDM principles in the SOW. Primarily, this involves frequent deliveries and acceptances, based around sprints and increments; frequent payments; and the ability to reprioritize requirements. The scope is fixed; any minor changes that are required later in the project could be partially managed by removing some of the lower priority requirements if they're no longer necessary.

CR52		With your FPIF and Agile delivery methodology, what are the Key Metrics that NATO will be using in order to measure that the Contractor has met the requirements and met the Acceptance Criteria?	The delivery acceptance requirements are defined through the SOW and SRS, see also answer to CR above.
CR53		Are the User Stories going to be sufficient for a contractor to use for Acceptance Criteria?	The acceptance criteria are defined in the SOW. User Stories are not by themselves sufficient. General functional requirements, specific functional requirements, and non-functional requirements as specified in the applicable SRS are also included in the deliverable acceptance criteria.
CR54	I2BE SRS	[GBE-6] of section 2.1.2.1 of I2BE SRS document states "All I2BE services (taken to mean the full set of Phase I, Phase II and integration services specified herein) shall be hosted upon the SOA & IdM Platform, and re- use and/ or integrate with the SOA & IdM Platform services". [15] of section 1.7 of I2BE SRS document: "..the bulk of the Spiral 2 effort concerns itself with technology refresh, migration and 're-platforming' (see [18]) of existing back end, full stack capabilities to the SOA & IdM Platform". Fig 8 – Interoperability Landscape in section 5.1 of NU_SOAIDM_Wave1and4_ICD_v8.0 document provides a logical interoperability view of SOA & IdM platform. • Please provide the details (documentation reference) of SOA and IdM platform covering: end to end physical system architecture (with supporting technologies) and ETL (Extract, Transform and Load) framework services to populate Intelligence	The documentation of the SOA and IdM Platform that is currently available has been provided on the IFB portal in the Referenced Documents section.
CR55	IFS1-ICD	Section 2 of IFS1-ICD document provides an overview of the implemented INTEL-FS Spiral 1 system. The scope covers intelligence requirements management and processing, information collection and processing and intelligence dissemination. Is the scope same for target INTEL-FS (New) backend system or there will be new functionalities/enhancements?	The scope of INTEL-FS Spiral 2 is defined through the IFB SOWs and annexes. INTEL-FS Spiral 2 will have more functionality and will have increased interoperability and integration with other Bi-SC AIS FASes.
CR56	IFS1-ICD	Section 3 of IFS1-ICD document provides an overview of INTEL-FS External Interfaces (inbound and outbound). a. How many of these interfaces are in the impact analysis scope of re-platforming? b. Are there any re-usable components (utilities, API definitions etc.) which can be leveraged for re-platforming?	Bidders should expect all interfaces to be affected by the re-platforming. The WSDL files for the SOAP services defined in Chapter 5 of the ICD should be reusable; these WSDL files will be applicable for the deliverable defined in section 4.2.4 in the Backend SRS.
CR57	IFS1-ICD	Section 4 & 5 of IFS1-ICD document provides the overview and definitions of INTEL-FS services. a. How many of these services are in the impact analysis scope of re-platforming? b. Are there any re-usable components (utilities, information data models etc.) which can be leveraged for re-platforming?	See answer above. Additionally, note that the Spiral 2 information model incorporates the Spiral 1 information model.
CR58	I2BE SRS	[14] of section 1.7 of I2BE SRS document: "The significant part of the Initial Information Model [INTEL-FS2-IM] is based on existing production systems (IRM, CM, BSO, Products, EOB, etc.) that these I2BE services will be replacing". Please provide the details (documentation reference) of Initial Information Model as per [INTEL-FS2-IM].	The Information Model is provided in document 14a_ and 14b_ of the IFB: *- 14a_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Battlespace Partition* *- 14b_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Staff Partition*)

CR59	N/A	Please provide the details (documentation reference) for Spiral 1 INTEL-FS backend data sources (description, quantity etc.) and data collection interface types (Event based, API based etc.). How many Spiral 1 data sources and interfaces are in scope of target INTEL-FS backend platform (New)?	The main data sources for INTEL-FS Spiral 1 are the CCC, MIDB, JTS, and organically created data. The CCC source/ interface is in the scope of Spiral 2 (see BE SRS section 4.1.1 and 4.2.1). The MIDB source is also in scope of Spiral 2 (see BE SRS 4.1.14). JTS (now N-JTS) will continue to be a source for INTEL-FS Spiral 2 (see BE SRS section 4.1.13)
CR60	N/A	How much data history (volume and period) needs to be migrated from Spiral 1 to the new backend platform?	There will be data from approximately 3 million information entities collected over many years that will have to be migrated. Note that the Spiral 2 information model builds upon, and incorporates, all of the Spiral 1 information model; this should ease the migration effort.
CR61	Book I-Bidding Sheets I2BE Annex B-13.	If the contractor will submit bid for both of the BE and UA, can proposed Key Personnel be the same personnel for both of the bid IFB-CO-14873-INTEL-FS2-BE and IFB-CO-14873-INTEL-FS2-UA? Or Should contractor propose different key Personnel (PM, QAM, CM, TL, TD, etc.) for both of the bid?	Contractor Key Personnel do not have to be different for each contract. However, the bid needs to demonstrate that the Contractor's Team is sufficiently resourced according to a resource plan that realistically can deliver the project in accordance with the contracted schedule. All meetings under project execution (Kick-Off, WP meetings etc.) will have to be run separately.
CR62	Book II – Part II – Contract Special Provisions - 4.4	Where are the priorities of the requirements (Must-have, Should-have or Could-have) given in the IFB? Will these priorities be decided during project execution by Purchaser?	The priorities will be provided to the Contractor as part of the pre-award discussions prior to Contract Award.
CR63	Book II – Part II – Contract Special Provisions - 7.5.3	In relation to the article 7.5.3 and 7.5.4 of the “Special provisions” could you please clarify whether the Contractor, may invoice at once the 100% of the value of the accepted Requirements but wait for the warranty payment of 10% of the total value of the accepted Requirements in four quarterly payments, or, Contractor is expected to invoice seperately each time? (e.g; 90% for acceptance, 10%*0,25 four times in the warranty period)”	The contractor will invoice 90% of the value of the accepted Requirements. The remaining 10% will be invoiced during the Warranty period. As an example, if the total value of the accepted Requirements from EDC to FSA = EUR 5,000,000, then 4,500,000 would be invoiced/paid following the Incremental acceptances; and 500,000 would be allocated to the warranty period. For this 500,000, four quarterly invoices of 125,000 would be submitted/paid during the 1-year warranty.
CR64	Book II - Part IV - SOW I2BE - 1.5 PFI	Will Contractor pay any price to the Purchaser for the NR laptop to be used for sharing of NR material?	The NR laptop will be lent to the Contractor as PFI; the Contractor does not need to pay for this.
CR65			
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 1*4b_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Annex B Information Model - Staff Partition*) were too big to send by email. The files are available to the bidders through the IFB portal.
CR81	SOW I2BE [28]	The Purchaser will provide the Contractor with the current INTEL-FS Spiral 1 software. Does it include Source code. When will it be provided ? Is it possible to have it during Bid phase?	The software, including source code, will be provided at Contract Award.
CR82	SOW I2BE [11] (4)	Sentence :"Integrating with the new backend solution into the new service-oriented architecture (SOA) as native hosted services;" Please clarify this sentence	In the updated SOW provided with this IFB Amendment, the sentence has been corrected to "*(4) Implement the new backend solution as services to be hosted on the service oriented architecture (SOA) and IdM Platform* " (only the integration services will have to be *native* hosted).
CR83	SOW I2BE [12]	The delivered SW at the end of each increment will have to have a quality at the level of being ready for deployment to production. The deployment of new software modules will be lead by the Purchaser with support from the Contractor. There might be multiple deployments to production of incrementally delivered functionality, e.g. deployment in support of the BMD tranche 25, and a final deployment prior to final system acceptance (FSA)" . The warranty starts after FSA . Does it means that Modules delivered at the end of one Increment are not supported? Or shall we include in the price the support of the first delivery until one ear after FSA ?	While incrementally delivered software to production will be supported operationally by NCIA staff, the Contractor will be responsible for correcting any software bugs found in the delivered software (see [SOWG-181] [SOWG-181] *The Sprint Work Plan shall include: ...(2) Tasks to implement bug-fixes in the case bugs has been discovered in software functionality previously delivered by the Contractor under this contract;. ..*"

CR84	IFB-CO-14873-INTELFS2 Book I - Bidding Instructions	IFB-CO-14873-INTELFS2 Book I - Bidding Instructions states: 1.5.3. The Contractor will be required to handle and store classified material to the level of "NATO RESTRICTED". and 1.5.4. The Contractor shall have the appropriate facility and personnel clearances at the date of Contract Signature. Should the Contractor be unable to perform the Contract due to the fact that the facility/security clearances have not been provided by their respective national security agency, this lack of clearance cannot be the basis for a claim of adjustment or an extension of schedule, nor the lack of clearance be considered a mitigating circumstance in the case of an assessment of Liquidated Damages or a determination of Termination For Default by the Purchaser under the Prospective Contract. but CO-14873-INTELFS2 Book II - Part II - Contract Special Provisions states: 16.10 The Contractor's facilities and personnel shall meet NATO security regulations to permit handling and storage of information classified up to and including NATO SECRET. so: which is it for the Contractor's facilities, NATO RESTRICTED or SECRET?	Contractor's facilities shall be able to handle material up to NATO RESTRICTED. Article 16, *Security,* of the Contract Special Provisions has been updated to reflect this correction by deleting paragraph 16.10. Paragraph 16.2 is correct in stating that *"the Contractor's premises shall be able to handle up to NATO Restricted."*
CR 85 start CR Release 3 here - do not include with CR Release 2	Book I-Bidding Sheets I2BE	Should Contractor deliver any HW or HW Components to any NATO deployment site of INTELFS2? Or Will Contractor deliver only SW Applications with COTS? For COTS products, how many (running) license will be delivered to the Purchaser by Contractor?	The contractor will not deliver any HW or HW components. The contractor will deliver only SW. COTS components being part of the INTEL-FS solution should not have any run-time licenses. If run-time licenses are unavoidable, then the licenses will have to be tailored for a Cloud-based environment with users accessing INTEL-FS through Web-browser. The bidder should then assume 3 data centres serving 2000 concurrent users with horizontal scaling elasticity to fulfil the INTEL-FS non-functional requirements. For any Development Licenses; 10 developer licenses will suffice.
CR86	N/A	Please describe the operational perspective of the platform: who will be using it, where (HQ, field, etc.), and when is it planned to be operationally deployed?	The solution will be deployed to the ITM data centers. Users in a number of organizations will be connecting using the NATO Communication System (NCS).
CR87	N/A	What are the main gaps of Spiral 1 solution this solution willing to solve?	As described in the Bidders Conference presentation slide 14, the primary objectives of the project are the "re-platforming", adding new capabilities, and implementing a number of integration cases with other Bi-SC AIS capabilities.

CR88	N/A	In terms of design and development - Please explain your expectations from a vendor which provides an existing intelligence platform (COTS) with high customizability to user workflows and data models?	The solution must comply with the requirements as defined in the IFB, which include: * The full Information Model must be realized; * An Odata REST API for accessing the information entities must be delivered; * The Odata REST API is forward transformed from the information model (i.e. for any API changes these are first done in the model and then forward transformed to an API specification); * The workflow models as specifed in the information model is realized; in particular supporting a seemless mediation with the STANAG 4559 workflow services; * The information platfom is hosted on the SOA & IdM Platform; * There is full support for, and integration with, the IdM mechanism of the SOA & IdM Platform (to include dynamic policy based IAM through ABAC Decision Points, XACML,etc.).
CR89	N/A	Please provide some examples of the common sources to be integrated with the I2BE. Is there a central DB to integrate with?	The integration cases are defined in Chapter 4 in the Backend SRS.
CR90	N/A	Our intelligence platform's User Interface is being developed using REACT libraries and can be integrated with external components written in Angular framework. Can this be considered as an appropriate solution for the I2UA requirements, or would this fail the key requirements?	A solution that includes existing REACT libraries could be considered appropriate (although this obviously depends on the entire Technical Volume submitted). There is nothing specific about using REACT libraries that would render the bid technically non-compliant. For implementation of new UI functionality, Angular shall be used (see Front End SRS [GUA-15]).
CR91	CR6	it is stated (CR6) that the initial API provided by NCIA will be an automatic forward transformation from the information model. Considering that is is far from being enough to define the API that will be necessary to support all US and AC from the I2UA, how will the I2UA contractor be involved in the further development of the API, which seems to be performed solely by the I2BE contractor with approval by NCIA?	The Front-end contractor's Scope and Requirements Analysis (see [SOWG 170]) at the start of each Increment Startup will need to identify potential shortcomings in the API and the API's ability to provide the backend support for the delivery of the front-end deliverables. NCIA will assess the Front end Contractor's API input and if an API change is deemed necessary, engage with the Back end Contractor to facilitate the change. As the API is mainly an OData API (SQL on URL) over a stable information model only minor refinements of the API should be expected.
CR92	Bidding Instructions 3.7.1 Bidding instructions 3.3.3.3 CR1	According to "Responses to Clarification Requests #1" Draft Delivery Plan is part of the Engineering package. This aspect is clear. Bidding Instructions 3.7.1 indicates the Draft Delivery Plan and the Solution Description Document to be part of only one PDF document. Bidding instructions 3.3.3.3 about package Making indicates the Delivery Plan to be and independent document from SDD: - 14873-UA/BE-Company Name–Vol III–Tech1-SDD - 14873-UA/BE-Company Name–Vol III–Tech4-DelPlan From our point of view it would be more clear to keep both documents separately. Therefore, we recommend to update Bidding instructions 3.7.1 to indicate Engineering package to contain 2 documents for SDD and DelPlan.	Book I, Bidding Instructions, Section 3.7.1 in IFB Amendment 3 has been updated to reflect the requirement to provide the Solution Description Document and the Draft Delivery Plan as separate documents. Section 3.3.3.3 has also been modified to update the names of the individual files submitted as part of the bid.

CR93	Bidders Conference	With the evals being done simultaneously can responses (tech and financial) be submitted together or do they still need to be submitted separately?	Yes, the technical, administrative and price volumes should all be submitted together. Please review Section 3.3.1 of Book I, Bidding Instructions: "The bid shall be consolidated into one email…" Only in the event the size of the email exceeds the limit should multiple emails be submitted. Later in Section 3.3, the names of the individual files that make up the bid are provided. Please note that the size limit of the emails in Section 3.2.2 has been increased to 15 MB.
CR94	Bidders Conference	when does the Initial acceptance takes place in this scheme	The term "Initial Acceptance" means the delivery of all Must Have requirements for any given Deliverable. Those Requirements which must be accepted in order to achieve "Initial Acceptance" will be designated in the SSS prior to contract award.
CR95	Bidders Conference	Many front end apps are using .NET so using Angular imply complete re-write?	INTEL-FS Spiral 1 will be re-written as a result of the "re-platforming", so the assumption of a complete re-write is correct.
CR96	Bidders Conference	Do you think it is possible to be more specific about the support of the contractor for the IV&V and UAT?	The SOWs in IFB Amendment 3 have been updated with the additional information provided below. The support to IV&V includes: * Presenting test plans and test cases at Increment startup meeting * Present and report on test results at sprint review meetings * Support ad hoc discussions on test results (e.g. in case IV&V identifies potential bugs) * Support NCIA in getting additional installations (on the NSF) setup (the expectation here is that the SW is easily installable and that NCIA personnel will be able to do this without contractor support) * Provide answers to question the Change Manager may have to the software submitted into the RFC process The support to UAT includes: * Participating in person for the first UAT. This first event is expected to last between 3-5 days. For this first UAT the first "production environment" will be installed and personal presence will be required. * For subsequent UATs, as long as the released software can be installed and operated by NCIA personnel Contractor's support can be provided remotely. Such remote assistance includes: Phone-support for any technical issues and Ad Hoc video/teleconference meetings to discuss UAT findings.

CR97	Bidders Conference	Bidders are encouraged to re-use existing NATO solutions. To support this, the IFB states that COTS may be provided as Purchaser Funded Items. To satisfy Intel FS 2 geospatial requirements (ie: Terrain & Mobility Analysis Service, Geospatial and Features Service), could Core GIS COTS tools (Esri ArcGIS) be provided as PFI?	* The Terrain & Mobility Service shall be implemented as OGC Web Processing Services (WPS) (see [FBE-160] in BE SRS) and it should be implemented for being hosted within the NATO CoreGIS system (see BE SRS [82]). This means that the solution should be hosted on CoreGIS (i.e. ESRI ArcGIS) instances in the Bi-SC AIS/ ITM environment. The inclusion of the WPS service in Bi-SC AIS CoreGIS instances is not expected to require additional licenses for these services in the Core GIS. However if the Contractor sees the need for any additional products/licenses the Contractor shall identify and cost them in the bid. As stated in paragraph 22.1 of the Contract Special Provisions, the Agency reserves the right to provide these licenses as PFE later on in the project. * The Geospatial and Feature service are services for managing Intelligence Information Entities, they are not geo-spatial services (even if the name could suggest so)
CR98	Bidders Conference	What AJPs are relevant for considering the process from the User perspective conducting INTEL business? AJP 2?	AJP-2.1 INTELLIGENCE PROCEDURES AJP-2.7 ALLIED JOINT DOCTRINE FOR RECONNAISSANCE AND SURVEILLANCE STANAG 4559 AEDP-19 ISR Workflow Architecture
CR99	Bidders Conference	STANAGs that need to be consider?	This question was asked within the context of the Information Model. The INTEL-FS model refers to the STANAGs listed below. Please be advised that the INTEL-FS model does not require the entirety of these other models. The INTEL-FS model imports some concepts/ types from these models. STANAG 5643 Multilateral Interoperability Programme Information Model STANAG 4559 AEDP-17, 18 & 19 STANAG 6545 Common Electronic Order of Battle Exchange Format STANAG 4774/ 4778 Confidentiality Labelling STANAG 7149/ APP-11 NATO Message Catalogue
CR100	Bidders Conference	Are these technical doctrines harmonized with the process one (AJP, AIntPs)?	AJP-2.1 INTELLIGENCE PROCEDURES AJP-2.7 ALLIED JOINT DOCTRINE FOR RECONNAISSANCE AND SURVEILLANCE STANAG 4559 AEDP-19 ISR Workflow Architecture
CR101	Bidders Conference	Do you have total number of attributes for IntelFS 1? Is this in the order of 100,000+ attributes or more like 20,000+ attributes?	The Information Model for Spiral1 has approximately 300 classes and approximately 3000 attributes. It should be noted that this is across the set of Intelligence Information Entities and it is not the total number of classes in the application. The total number of classes in the application contains also all of the framework and implementation code.
CR102	Bidders Conference	JIPOE the new IPB (Intelligence preparation of the battlespace/-ground)?	The term "JIPOE" replaces the former term "IPB".
CR103	Bidders Conference	Could we assume IntelFS 1 applications are mostly standalone and do not have online interfaces among each other as well as other Bi command systems?	Web Service interfaces INTEL-FS Spiral 1 are being consumed by other Bi-SC AIS system like TOPFAS and NCOP.

CR104	Bidders Conference	From your presentation we understand that INTEL-FS Spiral1 UI provides good UX and only requires technology refresh and not full re-design. Is this statement correct?	The INTEL-FS Spiral 1 UI originated in the NITB UI around 2005-2007 and was designed to look like Microsoft Outlook. The UX understanding has evolved a lot since then, and the UI needs modernization so that it looks more like modern Web Applications, e.g. similar to modern Web sites like Amazon.com etc. This means that the a full redesign of the UI will be required.
CR105	Bidders Conference	Work description document includes availability target value and mentions MIL-STD-1388 as a reference document. In addition to these, MTBF and MTTR values of system units/components are demanded. All of these remind us of hardware units/LRUs; however, not the software configuration items -- either developed or COTS. The answer given for CR-32 says that "This is a pure SW acquisition Project." Therefore; is it true that no hardware analysis will be needed? Secondly, do you suggest/dictate any other NATO reference document/procedure to follow for this Project, for software reliability analysis?	No HW analysis will be needed. All of the LSA and RAMT related activities will be performed on the SW product as these activities are not limited to HW components. Additional NATO standards are not mandated, so the Contractor can use the industry best practices to build the reliability models for the SW components.
CR106	Bidders Conference	During the technical evaluation i've heard that the vendors' name is stripped from al pertinent documents. true?	This is not correct. It is not feasible to remove all vendor names (including company logos, header/footer information, etc.) in the received bid documentation, so this will not be done.
CR107	Bidders Conference	There is a mistake in the last slide #96 about the weight of technical subvolumes. In the slide it said: M = Management Weighted Score (50 %); E = Engineering Weighted Score (30 %); S = Supportability Weighted Score (20%);" Shouldn't it be Management = 30% and Engineering 50% instead? According to bidding instructions "4.2. Best Value Award Approach and Bid Evaluation Factors"	Yes, this was a mistake in the presentation. The updated version of the presentation uploaded to the IFB portal under Supporting Document has corrected this mistake.
CR108	N/A	What's expected time period between Contract Award and EDC of project?	The current schedule foresees approximately two months from the notification of the successful bidder until contract award. EDC is expected within two weeks of contract award.
CR109	N/A	What configuration of Atlassian Jira tool is provided by NSF? Is it expected that Jira will be used as Configuration Management tool?	For SW configuration control GitLab will be used. The CMDB solution is for the contractor to design. The NSH Jira configuration includes: * JIRA DataCentre * Plugins: Links Hierarchy, SumUp, Misc Workflow Extensions * Jira is currently integrated with TestRail – but Testrail will most likely be replaced by (or at least augmented with) Zephyr Scale (used to be called Test Management for JIRA) (and is delivered as JIRA plugin) * Integrated with NSF GitLab (so that git commits are linked to JIRA issues and the JIRA has links to the related git commits) * Project Teams will get project admin rights on their own projects. Workflows/item types etc can be customized, but may require support from the NSF team to implement these.
CR110	N/A	Is there a set of automated tests for the current solution? Is it expected to reuse it?	In terms of automated tests, unfortunately there exists very little that could be reused.
CR111	N/A	The design of automated tests is fully in the responsibility of the Contractor?	Yes, design and implementation of automated tests is a Contractor responsibility.

CR112	N/A	There is mentioned that Purchaser will provide source code of STANAG 4609 video conditioner in “12_CO-14873-INTELFS2-Book-II-Part IV SOW I2BE Amd 1”. In which language is that video conditioner?	It is written in C# as a wrapper around other off-the-shelf libraries (e.g. FFMPEG).
CR113	N/A	What is the volume of the data migrated using ETL processes? All data processed when Spiral 1 was used?	There are around 3 million information entities in INTEL-FS Spiral 1. A significant amount of that data pre-dates the INTEL-FS Spiral 1, but was migrated into Spiral 1 when this Spiral 1 was deployed to production.
CR114	N/A	ETL processes are expected to run in specific increment or until Spiral 1 services are retired?	The Spiral 1 migration services needs to be able to handle a situation of new data appearing in Spiral 1 after initial migration has taken place, i.e. until Spiral 1 services are retired.
CR115	N/A	The document „09_CO-14873-INTELFS2-Book-II-Part IV SOW I2UA Amd 1“ says in point [11] „To support the BMD ORBAT functionality the Contractor will have to implement some interim backend logic“. This interim backend logic will be implemented in current Spiral 1 implementation?	The backend logic to support BM OPFOR ORBAT function for early delivery to BMD Tranche 23 does not necessarily have to be implemented in the Spiral 1 legacy code. If feasible, the BM OPFOR ORBAT functionality could be implemented outside of the Spiral 1 code. The important aspect of the work is to provide BM OPFOR ORBAT management functionality in the user interface.
CR116	N/A	We understand that current implementation is .NET based but why Technical Lead needs documented expert knowledge in C# and .NET when the scope is reimplementation in Angular?	The .Net/ C# expertise will be required in Phase 1 of work. The Technical Lead needs to be able to understand how the Spiral 1 SW works.
CR117	N/A	Are Service Specifications (SOWG-292 - SOWG-295) as a part of SDD relevant for UA which is a consumer of services and does not define services?	Service Specifications are not relevant for the UA work. As stated in [SOWG-290] "The SDD shall include annexes that documents implemented server-side services (if any), …" As the UA is not implementing server side services, no service specifications will need to be produced.
CR118	N/A	A major version of Angular framework is released in about one year period, so we can expect two or three major releases during project implementation. Is it expected that all applications will use the same version of Angular (actual in the project start), or they will be upgraded to actual version so at the end of the project all UAs will use the most actual version of Angular?	The non-functional requirements of the IFB does not mandate a common version of Angular, nor that it has to be the latest version by the end of the project.
CR119	N/A	Requirement FUA-20 says “in case … based on Windows operating system “. Should we consider other than Windows Operating systems? What is used instead of Active Directory in such case?	NATO Bi-SC AIS environment is a Windows environment and there is no need to consider any other operating systems.
CR120	N/A	There are several requirements (such as FUA-867, FUA 369, FUA-890, FUA-891) related to calculations of Launch Point error ellipse, salvotime etc. Will Purchaser provide formulas/algorithms for such calculations?	The launch point ellipses are not calculated within INTEL-FS, this information is received through the BM Firing Event Import Services (see BE SRS section 4.1.17). The salvotime calculation is very simple: the salvos are simple groupings of launch events based on a user definable salvo "time out value".

CR121	N/A	*A question was received regarding contractor eligibility, summarized as follows:* The prime contractor would be from a NATO Nation; its parent company is also based in a NATO Nation. A portion of the work, however, would be performed by a fully-owned subsidiary that is not based in a NATO nation.	The NATO eligibility rules are strict. The Agency does not have the authority to grant a waiver to the eligibility rules for a situation such as this. If a company submits a bid described in this situation, with a subsidiary from a non-NATO nation performing a portion of the work, they would not be able to sign Annex B-12 as part of the Bid Administration volume. This would render the bid non-compliant.
CR122	N/A	[GUA-49] requirement seems to indicate than 'an implementation of the eXtensible Access Control Markup Language (XACML) version 3 architecture' should be implemented within I2UA. However it seems to us than the implementation should be place within SOA & IdM services and I2UA should use it rather than implement itself. Please clarify if the XACML implementation will be in the SOA & IdM and I2UA will use it, or I2UA shall implement another XACML architecture.	XACML will be implemented within a SOA&IdM Platform's Policy Decision Point (PDP) called by a Policy Enforcement Point (PEP) in the I2UA. The I2UA SRS in IFB Amendment 5 has been updated with a new paragraph [229] that explicitly states this.
CR123	N/A	We would like to know if it is permitted to act as subcontractor for different consortia? We would like to offer our expertise via different proposal consortia. The offered expertise will be practically the same in all proposals, because we intend to bid only on 1 part. In the past there have been Invitations to Tender (from other customers) where we were only allowed to bid 1 time with 1 consortium. Does that apply for the INTELFS2 bid as well?	From the NCI Agency's perspective, companies are free to act as a subcontractor for multiple prime contractors. Any exclusivity/non-exclusivity arrangements are between the companies, and are not NCIA's responsibility. Therefore, if Company A and Company B are both submitting competing bids as prime contractors, Company Z is free to act as a subcontractor to both of them.

NATO Communications and Information Agency
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Invitation for Bids

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

IFB-CO-14873-INTELFS2-UA
User Applications

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

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The SOWs and annexes are specific to each prospective contract

NATO Communications and Information Agency
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IFB-CO-14873-INTELFS2
Amendment 5

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

BOOK I

BIDDING INSTRUCTIONS

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SECTION 1 INTRODUCTION

1.1. Purpose and Scope

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

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

1.2. Overview of the Prospective Contracts

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

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

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

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

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

1.3. Governing Rules, Eligibility, and Exclusion Provisions

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

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

1.4. Best Value Evaluation Method

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

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

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

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

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

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

1.5. Security

1.5.1. This Invitation for Bid is NATO UNCLASSIFIED.

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

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

1.5.4. The Contractor shall have the appropriate facility and personnel clearances at the date of Contract Signature. Should the Contractor be unable to perform the Contract due to the fact that the facility/security clearances have not been provided by their respective national security agency, this lack of clearance cannot be the basis for a claim of adjustment or an extension of schedule, nor the lack of clearance be considered a mitigating circumstance in the case of an assessment of Liquidated Damages or a determination of Termination For Default by the Purchaser under the Prospective Contract.

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

transmitted to the cognisant NATO or National security officer at least fourteen (14) days prior to the site visit, will be denied access to the site. Denial of such access by the Purchaser may not be used by the Contractor as the basis for a claim of adjustment or an extension of schedule nor can the denial of access be considered a mitigating circumstance in the case of an assessment of Liquidated Damages or a determination of Termination for Default by the Purchaser.

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

1.6. Bidders Conference

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

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

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

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

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

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

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

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

1.7. Documentation

1.7.1. All documentation – including the IFB itself, all applicable documents and any reference documents provided by the Purchaser – are solely to be used for the purpose of preparing a response to this IFB. They are to be safeguarded at the appropriate level according to their classification and reference documents are provided “as is“, without any warranty as to quality or accuracy.

SECTION 2 GENERAL BIDDING INFORMATION

2.1. Definitions

2.1.1. In addition to the definitions and acronyms set forth in the Contract Special Provisions (Part II) and Contract General Provisions (Part III) of the prospective Contract, the following terms and acronyms, as used in this Invitation for Bid shall have the meanings specified below:

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

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

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

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

2.1.1.5. “IFB”: Invitation for Bid.

2.1.1.6. “Participating Country”: any of the following 29 NATO nations (in alphabetical order): ALBANIA, BELGIUM, BULGARIA, CANADA, CROATIA, CZECH REPUBLIC, DENMARK, ESTONIA, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, MONTENEGRO, THE NETHERLANDS, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, TURKEY, THE UNITED KINGDOM and THE UNITED STATES.

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

2.1.1.8. “Quotation” or “Bid”: a binding offer to perform the work specified in the attached prospective Contract (Book II).

2.2. Eligibility and Origin of Equipment and Services

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

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

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

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

2.3. Bid Delivery and Bid Closing

2.3.1. The closing date and time for submission of bids in response to this IFB is **12h00 / 12pm (Central European Time) on 6 April 2021**.

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

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

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

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

or

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

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

2.3.4. Late Bids

2.3.4.1. Bids which are delivered to the Purchaser after the specified time and date set forth above for Bid Closing are "Late Bids" and shall not be considered for award. Such Bids will remain unopened unless the Purchaser can determine that the Bid in question meets the criteria for consideration as specified below.

2.3.4.2. *Consideration of Late Bid* – The Purchaser considers that it is the responsibility of the Bidder to ensure that the Bid submission arrives by the specified Bid Closing time. A late Bid shall only be considered for award under the following circumstances:

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

2.3.4.2.2. The Bid was sent to the correct email address specified in Section 2.3.3 and the delay was solely the fault of the Purchaser.

2.4. Requests for Extension of Bid Closing Date

2.4.1. Bidders are informed that requests for extension to the closing date for the IFB shall be submitted by the Bidder only through its respective country's NATO Delegation or Embassy to the Purchaser Point of Contact indicated in Section 2.5.1 below. Any request for extension shall be submitted by the respective NATO Delegation or Embassy **no later than fourteen (14) calendar days** prior to the established Bid closing date. Bidders are advised to submit their request in sufficient time as to allow their respective NATO Delegation or Embassy to deliver the formal request to the Purchaser within the above time limit.

2.5. Purchaser's Point of Contact

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

Mr. Dan Gaertner, Senior Contracting Officer
Acquisition, NCI Agency
Questions/Clarifications:
IFB-CO-14873-INTELFS2@ncia.nato.int
Bid Delivery :
All bids shall be delivered by email as stated in paragraph 2.3.3.

2.6. Request for IFB Clarifications

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

2.6.2. All questions and requests for clarification shall be forwarded to the Purchaser using the Clarification Request (CR) Forms provided at Annex D of this Book I. Such questions shall be submitted by email to the point of contact specified in Section 2.5.1 above and shall arrive **not later than twenty eight (28) calendar days** prior to the stated "Bid Closing Date". The Purchaser is under no obligation to answer requests for clarification submitted after this time. Requests for clarification must address the totality of the concerns of the Bidder, as the Bidder will not be permitted to revisit areas of the IFB for additional clarification except as noted in Section 2.6.4, below.

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

2.6.4. Additional requests for clarification are limited only to the information provided as answers by the Purchaser to Bidder requests for clarification.

Such additional requests shall arrive not later than fourteen (14) calendar days before the established Bid Closing Date.

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

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

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

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

2.6.9. Except as provided above, all questions will be answered by the Purchaser and the questions and answers (but not the identity of the questioner) will be issued in writing to all prospective Bidders.

2.6.10. Where the extent of the changes implied by the response to a clarification request is of such a magnitude that the Purchaser deems necessary to issue revised documentation, the Purchaser will do so by the means of the issuance of a formal IFB amendment pursuant to AC/4-D/2261 and in accordance with paragraph 2.8.

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

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

2.7. Requests for Waivers and Deviations

2.7.1. Bidders are informed that requests for alteration to, waivers or deviations from the terms and conditions of this IFB and attached prospective Contract (Book II) will not be considered after the request for clarification process. Requests for alterations to the other requirements, terms or conditions of the Invitation for Bid or the prospective Contract may only be

considered as part of the clarification process set forth in paragraph 2.6 above. Requests for alterations to the specifications, terms and conditions of the Contract which are included in a Bid as submitted may be regarded by the Purchaser as a qualification or condition of the Bid and may be grounds for a determination of non-compliance.

2.8. Amendment of the IFB

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

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

2.8.3. All such IFB amendments issued by the Purchaser shall be acknowledged by the Bidder in its Bid by completing the “Acknowledgement of Receipt of IFB Amendments” certificate at Annex B-2. Failure to acknowledge receipt of all amendments may be grounds to determine the Bid to be administratively non-compliant.

2.9. Modification and Withdrawal of Bids

2.9.1. Bids, once submitted, may be modified by Bidders, but only to the extent that the modifications are in writing, conform to the requirements of the IFB, and are received by the Purchaser prior to the Bid Closing Date as detailed in paragraph 2.3.1. Such modifications will be considered as an integral part of the submitted Bid.

2.9.2. Modifications to Bids which arrive after the Bid Closing Date will be considered as "Late Modifications" and will be processed in accordance with the procedure detailed in paragraph 2.3.4, except that unlike a "Late Bid", the Purchaser will retain the modification until a selection is made. A modification to a Bid which is determined to be late will not be considered in the evaluation and selection process. If the Bidder submitting the modification is determined to be the successful Bidder on the basis of the unmodified Bid, the modification may then be opened. If the modification makes the terms of the Bid more favourable to the Purchaser, the modified Bid may be used as the basis of Contract award. The Purchaser, however, reserves the right to award a Contract to the apparent successful Bidder on the basis of the Bid submitted and disregard the late modification.

2.9.3. A Bidder may withdraw its Bid at any time prior to Bid Opening without penalty. In order to do so, an authorised agent or employee of the Bidder

must provide an original statement of the firm's decision to withdraw the Bid.

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

2.10. Bid Validity

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

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

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

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

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

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

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

2.11. Bid Guarantee

2.11.1. The Bid Guarantee shall be submitted by email to the Purchaser, either directly by a banking institution or from the Bidder, to the email address *NCIAFinanceTreasuryBankGuarantee@ncia.nato.int*. In either case, the Bidder shall also provide a copy of the Bid Guarantee in the Bid Administration Volume.

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

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

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

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

2.11.2.4. The Bid Guarantee shall be substantially similar to Annex C as an irrevocable, unqualified and unconditional Standby Letter of Credit (SLC) issued by a Belgian banking institution fully governed by Belgian legislation or issued by a non-Belgian financial institution and confirmed by a Belgian banking institution fully governed by Belgian legislation. In the latter case signed original letters from both the issuing institution and the confirming institution must be provided. The confirming Belgian bank shall clearly state that it will guarantee the funds, the drawing against can be made by the NCI AGENCY at its premises in Belgium. Bid Guarantees shall be made payable to the Treasurer, NATO Communications and Information Agency.

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

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

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

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

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

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

2.11.6.3. The Purchaser has offered the Bidder the Contract for execution but the Bidder has been unable to demonstrate compliance with the security requirements of the Contract within a reasonable time,

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

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

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

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

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

2.11.7.4. pursuant to paragraph 2.10.4.2.

2.11.8. “Standby Letter of Credit" or “SLC” as used herein, means a written commitment by a Belgian financial institution either on its own behalf or as a confirmation of the Standby Letter of Credit issued by a non-Belgian bank to pay all or part of a stated amount of money, until the expiration date of the letter, upon presentation by the Purchaser of a written demand therefore. Neither the financial institution nor the Contractor can revoke or condition the Standby Letter of Credit. The term “Belgian financial institution” includes non-Belgian financial institutions licensed to operate in Belgium,

2.12. Cancellation of IFB

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

recovery of costs incurred in connection with preparation and submission of a Bid in response to this IFB.

2.13. Electronic Transmission of Information and Data

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

2.13.2. Bidders are advised that the Purchaser will rely exclusively on email communication to manage all correspondence related to this IFB, including IFB amendments and clarifications.

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

2.14. Supplemental Agreements

2.14.1. Bidders are required, in accordance with the certificate at Annex B-7 of these Instructions to Bidders, to disclose any prospective Supplemental Agreements that are required by national governments to be executed by NATO/ NCI AGENCY as a condition of Contract performance.

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

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

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

2.15.1. Bidders are instructed to review Article 17, *Intellectual Property*, of the Contract Special Provisions set forth in Part III of Book II, and Clause 30, *Intellectual Property*, of the Contract General Provisions set forth in Part III of Book II. These Clauses set forth the definitions, terms and conditions regarding the rights of the Parties concerning Intellectual Property developed and/or delivered under this Contract or used as a basis of development under this Contract.

2.15.2. Bidders are required to disclose, in accordance with the Certificates at Annex B-10 and Annex B-11, the Intellectual Property proposed to be used by the Bidder that will be delivered with either Background Intellectual Property Rights or Third Party Intellectual Property Rights. Bidders are

required to identify such Intellectual Property and the basis on which the claim of Background or Third Party Intellectual Property is made.

2.15.3. Bidders are further required to identify any restrictions on Purchaser use of the Intellectual Property that is not in accordance with the definitions and rights set forth in Clause 30 of the Contract General Provisions, or any other provision of the Contract concerning use or dissemination of such Intellectual Property.

2.15.4. Bidders are reminded that restrictions on use or dissemination of Intellectual Property conflicting with Article 17 of the Contract Special Provisions, Clause 30 of the Contract General Provisions or with the objectives and purposes of the Purchaser as stated in the Prospective Contract shall result in a determination of a non-compliant Bid.

2.16. Receipt of an Unreadable Electronic Bid

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

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

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

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

2.16.3. If it is discovered, during either the Administrative, Price or Technical evaluation, that the Bidder has submitted an unreadable electronic bid, the Bidder may be determined to have submitted a non-compliant bid.

SECTION 3 BID PREPARATION INSTRUCTIONS

3.1. General

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

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

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

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

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

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

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

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

3.2. Bid Package Content

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

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

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

3.3. Package Marking

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

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

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

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

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

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

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

3.3.3.1. Volume I, Bid Administration:

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

3.3.3.2. Volume II, Price:

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

3.3.3.3. Volume III, Technical:

- 14873-UA/BE-*Company Name*–Vol III–Tech1-DelPlan
- 14873-UA/BE-*Company Name*–Vol III–Tech2-SDD
- 14873-UA/BE-*Company Name*–Vol III–Tech3-PMP
- 14873-UA/BE-*Company Name*–Vol III–Tech4-IRR
- 14873-UA/BE-*Company Name*–Vol III–Tech5-BOE
- 14873-UA/BE-*Company Name*–Vol III–Tech6-Quals
- 14873-UA/BE-*Company Name*–Vol III–Tech7-CMP
- 14873-UA/BE-*Company Name*–Vol III–Tech8-ILS
- 14873-UA/BE-*Company Name*–Vol III–Tech9-QP

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

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

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

3.4. Volume I: Bid Administration

3.4.1. This volume is comprised of:

- All of the required certificates submitted as a consolidated PDF file;
- One electronic copy of the Bid Guarantee provided with the bid as well as directly to:

  NCIAFinanceTreasuryBankGuarantee@ncia.nato.int

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

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

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

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

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

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

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

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

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

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

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

3.4.3.10. Annex B-10 (Bidder Background IPR)

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

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

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

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

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

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

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

3.5. Volume II: Price

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

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

  Or

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

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

3.5.3. General Rules

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

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

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

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

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

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

3.5.3.5. With the exception of any pre-populated Not-to-Exceed amounts, Bidders shall furnish Firm Fixed Prices for all required items in accordance with the format set forth in the Instructions for preparation of the Bidding Sheets. This includes Firm Fixed Prices for all optional CLINs.

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

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

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

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

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

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

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

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

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

3.6. Volume III: Technical

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

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

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

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

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

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

3.6.4. PART 1: ENGINEERING SECTION

3.6.4.1. The Engineering Proposal shall include:

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

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

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

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

3.6.5. PART 2: MANAGEMENT SECTION

3.6.5.1. The Management Proposal shall include:

3.6.5.2. Bidder Qualifications

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

3.6.5.3. Draft Project Management Plan (PMP)

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

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

3.6.5.4. Initial Risk Register

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

3.6.5.5. Basis of Estimate (BOE)

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

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

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

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

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

3.6.6. PART 3: SUPPORTABILITY

3.6.6.1. Draft Configuration Management Plan

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

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

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

3.6.6.3. Draft Support Case

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

3.6.6.4. Draft Training Plan

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

3.6.6.5. Draft Quality Plan

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

3.7. Bidder's Checklist

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

Volume 1: Bid Administration

	Item	Format
1	Annex B-1: Certificate of Legal Name of Bidder	One PDF file
2	Annex B-1: Acknowledgment of Receipt of IFB Amendments	
3	Annex B-3: Certificate of Independent Determination	
4	Annex B-4: Certificate of Bid Validity	
5	Annex B-5: Certificate of Exclusion of Taxes, Duties, and Charges	
6	Annex B-6: Comprehension and Acceptance of Contract Special and General Provisions	
7	Annex B-7: Disclosure of Requirements for the NCI Agency Execution of Supplemental Agreements	
8	Annex B-8: Certificate of Compliance AQAP 2110 or ISO 9001:2015 or Equivalent	
9	Annex B-9: List of Prospective Sub-Contractors	
10	Annex B-10: Bidder Background IPR	
11	Annex B-11: List of Subcontractor and Third Party IPR	
12	Annex B-12: Certificate of Origin of Equipment, Services, and Intellectual Property	
13	Annex B-13: List of Proposed Key Personnel	
14	Annex B-14: Certificate of Price Ceiling	
15	Annex B-15: Disclosure of Involvement of Former NCI Agency Employment	
16	Annex B-16: NCI Agency AD. 05.00, Code of Conduct: Post Employment Measures Information only. Not required to be submitted	
17	Annex C: Bid Guarantee	One copy as a PDF file; also submitted as required in 3.2.1

Volume 2: Price

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

Volume 3: Technical

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

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

SECTION 4 BID EVALUATION AND CONTRACT AWARD

4.1. General

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

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

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

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

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

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

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

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

4.2. Best Value Award Approach and Bid Evaluation Factors

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

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

4.2.3. Technical Scoring

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

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

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

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

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

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

4.2.4. Price Scoring

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

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

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

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

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

4.2.5. Best Value Final Scoring

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

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

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

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

4.3. Evaluation Procedure

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

4.3.1.1. Step 1: Administrative Compliance

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

4.3.1.2. Step 2: Parallel Technical and Price Evaluations

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

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

4.3.1.2.2.1 Step 2A: Technical Evaluation

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

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

4.3.1.2.2.2 Step 2B: Price Evaluation

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

4.3.1.2.2.3 Step 3: Determination of Apparent Successful Bidder

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

4.4. Evaluation Step 1 - Administrative Compliance

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

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

4.4.1.2. The Bid is packaged and marked properly,

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

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

4.4.1.5. **Receipt of an unreadable electronic bid**. If a bid received by email is unreadable to the degree that conformance to the essential requirements of the solicitation cannot be ascertained, the CO immediately shall notify

the Bidder that the bid will be rejected unless the Bidder provides clear and convincing evidence:

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

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

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

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

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

4.5. Evaluation Step 2A – Technical Evaluation

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

4.5.2. PART 1: ENGINEERING

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.5.3. PART 2: MANAGEMENT

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

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

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

4.5.3.4. Bidder Qualifications

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

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

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

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

4.5.3.4.5. The Bidder provides two relevant examples (2 pages max each) including a description of the solution deployed/delivered, the expertise/experience highlighting similarities to the bid solution; the purchaser(s) of these systems; the user(s) of these systems; the Contract number(s); the start date and end date of the Contract; a point of contact for verification purposes.

4.5.3.5. Draft Project Management Plan (PMP)

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

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

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

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

4.5.3.6. Initial Risk Register

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

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

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

4.5.3.7. Basis of Estimate (BOE)

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

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

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

4.5.4. PART 3: SUPPORTABILITY

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

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

4.5.4.3. Draft Configuration Management Plan (CMP)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4.5.4.5. Draft Support Case

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

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

4.5.4.6. Draft Training Plan

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

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

4.5.4.7. Draft Quality Plan

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

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

4.6. Evaluation Step 2B – Price Evaluation

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

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

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

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

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

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

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

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

4.6.4. Basis of Price Comparison

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

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

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

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

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

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

4.6.5. Price Balance and Realism

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

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

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

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

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

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

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

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

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

4.6.5.4. If a Bidder fails to submit a comprehensive and compelling response on one of the bases above, the Purchaser may determine the Bid submitted as non-compliant. If the Bidder responds on the basis of 4.6.5.3.1 above and requests to withdraw from the competition, the Purchaser may, depending on the nature and gravity of the mistake, allow the Bidder to withdraw.

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

pursuant to paragraph 4.6.5.3.3 above, the Bidder shall agree that the supporting pricing data submitted with his Bid will be incorporated by reference in the resultant Contract. The Bidder shall agree as a condition of Contract signature, that the pricing data will be the basis of determining fair and reasonable pricing for all subsequent negotiations for modifications of or additions to the Contract and that no revisions of proposed prices will be made.

4.6.5.6. If the Bidder presents a convincing rationale pursuant to paragraph 4.6.5.3.2 above, no additional action will be warranted. The Purchaser, however, reserves its right to reject such an argument if the rationale is not compelling or capable of objective analysis. In such a case the Bid may be determined to be non-compliant.

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

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

4.7. Evaluation Step 3 – Calculation of Best Value Scores

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

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

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

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

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

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

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

Annex A Bidding Sheets

A-1 Introduction

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

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

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

A-2 General Requirements

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

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

3. The prices and quantities entered on the document shall reflect the total items required to meet the Contractual requirements. The total price shall be indicated in the appropriate columns.

4. In preparing the Bidding Sheets, Bidders shall ensure that the prices of the Sub-items total the price of the major item of which they constitute a part.

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

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

7. Bidders are advised that formulae are designed to ease evaluation of the Bidders proposal have been inserted in the electronic copies of the Bidding Sheets. Notwithstanding this, the Bidder remains responsible for ensuring that their figures are correctly calculated and should not rely on the accuracy of the formulae electronic copies of the Bidding Sheets.

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

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

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

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

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

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

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

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

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

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

Annex B Prescribed Administrative Forms and Certificates

Annex B-1. Certificate of Legal Name of Bidder

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

FULL NAME OF CORPORATION: _____

DIVISION (IF APPLICABLE): _____

SUB DIVISION (IF APPLICABLE): _____

OFFICIAL MAILING ADDRESS

_____
_____
_____

E-MAIL ADDRESS: _____

POINT OF CONTACT REGARDING THIS BID:

NAME: _____
POSITION: _____
TELEPHONE: _____

ALTERNATIVE POINT OF CONTACT:

NAME: _____
POSITION: _____
TELEPHONE: _____

_____ _____
Date Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-2. Acknowledgement of Receipt of IFB Amendments

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

Amendment no.	Date of Issued	Date of receipt	Initials

Date

Signature of Authorised Representative

Printed Name

Title

Company

Annex B-3. Certificate of Independent Determination

It is hereby stated that:

a. We have read and understand all documentation issued as part of IFB-CO-14873-INTELFS2. Our Bid submitted in response to the referred solicitation is fully compliant with the provisions of the IFB and the prospective Contract.

b. Our Bid has been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition, with any other Bidder or with any competitor;

b. The contents of our Bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder prior to award, directly or indirectly to any other Bidder or to any competitor; and

c. No attempt has been made, or will be made by the Bidder to induce any other person or firm to submit, or not to submit, a Bid for the purpose of restricting competition.

_____ _____

Date Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

Annex B-4. Certificate of Bid Validity

I, the undersigned, as an authorised representative of the firm submitting this Bid, do hereby certify that the pricing and all other aspects of our Bid will remain valid for a period of twelve (12) months from the Bid Closing Date of this Invitation for Bid.

_____ _____
Date Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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

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

Date

Signature of Authorised Representative

Printed Name

Title

Company

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

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

_____ _____

Date Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

ANNEX B-7. Disclosure of Requirements for NCI Agency Execution of Supplemental Agreements

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

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

These supplemental agreements are listed as follows:

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

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

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

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

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

_____ _____

Date Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

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

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

_____ _____

Date Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

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

Annex B-9. List of Prospective Subcontractors

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

Date

Signature of Authorised Representative

Printed Name

Title

Company

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

Annex B-10. Bidder Background IPR

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

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

ITEM	DESCRIPTION

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

c. The Background IPR stated above complies with the terms specified in Article 8 of the Contract Special Provisions.

_____ _____
Date Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

Annex B-11. List of Subcontractor and Third Party IPR

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

a. The Subcontractor and/or IPR specified in the table below will be used for the purpose of carrying out work pursuant to the prospective Contract.

OWNER OF IPR (Source/Company)	ITEM	DESCRIPTION

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

c. The Subcontractor and/or Third Party IPR stated above complies with the terms Clause 30 the Contract General Provisions.

_____ _____
Date Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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

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

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

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

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

_____ _____

Date Signature of Authorised Representative

_____

Printed Name

_____

Title

_____

Company

Annex B-13. List of Proposed Key Personnel

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

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

Date

Signature of Authorised Representative

Printed Name

Title

Company

Annex B-14. Certificate of Price Ceiling

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

- EUR 17,510,454, for the Front-end User Applications contract;
- EUR 23,178,132, for the Back-end Data Management contract.

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

Date

Signature of Authorised Representative

Printed Name

Title

Company

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

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

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

The Bidder hereby certifies that:

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

☐ It has obtained a signed statement from the former NCI Agency personnel below, who departed the NCI Agency within the last two years, that they were not previously involved in the project under competition (as defined in the extract of the NCI Agency Code of Conduct provided in Annex B-16 of this IFB):

Employee Name	Former NCI Agency Position	Current Company Position

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

_____
Date

_____
Signature of Authorised Representative

_____
Printed Name

_____
Title

_____
Company

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

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

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

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

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

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

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

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

Annex C Bid Guarantee – Standby Letter of Credit

Standby Letter of Credit Number:

Issue Date: _____

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

Expiry Date: _____

Delete whichever paragraph 1 below does not apply.

1. We, (issuing bank) hereby establish in your favour our irrevocable standby letter of credit number {number} by order and for the account of (NAME AND ADDRESS OF BIDDER) in the original amount of € 130,000.00 (One Hundred and Thirty Thousand Euro) . We are advised this Guarantee fulfils a requirement under Invitation for Bid IFB-CO-14873-INTELFS2-UA dated _____.

1. We, (issuing bank) hereby establish in your favour our irrevocable standby letter of credit number {number} by order and for the account of (NAME AND ADDRESS OF BIDDER) in the original amount of € 170,000.00 (One Hundred and Seventy Thousand Euro) . We are advised this Guarantee fulfils a requirement under Invitation for Bid IFB-CO-14873-INTELFS2-BE dated _____.

2. Funds under this standby letter of credit are available to you upon first demand and without question or delay against presentation of a certificate from the NATO CI Agency Contracting Officer that:

a) (NAME OF BIDDER) has submitted a Bid and, after Bid Closing Date (including extensions thereto) and prior to the selection of the lowest priced, technically compliant Bid, has withdrawn his Bid, or stated that he does not consider his Bid valid or agree to be bound by his Bid, or

b) (NAME OF BIDDER) has submitted a Bid determined by the Agency to be the lowest priced, technically compliant Bid, but (NAME OF BIDDER) has declined to execute the Contract offered by the Agency, such Contract being consistent with the terms of the Invitation for Bid, or

c) The NATO CI Agency has offered (NAME OF BIDDER) the Contract for execution but (NAME OF BIDDER) has been unable to demonstrate compliance with the security requirements of the Contract within a reasonable time, or

d) The NATO CI Agency has entered into the Contract with (NAME OF BIDDER) but (NAME OF BIDDER) has been unable or unwilling to provide the

Performance Guarantee required under the terms of the Contract within the time frame required.

3. This Letter of Credit is effective the date hereof and shall expire at our office located at (Bank Address) on _____. All demands for payment must be made prior to the expiry date.

4. It is a condition of this letter of credit that the expiry date will be automatically extended without amendment for a period of sixty (60) calendar days from the current or any successive expiry date unless at least thirty (30) calendar days prior to the then current expiry date the NATO CI Agency Contracting Officer notifies us that the Letter of Credit is not required to be extended or is required to be extended for a shorter duration.

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

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

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

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

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

8. Multiple drawings are allowed.

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

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

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

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

Annex D Clarification Request Form

INVITATION FOR BID
IFB-CO-14873-INTELFS2

CLARIFICATION REQUEST FORM

Delete whichever does not apply:

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

Company Name _____ Submission Date_____

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

Delete whichever does not apply:

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

Company Name _____ Submission Date_____

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

Delete whichever does not apply:

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

Company Name _____ Submission Date_____

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

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

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

SYSTEM REQUIREMENT SPECIFICATION (SRS)

Version 1.2

04/03/2021

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Document Revision History

Date	Version	Changes
21 Dec 2020	1.0	IFB package release version
29 Jan 2021	1.1	Added a few requirements clarifications on template management and data loss protection
4 Mar 2021	1.2	Added comment to clarify that a XACML PDP service will be provided by the SOA & IdM Platform

1 Introduction

[1] This System Requirements Specification (SRS) documents the requirements for the user applications of the Intelligence Functional Services (INTEL-FS) Spiral 2, hereafter referred to as the I2UA.

1.1 Scope

[2] This SRS specifies Functional and Non-Functional system requirements for the I2UA. In fulfilling the functional and non-functional requirements defined in this SRS, the I2UA will also have to fully support the INTEL-FS Spiral 2 user stories as defined in [INTEL-FS2-UserStories].

[3] The Functional Requirements of the I2UA specify the functions that will be implemented by this capability in order to deliver the user applications for INTEL-FS Spiral 2.

[4] The Non-Functional Requirements of the I2UA specify the quality and performance constraints that shall be satisfied in the solution design and implementation.

[5] The INTEL-FS Spiral 2 user stories (see [INTEL-FS2-UserStories]) specify the tasks that the users of the I2UA will be able to conduct using features implemented by I2UA and supported by the INTEL-FS Spiral 2 backend (I2BE).

[6] In addition to explicitly specifying new system requirements, legacy user interface (UI) functionality of the INTEL-FS Spiral 1 will be maintained and improved.

1.2 Conventions

[7] Within this SRS, general functional requirements applicable to most or all user applications are numbered as [GUA-number], application-specific functional requirements are numbered as [FUA-number], non-functional requirements (NFR) are numbered as [NFR-number], while narrative text is numbered as [number].

[8] Each functional requirements has associated with it a cost attribute. The Contractor will prior to starting the work identify the cost of each single functional requirement. The cost of implementing the general requirements and the cost of obtaining the qualities of the non-functional requirements will have to be incorporated into the implementation cost of the functional requirements. Hence, the general requirements and the non-functional requirements do not have an associated cost attribute.

[9] The term "including" is throughout this SRS never meant to be limiting - the list that follows is always non-exhaustive.

1.3 Phased approach to delivering user functionality

[10] The I2UA capability is expected to be delivered in three phases:

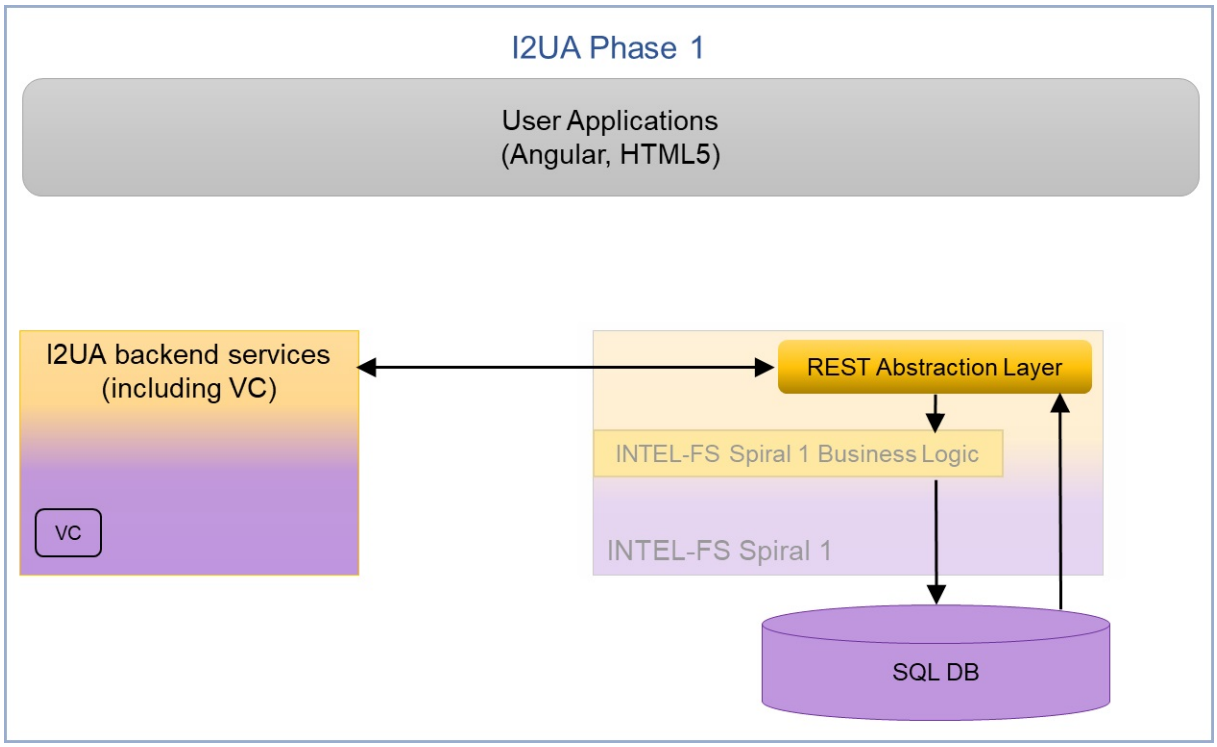
(1) In phase 1 the I2UA Contractor will address the obsolescence of the INTEL-FS Spiral 1 user interface (UI) and replace it with a new and modern UI that will be based on the Angular TypeScript-based open-source front-end web application platform. The new UI will interface with the current INTEL-FS Spiral 1 backend through a RESTful abstraction layer, see Figure 1-1. An initial version of this abstraction layer exists and is included within the INTEL-FS Spiral 1 product baseline. However, the I2UA contractor should expect to have to make some changes to this abstraction layer and also to make some changes to the INTEL-FS Spiral 1 database to enable implementation of the new UI.

(2) At the time when the Contractor has completed phase 1, the interface for the new backend (to be delivered through a separate contract) may still not be ready for the I2UA Contractor to use. In this case, a phase 2 is inserted where work can continue to evolve the user interfaces for new functionality against a mock backend. In phase 2

the Contractor is responsible to establish mock backends to enable implementation of new user interfaces.

(3) In phase 3 all of the user interfaces will be integrated with a new (and separately implemented) backend and the REST abstraction layer and the legacy INTEL-FS Spiral 1 backend will be retired.

Figure 1-1 Accessing INTEL-FS Spiral 1 data through an abstraction layer



[11] In the case that initial backend services are available (provided through a different contract) the work described under phase 2 can/ will be merged into phase 3. I.e. the new user interface functionality is implemented directly against the new backend application programming interface (API) instead of against a mock backend.

1.4 Structure

[12] This SRS is structured as follows:

- Chapter 1: The introduction to this document;
- Chapter 2: Specification of general requirements that generally applies across all deliverables;
- Chapter 3: Specification of the requirements for the user account management application;
- Chapter 4: Specification of the functional requirements for the I2UA;
- Chapter 5: Specification of the Non-functional Requirements for the I2UA.

1.5 Applicable documents

[13] Applicable documents provide details not explicitly set out through this SRS (other requirements, architecture, standards and specifications). The Contractor shall consider the applicable documents as requirements associated with this SRS.

Table 1-1 Applicable documents (Compliance Requirements)

[INTEL-FS2-	CO-14873-INTELFS2, INTEL-FS SPIRAL 2 - Information Model

InformationModel]	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

1.6 Reference documents

[14] 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

[AC/35-D/2004-REV3]	Primary Directive on CIS Security, North Atlantic Council, 15 November 2013 (NATO Unclassified)
[ADatP-4774]	NATO STANDARD ADatP-4774, CONFIDENTIALITY METADATA LABEL SYNTAX, Edition A Version 1, December 2017
[ADatP-4778]	NATO STANDARD ADatP-4778, METADATA BINDING MECHANISM, Edition A Version 1, October 2018
[AEDP-19]	NATO Standard ISR Workflow Architecture, AEDP-19 Edition A Version 1, March 2018
[APP11D-DIR]	APP-11(D)(1)/ J186, DIR (DYNAMIC INTELLIGENCE REPORT), Edition D Version 1, NATO UNCLASSIFIED
[HMI-C4ISR]	Human Machine Interface (HMI) Style Guide for Rich C4ISR Applications, edition 2.0, 30 July 2018, NCI Agency
[NAMIS]	NAMIS Interface Control Document (ICD), version v3.6.16, 22/05/2019, NCI Agency (NATO Unclassified)
[NCOP-ICD]	NCOP INTERFACE CONTROL DOCUMENT, Rev. No. 1.6, 01 MAR 2018, NCI Agency
[OData-4.0]	OData Version 4.0. Part 1: Protocol Plus Errata 03, 02 June 2016, OASIS http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part1-protocol/odata-v4.0-errata03-os-part1-protocol-complete.html
[OWASP]	Open Web Application Security Project (OWASP), https://www.owasp.org/index.php/Main_Page
[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/
[VC-IDC]	TRI-IC-54-2085, Visualisation Component Interface Control Document (VC-ICD), MAR. 30, 2020

1.7 Background – Envisioned Capability

[15] With the I2UA NATO will acquire a set of user applications for directing intelligence collection, and for analysing and visualizing intelligence data in support of the NATO Intelligence community and the Ballistic Missile Defence (BMD) community.

[16] The final I2UA capability will:

(1) Implemented as a web-application, where the user interface is running in the Angular framework within a web browser.

(2) Interact with a backend intelligence information platform hereafter referred to as the I2BE.The I2BE will expose a RESTful application programming interface (API) that the I2UA will consume. The backend API will primarily be implemented as a Open Data Protocol (OData) API enabling the I2UA to access the intelligence information entities(IIE) managed in the backend.
(3) Provide UI support for all of the functionality that is currently in place for INTEL-FS Spiral 1, but ported onto the Angular framework and removing all dependencies on Microsoft Silverlight.
(4) Augment the UI with support for new functionality like collection management (CM), ballistic missile (BM) opposing force (OPFOR) order of battle (ORBAT) management, BM joint intelligence preparation of the operating environment (JIPOE), etc.
(5) Re-implement user authentication and authorization functionality to use an attribute-based access control (ABAC) mechanism.
(6) Manage I2UA user accounts.

[17] The users of I2UA is managed according to their organizational belonging. This means that each user will be registered as a member of an organizational node (ON).

[18] The ON concept is used to manage visibility and dissemination of information:

(1) IIEs created by a user within an ON is initially only visible within the ON;
(2) The user can through an approval process get the IIE published, and once the IIE has been published it will be retrievable and visible for users at other ONs (pending they have the correct access rights).

[19] The users of I2UA will have access to several data sources (eventually exposed through the I2BE API) that will contain different data; typically there will be one operational data source and several exercise and training data sources.

[20] The technical solution of I2UA is envisioned to consist of 14 loosely coupled user applications:

(1) User Management Application
(2) Dashboard Application
(3) Products Management Application
(4) Battlespace Object (BSO) Management Application
(5) Targets Application
(6) Intelligence Situation Application
(7) BM JIPOE Application
(8) Search Application
(9) Analysis Application
(10) Intelligence, Surveillance and Reconnaissance (ISR) Organization Management Application
(11) Intelligence Requirements (IR) Management Application
(12) Request for Information (RFI) Management Application
(13) Collection Requirement (CR) Management Application
(14) Collection & Exploitation Planning Application

2 General functional requirements

[21] This chapter chapter defines a set of general requirements that are generally applicable to all of the I2UA User Applications.

[22] Note: Costing is broken down according to the I2UA applications and therefore the cost of implementing general requirements is to be incorporated into the cost of each delivered I2UA application.

2.1 General cross-cutting requirements

2.1.1 No loss of legacy functionality

[GUA-1] The I2UA shall, as it evolves through this project, replace user-facing functionality from INTEL-FS Spiral 1 version 1.5; this shall be based on the principle of no regression (no loss of functionality and no loss of non-functional qualities) unless otherwise agreed with the Purchaser.

Verification: Demonstration

[23] Note: The existing INTEL-FS Spiral 1 functionality that is to be replaced is included within the requirements of this SRS and within the user stories in [INTEL-FS2-UserStories].

[224] [INTEL-FS2-InformationModel] implicitly includes the information managed by Spiral 1 because it extends from the principal components of Spiral 1. These principal components include: Battlespace Object (BSO) Management; Reference Data Management; ISR Product-Metadata Management and Intelligence Requirements Management (IRM).

2.1.2 Testability, test automation, continuous integration (CI) and continuous delivery (CD), and quality assurance (QA)

[GUA-501] The software shall be designed and structured for good testability. This includes usage of patterns such as, for example, decoupling, test data generation and dependency injection to enable unit testing.

Verification: Inspection

[GUA-2] Test automation, continuous integration (CI), and continuous delivery (CD) shall be implemented for all of I2UA applications and services.

Verification: Demonstration

[GUA-3] The Continuous Integration shall include automated security tests, automated source code analysis including security vulnerability analysis, and automatic smoke test (build verification test (BVT)).

Verification: Demonstration

[GUA-4] All applications and services modules shall be accompanied with automated regression tests (e.g. unit tests and external test harnesses).

Verification: Inspection

[GUA-5] Hardcoding of, or embedding of, resources, configuration settings, or any other non-binary artefacts (URL, DNS, IP addresses, file path, drive letters, etc.) shall NOT be implemented/ used.

Verification: Inspection

2.1.3 Export of information

[GUA-12] The I2UA shall when exporting any data to a file ensure that highest security classification and the most restricted releasability of the data is captured in the exported file, and that the file name convey the file security classification and releasability. Whenever possible, the classification and releasability markings shall be compliant with [ADatP-4774] and [ADatP-4778]). When exporting to a PDF or Office type file, the content's highest security classification and most restricted releasability shall be inserted in the document header and footer on all pages.

Verification: Demonstration

[GUA-13] The I2UA shall always require the user to specify/ confirm the highest security classification and most restricted releasability of the file before saving an export file.

Verification: Demonstration

2.1.4 User Interface cross-cutting requirements

2.1.4.1 Language

[GUA-14] The I2UA shall use "UK English" as the default language. This shall apply to all applications and supporting components, including all user interfaces (e.g.

views, dialogs, help screens, tooltips, etc.), error/notification/warning messages and documentation.

Verification: Demonstration

2.1.4.2 HTML5 implementation

[GUA-15] The UI shall be implemented in Angular 9 (or newer) and HTML5.

Verification: Demonstration and Inspection

[GUA-16] The UI shall be implemented in accordance with the recommendations provided in the "Human Machine Interface (HMI) Style Guide for Rich C4ISR Applications" [HMI-C4ISR].

Verification: Demonstration

[GUA-17] It shall be possible for a user to switch the user interface theme between the dark theme and the light theme UI as defined by [HMI-C4ISR].

Verification: Demonstration

2.1.4.3 Implemented as a set of “Apps” in a web browser

[GUA-18] The UI shall be organized as a set of applications ("Apps").

Verification: Demonstration

[GUA-19] The "App" window shall include a classification bar (see [HMI-C4ISR]).

Verification: Demonstration

[GUA-20] Each App shall include a main menu bar that includes an identification of the App (e.g. an "App logo"), a help function (?), a configuration settings function, and an application selector. Examples for such main menu bars (from Google Apps) are shown in the two figures below.

Verification: Demonstration

Figure 2-1 Example 1 of main menu bar - Google Drive

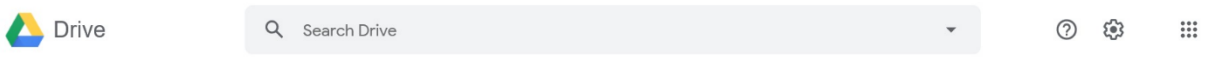
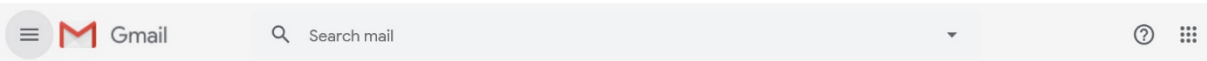


Figure 2-2 Example 2 of main menu bar - Gmail



[GUA-21] The UI shall require only an ordinary web browser present on the Approved Fielded Product List (AFPL) at the time of deployment, and shall not require the

installation of additional software, components or plug-ins on the user workstation, except as specifically waived by the Purchaser.

Verification: Demonstration

[GUA-22] The UI shall run successfully independent of environment regional settings (e.g. decimal symbol, date/time format).

Verification: Demonstration

2.1.4.4 Adapted to user roles and user privileges

[GUA-23] The UI shall adapt to the individual users roles and privileges (e.g., a user with only read privileges shall not have access to create functionalities, a user with no access to a particular feature within an App shall normally not see/ detect the existence of such a feature, a user with no privilege to access an App shall not even see the App, etc.).

Verification: Demonstration

2.1.4.5 Tooltips, other guidance and user feedback

[GUA-24] The I2UA shall implement tooltips for all controls, which can benefit from a text description, especially those that do not have a text label. The tooltips shall be configurable (i.e. they can be updated without rebuilding/ recompiling the software). The tooltips shall as a minimum have support for bold font, space between paragraphs, numbered lists, and bullet lists. For more guidance on tooltips, see [HMI-C4ISR].

Verification: Demonstration

[GUA-25] The I2UA shall display the expected input format on all form fields to the user if the label is not clear enough (e.g. date input format - ddmmyyyy or dd-mm-

yyyy). This shall be done via tooltips, greyed-out example content, additional labels, or some other means.

Verification: Demonstration

[GUA-26] The I2UA shall notify the user who has initiated an action that processing of the action has started and convey the sense of processing progress (by means of a progress indicator, dialog boxes).

Verification: Demonstration

[GUA-27] The I2UA control actions shall be simple and direct, whereas potentially destructive control actions shall require extended user attention such that they are not easily acted on (e.g., "are you sure" queries).

Verification: Demonstration

[GUA-28] The I2UA shall provide an error management capability which is readily distinguishable from other displayed information (e.g. pop-up error dialog window).

Verification: Demonstration

[GUA-29] The I2UA shall provide the users with meaningful error messages and information about the actions they need to take in order to fix or at least to report the problem.

Verification: Demonstration

[GUA-30] The I2UA shall include a visual label that at all times inform the user of which data set the user is connected to (i.e. operational data set, training data set, exercise data set, ...)

Verification: Demonstration

[GUA-31] The I2UA shall only allow a user to be connected to one data set at the time (per session) to prevent data leakage between data sets.

Verification: Demonstration

2.1.4.6 Online help

[GUA-34] The I2UA shall provide online help functions where the help information is implemented as HTML5 documents and where hyperlinks from the help information to externally provided multimedia files is supported/ possible.

Verification: Demonstration

[GUA-35] The text for the online help functions shall be managed in updateable server-side files. It shall be possible to edit and update the text for the online help functions without requiring software recompile.

Verification: Demonstration

[GUA-235] The text for the online help function shall also be made available in the form of a wiki compliant with the Purchaser Knowledge Management tools.

2.1.4.7 Data entry interactions

[GUA-36] Where the user is entering (or changing) data, the user interface shall detect invalid and missing entries. The invalid or missing entries shall be highlighted or marked so that the user can be quickly identify and correct them. The validation

(and subsequent highlighting) of the value in an entry field shall take place "dynamically" upon moving to the next entry field.

Verification: Demonstration

[GUA-37] The I2UA shall use predefined dropdown lists based on configured Domain Values in appropriate situations. Open text input fields shall, if possible, be avoided to prevent errors during input.

Verification: Demonstration

[GUA-38] For all attributes related to geographic co-ordinates, the I2UA shall allow the User to enter geographic co-ordinates using a gazetteer function. The user shall be able to: 1) Select a gazetteer (or optionally use the default gazetteer), and 2) Select a place/area name from the gazetteer.

Verification: Demonstration

[GUA-39] Whenever it is possible to validate User input values then validation of entered value shall be performed. In particular, data that will be forwarded to the backend shall be validated against the interface specification of which the data will pass through.

Verification: Demonstration

[GUA-40] In the I2UA, during data entry, the ENTER key shall not trigger form submission. I.e. the user shall specifically click the "submit button" to submit the entered data.

Verification: Demonstration

[GUA-41] The I2UA shall provide prompts (i.e., allow cancellation or confirmation) when input or changes may be lost due to navigation or logging out.

Verification: Demonstration

[GUA-42] Any user interface shall support normal Microsoft (MS) Windows Accelerators. These shall include: CTRL+C (Copy), CTRL+X (Cut), CTRL+V (Paste), CTRL+Z (Undo), CTRL+Y (Redo) and DELETE (Delete).

Verification: Demonstration

[GUA-43] The I2UA shall allow the user to cut, copy and paste [textual or tabulated] data between (to and from) the I2UA applications and Microsoft Office formats.

Verification: Demonstration

[GUA-44] The I2UA shall be able to undo changes made during data entry by supporting reversing of up to 100 "undoable" changes.

Verification: Demonstration

[GUA-45] The I2UA shall be tolerant to the delimiters of input format, including Date format (e.g. dd-mm-yyyy could also be entered as ddmmyyyy or d-m-yy without error or picked from a calendar) and Location format (e.g. latitude/longitude could be entered as degrees-minutes-seconds, decimal degrees, etc.)

Verification: Demonstration

[GUA-46] For all attributes related to geographic coordinates, the I2UA shall allow the user to enter geographic coordinates in a single text field (not requiring the user to copy/paste more than once to input a geographic value). I2UA shall be able

to automatically identify and parse the location formats as listed in the table below.

Verification: Demonstration

Table 2-1 Location formats automatically detected

1	Degrees/Minutes/Seconds
2	Decimal Degrees
3	Degrees and Decimal Minutes
4	Degrees, Minutes and Decimal Seconds
5	Military Grid Reference System (MGRS)
6	Universal Transverse Mercator (UTM)

2.1.4.8 User eXperience (UX)

[GUA-546] The I2UA shall use dialog windows sparingly (a better solution will normally be to use in-line expansion) and shall be kept simple.

Verification: Demonstration

[GUA-547] The I2UA dialog windows shall not include multiple steps, and shall not launch other dialog windows.

Verification: Demonstration

[GUA-548] All I2UA user interfaces shall automatically refresh whenever a user makes a change that has an impact on the information presented in the UI on the screen.

Verification: Demonstration

[GUA-549] The I2UA shall in all entry fields where dates are provided be flexible and allow other data formats than the one indicted by tooltips or in the field (see [GUA-25]) and automatically detect the date-format entered.

Verification: Demonstration

[GUA-550] The I2UA shall for all textual entry fields spell-check the entered text, visually highlight spelling errors, and suggest spelling corrections.

Verification: Demonstration

[GUA-551] The I2UA shall for all multi-select actions support consecutive item selection by selecting first and last item in a list (e.g. by shift-key plus left mouse click) and support adding individual (non-consecutive) items to the multi-selected set (e.g. by control-key plus left mouse click).

Verification: Demonstration

[GUA-552] The I2UA shall for all panels and dialog windows containing data entry fields support navigation between entry fields using the Tab key (i.e. Tab key to move

cursor to next entry field and Shift-Tab key to move curser to previous entry field)

Verification: Demonstration

2.1.5 Access control

[25] The I2UA should make use of the SOA & IdM Platform Identity and Access Management (IAM) Components and Services defined in the [SOA-IdM].

[GUA-47] The I2UA shall implement support for single sign on (SSO).

Verification: Demonstration

[GUA-48] The I2UA shall implement the authentication/ authorization standards specified by the [SOA-IdM] to include WS-Security/ Security Assertion Markup Language (SAML) and OAuth2/ OpenID Connect (OIDC).

Verification: Demonstration

[GUA-49] The I2UA shall replace the INTEL-FS Spiral 1 access control mechanism with an implementation of the eXtensible Access Control Markup Language (XACML) version 3 architecture as defined by the Organization for the Advancement of Structured Information Standards (OASIS). The I2UA ABAC implementation shall provide the same (or better) granularity of access control to I2UA resources.

Verification: Demonstration

[26] Policy attributes for the Subjects will most likely include Identity, Organizational Node (ON), and Role (e.g. Administrator, Intel Creator, Intel Manager, etc.).

[27] Policy attributes for the Objects will be the IIE at category/type granularity (e.g. Product/Document, Product/Image, Product/ Report, BSO/Person, BSO/Unit, etc.) including confidentiality labels.

[28] Policy Actions will include Create, Read, Update, Soft Delete, Hard Delete, Approve, Publish, Archive, and other workflow actions.

[29] Policy Context will include data set (operational data set, training data set, exercise data set, etc.), date-time, etc.

[GUA-50] The I2UA shall use externally defined and administered XACML policies. E.g. policy decision point (PDP). I.e. using a policy retrieval point (PRP) that uses policies from an external policy store administered by an external policy administration point (PAP).

Verification: Demonstration

[229] Note: XACML will be implemented within a SOA&IdM Platform's Policy Decision Point (PDP) called by a Policy Enforcement Point (PEP) in the I2UA.

[GUA-51] An I2UA shall only be accessible for users that have been granted the privilege to access the application; for users that are given access, the application shall

enforce that the access rights are limited to the users assigned privileges (based on claims)

Verification: Demonstration

[GUA-52] It shall be possible to control access to all functionality (user actions) defined in this SRS with ABAC policies.

Verification: Demonstration

2.1.6 Third-party components

[GUA-54] Third-party UI component shall be implemented entirely using JavaScript (or TypeScript), HTML, and cascading style sheets (CSS).

Verification: Demonstration

[GUA-55] Third-party UI component shall be cross-browser compatible, and shall work with any backend and framework (Angular, React, etc.)

Verification: Demonstration

[GUA-56] Third-party UI component shall have support for changing the visual style using cascading style sheets (CSS).

Verification: Demonstration

[GUA-57] Purchaser shall approve the choice of any third-party components.

Verification: Inspection

2.1.7 Minimized backend footprint

[GUA-557] The I2UA, with the exception of the User Management Application, shall not introduce/ implement any backend processing services and shall be fully implemented as a browser-based client application. The only exception from this rule is the User Management Application where server side functionality will be expected and required.

Verification: Inspection

2.1.8 Compliance with non-functional requirements (NFR)

[GUA-558] The I2UA applications shall comply with the NFRs as defined in chapter 4, when the NFR is relevant for the individual application. In general all NFRs are relevant for all applications, with a few exceptions, like the User Management Application not having the same performance and capacity requirements as the other applications. The Performance Requirements (see section 4.2) and the Interoperability Requirements (see section 4.3.2) will not be applicable before the Phase 3 deliveries.

Verification: Test, Demonstration, Analysis and Inspection

2.2 General UI requirements

2.2.1 Use of panels

[GUA-58] The User Applications shall consist of a set of panels that enables the user to adapt the user interface to his/ her needs and tasks. Note: Panels are not

windows, and thus that cannot be moved freely; nor can they overlap each other.

Verification: Demonstration

[GUA-60] It shall be possible to resize a panel by dragging and dropping the panel's border. This means that there can be no gaps or empty spaces between the panels, which keeps the UI manageable.

Verification: Demonstration

2.3 General IIE-oriented requirements

2.3.1 Workflow management requirements

[GUA-63] It shall be possible to search for and select one or multiple draft application-specific IIEs and request for the selected IIEs to be approved/ published.

Verification: Demonstration

[GUA-64] It shall be possible to develop draft IIEs that can be saved to enable the user to continue working on the draft IIE across multiple sessions.

Verification: Demonstration

[GUA-65] It shall be possible to search for, filter, and sort application-specific IIEs awaiting approval, select one or multiple such IIEs, and approve the IIEs, or approve and directly publish the IIEs.

Verification: Demonstration

[GUA-66] It shall be possible to search for, filter, and sort application-specific IIEs awaiting approval, select one or multiple such IIEs, reject them and add/ attach rejection comments.

Verification: Demonstration

[GUA-67] It shall be possible to search for application-specific IIEs waiting to be published, select one or multiple such IIEs, and publish the IIEs.

Verification: Demonstration

[GUA-68] It shall be possible to search, filter, and sort application-specific IIEs where the approval has been rejected, and identify the reason for rejection. It shall then be

possible to update the IIEs and resubmit them for approval, or alternatively leave them in draft status, or delete them.

Verification: Demonstration

2.3.2 IIE data management requirements

[GUA-69] The applications shall implement user interfaces for managing (create, update, delete) all IIEs that are identified through the user stories and associated acceptance criteria to be of relevance for the particular application.

Verification: Demonstration

[GUA-70] The applications data entry form for a particular IIE shall enable the user to enter/ update all attributes of the IIE as per definition of the particular IIE in [INTEL-FS2-InformationModel].

Verification: Demonstration

[GUA-570] The applications data entry form shall support the confidentiality metadata label syntax as defined by [ADatP-4774] for the IIEs in accordance with the IIEs' confidentiality metadata attribute definitions in [INTEL-FS2-InformationModel].

Verification: Demonstration

[GUA-571] It shall be possible through configuration settings, to define default values for the applications data entry forms for the different IIEs as per definition of the IIE in [INTEL-FS2-InformationModel].

Verification: Demonstration

[GUA-72] The applications shall validate the entered data in the data entry form against [INTEL-FS2-InformationModel] and ensure that the entered data is valid before submitting the data to the backend API.

Verification: Demonstration

[GUA-73] The application responsible for managing particular IIE types shall enable an authorized user to search for application-specific IIEs, select one or multiple such IIEs and tag them as soft-deleted.

Verification: Demonstration

[GUA-74] The application responsible for managing particular IIE types shall enable an authorized user to search for soft-deleted application-specific IIEs, select one or multiple such soft-deleted IIEs and un-delete them.

Verification: Demonstration

[GUA-75] The application responsible for managing particular IIE types shall enable an authorized user to search for application-specific IIEs, select one or multiple

such IIEs and hard-delete them (i.e. these IIEs will be permanently removed and cannot later be undeleted).

Verification: Demonstration

2.4 General requirements for IIE View/ Entry Panels

[GUA-575] The IIE View/Entry Panel shall be used for presenting all details of a selected IIE (in read-only mode), and for editing all attributes of an IIE (in edit mode).

Verification: Demonstration

[GUA-576] It shall be possible to supress all optional attributes and show only the IIE's mandatory attributes in the panel where all the mandatory attributes can be seen and directly accessed without needing to use the scrollbar.

Verification: Demonstration

[GUA-577] It shall, when working in the IIE View/ Entry Panel in edit mode, be possible to suppress all empty optional attributes. I.e. so that the user in most cases can access the attribute to edit without needing to use the scrollbar.

Verification: Demonstration

[GUA-578] It shall, when working in the IIE View/ Entry Panel, be possible to manage (create, update, and delete) templates for the relevant IIE type (as supported through the I2BE API).

Verification: Demonstration

[GUA-579] It shall, when working in the IIE View/ Entry Panel, be possible to create a new IIE from a specific template, and from the default template, and from no template.

Verification: Demonstration

2.5 General requirements for usage of the Table View Component

[GUA-76] The Table View functionality shall be implemented as a reusable UI component that can be used in many of the I2UA applications.

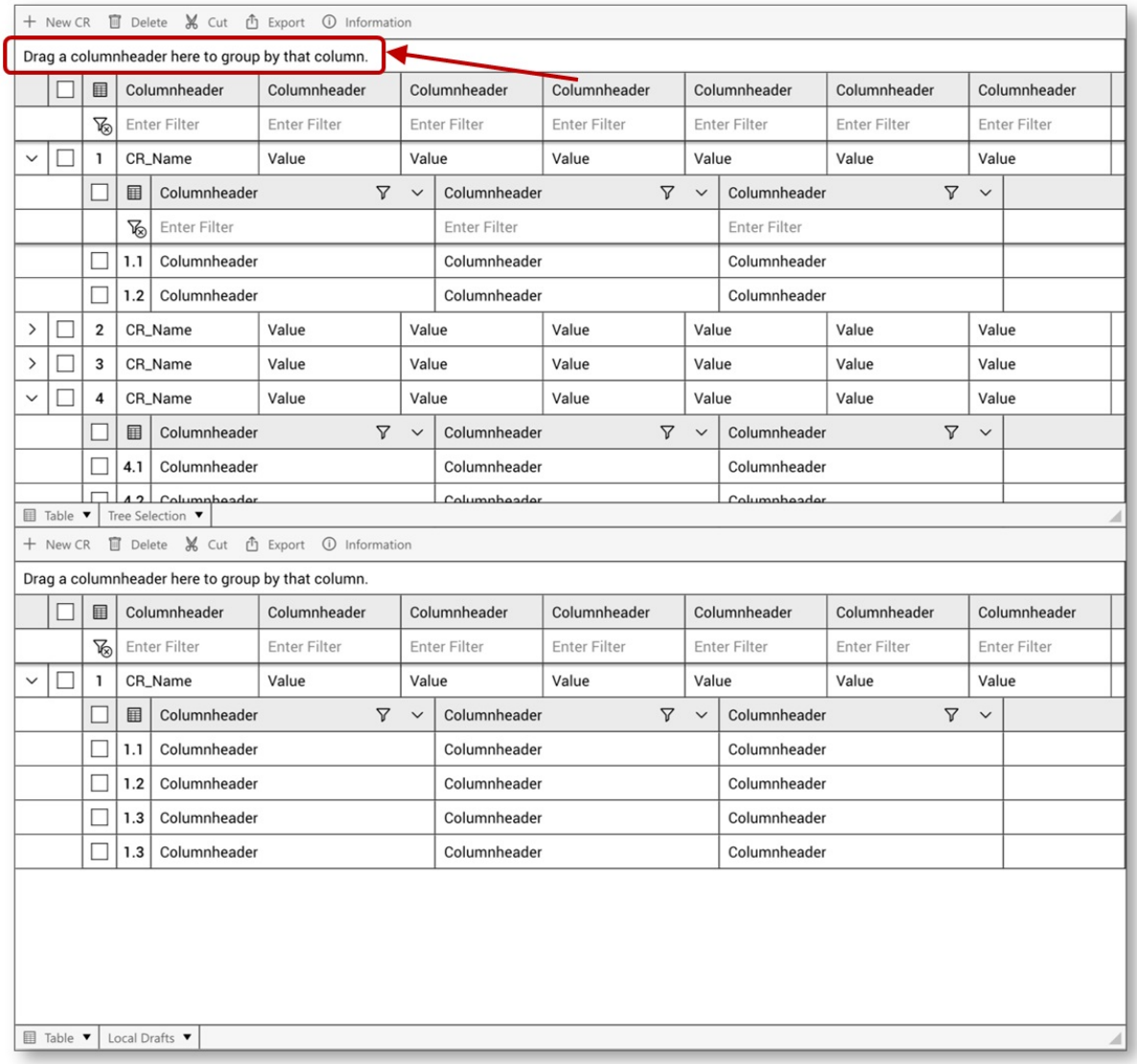
Verification: Demonstration and Inspection

[GUA-77] It shall be possible to define collapsible groups in the Table View by dragging and dropping an attribute column header to a "Group By field" and to add a second tier group by dragging a second column header to a "Group By field",

see example in the figure below. It shall also be possible to reorder the tiers in the groups and remove a tier from the groups.

Verification: Demonstration

Figure 2-3 Direct-manipulation of table to specify multi-tier groups of rows



[GUA-78] It shall be possible to sort the Table View by groups and by columns. When the Table View includes groups, the column sorting shall be done within the groups (per group).

Verification: Demonstration

[GUA-79] It shall be possible to hide/ unhide groups in the Table View.

Verification: Demonstration

[GUA-80] It shall be possible to hide and unhide columns and rows in the Table View.

Verification: Demonstration

[GUA-81] It shall from a column (or a row) with numerical values, be possible to select a range of consecutive cells and have the sum of the numerical values in all the selected cells calculated and reported to the screen.

Verification: Demonstration

[GUA-82] It shall be possible to export the data in the Table View directly to a comma separate file separating the visible (unhidden) columns in the table in the order they have in the table by a comma. Note that hidden columns and rows shall not be exported.

Verification: Demonstration

[GUA-83] It shall be possible to navigate from cell to cell in the table using the Tab key.

Verification: Demonstration

[GUA-84] It shall be possible to perform free-text search against the content in the table and have the search hits highlighted in the table.

Verification: Demonstration

[GUA-85] Default mode for the table cells shall be read-only (i.e. the use cannot change a cells content). The table cells shall only be "editable" in situations where a user (with the appropriate privileges) needs to change the data in the table.

Verification: Demonstration

[GUA-86] It shall be possible, in edit mode, to change the content of multiple cells in the table in one operation. For instance it shall be possible to select a column in the

table and change the value of all cells in that column to a new value in one operation.

Verification: Demonstration

[GUA-87] It shall be possible, in edit mode, to drag and drop a row from one group to another group and automatically update the attribute defining the group affiliation for the row that is moved.

Verification: Demonstration

[GUA-88] It shall be possible, in edit mode, to open up an empty row and enter values in the cells in the new row.

Verification: Demonstration

[GUA-89] It shall be possible, in edit mode, to copy a row and create a new row with cell values from the copied row.

Verification: Demonstration

[GUA-90] The Table View shall have support for configurable right-click menus.

Verification: Demonstration

[GUA-91] The Table View shall include scroll bars for both vertical and horizontal scrolling that appears when the available data exceeds the current viewport.

Verification: Demonstration

[GUA-591] The Table View shall have support for Freeze Top Row and Freeze First Column (like MS Excel) where the top row or first column stays put when the user scrolls the rest of the table.

Verification: Demonstration

[GUA-92] It shall be possible to split a Table View in two horizontal views where each view can individually scroll the Table View data set.

Verification: Demonstration

[GUA-93] It shall be possible to have multiple Table Views active in multiple panels concurrently where each Table View can visualize different data sets.

Verification: Demonstration

[GUA-94] It shall be possible to present two separate data sets in the Table View side by side for comparison with synchronous scrolling of both data sets.

Verification: Demonstration

2.6 General requirements for usage of the Relationship View Component

[GUA-95] The Relationship View functionality shall be implemented as a reusable UI component that can be used in many of the I2UA applications.

Verification: Demonstration and Inspection

[GUA-96] The Relationship View shall have functionality for zooming (in and out), panning and re-centering.

Verification: Demonstration

[GUA-97] The Relationship View shall have support for different layout algorithms to include force-directed layout, force-directed with clustering layout, circular layout, hierarchical (organigram) layout, etc.

Verification: Demonstration

[GUA-98] The Relationship View shall support manual changes to the auto-generated layout by dragging nodes around in the Relationship View.

Verification: Demonstration

[GUA-99] The Relationship View shall include functionality for reducing clutter. The de-cluttering function shall include grouping/ combining of nodes by user-selected attributes. The grouped nodes shall depict glyphs informing about the nature of the grouping of nodes. The rendered size of the grouped nodes shall visually be distinguishable based on the number of nodes within the combined node.

Verification: Demonstration

[GUA-100] It shall be possible to reduce the information in the Relationship View by selecting nodes matching a certain criteria, and then only show those nodes and any nodes that they are linked to.

Verification: Demonstration

[GUA-101] It shall be possible to expand any node with all nodes it is linked to (e.g. by double-clicking, or right-clicking, a node).

Verification: Demonstration

[GUA-102] It shall be possible hide/ unhide labels for the IIEs and the relationships within the Relationship View.

Verification: Demonstration

[GUA-103] It shall be possible to render nodes in the Relationship View as symbols, or icons, or geometric shapes, or thumbnails.

Verification: Demonstration

[GUA-104] It shall be possible to decorate the symbols in Relationship View with country flags and also with fictitious and configurable country flags (when running in exercise mode).

Verification: Demonstration

[GUA-105] When using geometric shapes nodes in the Relationships View then it shall be possible, from a palette of different shapes, to select shapes to be used for different node types/ categories using attributes associated with the nodes to categorize them (e.g. using different shapes for male versus female persons).

Verification: Demonstration

[GUA-106] When using geometric shapes nodes in the Relationships View then it shall be possible, from a colour palette, to select colours to be used for different node types/ categories using attributes associated with the nodes to categorize them (e.g. using different shapes for male versus female persons.

Verification: Demonstration

[GUA-107] When using geometric shapes nodes in the Relationships View then it shall be possible, from a centralities palette, to specify a centrality type and sizing

parameters (minimum and maximum size) to be used for rendering the size of nodes such that the size of the rendered shapes correlates with their centrality values.

Verification: Demonstration

[GUA-108] It shall be possible to select a node in the Relationship View and for all other nodes compute the similarity rank with the selected node where the similarity rank is visually depicted in the Relationship View.

Verification: Demonstration

[GUA-109] The Relationship View shall include support for animation that is reflecting changes to the objects within the Relationship View (e.g. visualizing effect of added or removed nodes and or relationships, change in attributes of the nodes or relationships, etc.).

Verification: Demonstration

[GUA-110] The Relationship View shall have support for configurable right-click menus tailored for individual node types (IIE types) and edges types (links and relationships).

Verification: Demonstration

[GUA-111] It shall be possible to export the content of the Relationship View as a Portable Network Graphics (PNG) file.

Verification: Demonstration

2.7 General requirements for usage of the Timeline View Component

[GUA-112] The Timeline View functionality shall be implemented as a reusable UI component that can be used in many of the I2UA applications.

Verification: Demonstration and Inspection

[GUA-113] The Timeline View shall have functionality for zooming (in and out) and panning along the timeline.

Verification: Demonstration

[GUA-114] The Timeline View shall have functionality for moving to next or previous event and centre around that event.

Verification: Demonstration

[GUA-115] The Timeline View horizontal axis shall represent the time dimension where the time representation, and time scale/ resolution, is user configurable.

Verification: Demonstration

[GUA-116] The Timeline View plot area (canvas) shall have support for callout-boxes and other graphical shapes that can contain formatted text (i.e. font size, type, and colours is dynamically configurable) and pictures combined with text. It shall be

possible to show IIE symbols within the call-out box. The colours of the call-out boxes and the graphical shapes can be dynamically changed.

Verification: Demonstration

[GUA-616] It shall be possible to minimize the "footprint" of the callout-box in the plot area and/ or only show the IIE symbol.

Verification: Demonstration

[GUA-117] The Timeline View shall have support for automatic de-cluttering layout. E.g. stacking callout boxes vertically, grouping several overlapping callout boxes that can be expanded by the user.

Verification: Demonstration

[GUA-118] The Timeline View shall have support for organizing call-out boxes and the graphical shapes in swim lanes.

Verification: Demonstration

[GUA-119] The Timeline View shall have support for drawing connecting lines between call-out boxes and the graphical shapes.

Verification: Demonstration

2.8 General requirements for usage of the Gantt View Component

[GUA-120] It shall be possible zoom in and out and pan within the timeline part of the Gantt View.

Verification: Demonstration

[GUA-121] The timeline part shall have a multi-tier timescale with time-scale groupings supporting years, quarters, months, weeks, and days.

Verification: Demonstration

[GUA-122] It shall be possible to render summary tasks in the timeline part.

Verification: Demonstration

[GUA-123] It shall be possible to depict milestones (using milestone symbols) in the timeline part of the Gantt View.

Verification: Demonstration

[GUA-124] It shall be possible to view more than 20 columns in the data grid part of the Gantt View.

Verification: Demonstration

[GUA-125] It shall be possible to search for data and to filter out rows in the grid part of the Gant View.

Verification: Demonstration

[GUA-126] It shall be possible to hide and un-hide columns in the grid part of the Gant View.

Verification: Demonstration

[GUA-127] It shall be possible to display icons in columns in the data grid part of the Gantt View.

Verification: Demonstration

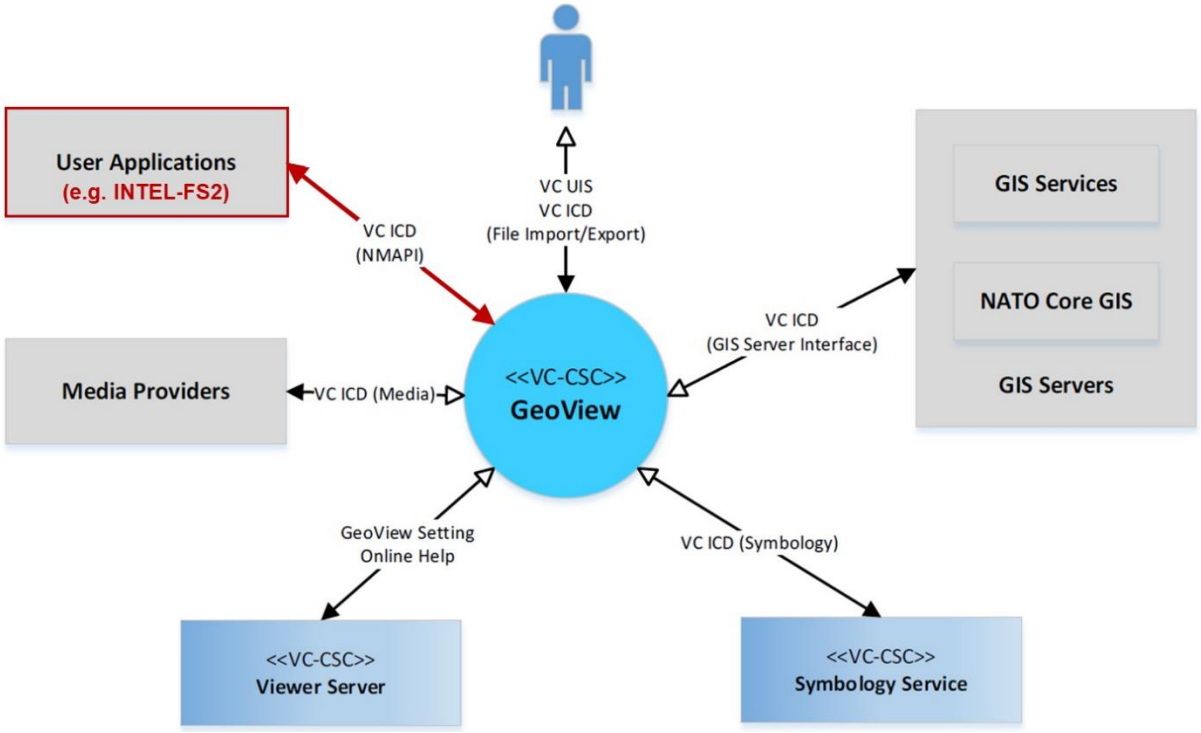
[GUA-128] It shall be possible to scroll horizontally and vertically in both the data grid part and the timeline part of the Gantt View.

Verification: Demonstration

2.9 General requirements for usage of the GeoView and controlling widgets

[32] I2UA will be using a map component provided as a purchaser furnished item (PFI). This map component, called GeoView, is provided as an executable container for integration with INTEL-FS2. As shown in the figure below INTEL-FS2 will integrate with GeoView application through the NATO Map API (NMAPI), see [VC-ICD]. The NMAPI works by sending and receiving JSON documents over event channels (HTML5 messaging) in the browser.

Figure 2-4 Integration with GeoView



[GUA-129] I2UA shall implement the full NMAPI interface as defined in [VC-IDC].

Verification: Demonstration and Inspection

[GUA-130] Control widgets for controlling the GeoView shall be implemented as reusable UI components that can be used in many of the I2UA applications.

Verification: Demonstration and Inspection

[GUA-131] I2UA shall implement listeners to the event channel so that any user defined actions done in the GeoView is detected by I2UA keeping the state of what is visualized in GeoView synchronized with information internally in I2UA (e.g. an

overlays hide/ unhide state, the zoom level, changes to the overlay hierarchical structure, etc.)

Verification: Demonstration

[GUA-132] I2UA shall implement context-oriented right-click menus in GeoView using the nmap.command event channels.

Verification: Demonstration

[GUA-133] I2UA shall be able to manage geographical areas (as defined in [INTEL-FS2-InformationModel]) from within GeoView. This means it shall be possible to create, update and delete geographical areas from within GeoView and subsequently have these area changes persisted and processed through the approval/ publish workflow. The implementation of this functionality shall fulfil the user story acceptance criteria of [US 32]: As an Authorized User I want to create and update geographic areas so that these can be referenced in multiple use cases within INTEL-FS2 (e.g. Intelligence Requirements Management and Collections Requirements Management).

Verification: Demonstration

[GUA-134] I2UA shall only use one instance of the GeoView application.

Verification: Demonstration

[33] Note: the main reason for the constraint of only using one instance of GeoView is that each instance of GeoView will require between 0.5 - 1 GB of memory.

[GUA-135] I2UA shall have support for concurrently holding data from multiple applications (e.g. Product Management Application and BSO Management Application both being used by a user) and be able to switch the viewable content in the GeoView to match the active application (e.g. switching between the Product Management Application and the BSO Management Application).

Verification: Demonstration

[34] The I2UA could organize the content of application by hierarchy where the root node in each hierarchy is the I2UA application. To quickly switch from one application to the other the current viewport could be hidden by hiding the overlay at the top level in the current hierarchy and similarly the other applications data can be made visible by un-hiding the other applications top overlay.

[GUA-136] I2UA shall include control functions for working with GeoView overlays. The control functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-2 Supported GeoView overlay functions from INTEL-FS2

Function	**Candidate* NMAPI event channels**
I2UA shall be able to create named and hierarchical overlays	map.overlay.create
I2UA shall be able remove an overlay and all features and objects within the overlay	map.overlay.remove
I2UA shall be able to hide an overlay and all features and objects within the overlay	map.overlay.hide
I2UA shall be able to unhide an overlay (and all its content)	map.overlay.show

I2UA shall be able to reorder the sequence of layers (from foreground to background)	map.overlay.update

* It is the Contractors responsibility to identify and implement the appropriate events (HTML5 messaging) in accordance with [VC-ICD] to deliver the functionality defined in the left-hand column. The event channels listed in the right-hand column are suggestions that are believed to be relevant for achieving the required functionality.

[GUA-137] I2UA shall include control functions for rendering GeoView features and objects. The control functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-3 Supported GeoView functions for rendering features from INTEL-FS2

Function	**Candidate NMAPI event channels**
I2UA shall be able to add or update APP6 (A/ B and D) symbols in GeoView	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall be able to annotate APP6 symbols with IIEs workflow status (see PublishedStatusType in [INTEL-FS2-InformationModel]))	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall be able to draw icons, pictures, and geometric shapes on GeoView	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall be able to render NATO Vector Graphics (NVG) data and Keyhole Markup Language (KML) in overlays	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall, when adding or updating geometric shapes in GeoView, implement a colour palette that can be used to select colours for different IIE types and/ or IIE attributes	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall, when adding or updating geometric shapes in GeoView, implement palette of different shapes that can be used to select shapes for different IIE types and/ or IIE attributes (e.g. using different shapes for male versus female persons)	map.feaure.plot map.feature.plot.batch map.feature.update
I2UA shall be able to create annotation directly in GeoView	map.feature.edit (and/ or use nmap.object.x channels)
I2UA shall be able to send geometric figures and text annotations to GeoView to be rendered in GeoView	map.feature.draw (and/ or use nmap.object.x channels)
I2UA shall be able to hide/ unhide labels for IIEs and relationships within	nmap.object.x channels
I2UA shall be able to remove features from GeoView	map.feature.unplot map.feature.unplot.batch
I2UA shall be able to hide individual features in GeoView	map.feature.hide
I2UA shall be able to unhide hidden features in GeoView	map.feature.show

[GUA-138] I2UA shall include control functions for selecting GeoView features. The control functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-4 Supported GeoView functions for features selection

Function	**Candidate NMAPI event channels**
I2UA shall detect when features are selected in the GeoView and subsequently identify the feature (e.g. as a particular IIE)	map.feature.selected map.feature.selected.batch
I2UA shall detect when features are un-selected in the GeoView and subsequently identify the feature	map.feature.deselected map.feature.deselected.batch
I2UA shall be able to command GeoView to select (and highlight) features	map.feature.selected map.feature.selected.batch
I2UA shall be able to command GeoView to un-select features	map.feature.deselected map.feature.deselected.batch
I2UA shall be able to query GeoView for status information and receive information on which features in the GeoView that is currently selected	map.status.request map.status.selected

[GUA-139] I2UA shall implement GeoView control functions to support searching and querying. The control functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-5 GeoView functions in support of searching and querying

Function	**Candidate NMAPI event channels**
A click in GeoView shall be picked up by I2UA such that the selected location can be used for searching or querying (e.g. as a centre point for a circle)	map.view.clicked
The user shall be able to draw an area in GeoView to define a geolocation boundary where this area is received by I2UA and subsequently used in search or query operations	map.view.area.selected

[GUA-140] I2UA shall include control functions for selecting the GeoView view-port. The control functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-6 Supported GeoView functions for controlling the view-port

Function	**Candidate NMAPI event channels**
I2UA shall be able to command GeoView to incrementally zoom in and out	map.view.zoom
I2UA shall be able to detect that the zoom level has been changed from within the GeoView	map.view.zoom
I2UA shall be able to command GeoView to re-centre on a particular overlay	map.view.center.overlay
I2UA shall be able to command GeoView to centre and zoom to a	map.view.center.feature

specific feature	
I2UA shall be able to command GeoView to centre on a specific geolocation at a user-defined zoom-level	map.view.center.location map.view.center.bounds

[GUA-141] The I2UA shall have support for automatically bringing IIEs into the GeoView based on the current viewport when zooming and panning. This "search-by-zooming" shall implement extent management to protect the I2UA and GeoView from having to handle too many search results. Extent management should be implemented by applying a limit for the number of new IIEs to be sent to GeoView, and the IIEs selected for GeoView display should be selected based on time (most recently updated) and other user-configurable filters.

Verification: Demonstration

[GUA-142] The GeoView shall be configured to, when required, obtain and display a number of different map data types as identified in the table below (pending that these map types are supported by the geographic information system (GIS) server interface and available in the GIS servers).

Verification: Demonstration

Table 2-7 Supported map data types in VC/ GeoView

Map data type
Elevation data
Vegetation data
Hydrology data
Road network data
Railway network data
Telecommunications network data
Multiple gazetteer data sets

[GUA-143] I2UA shall include functions for exporting files from GeoView and importing files to GeoView. The export and import functions identified in the table below shall be supported.

Verification: Demonstration

Table 2-8 Supported GeoView functions for features selection

File import/ export functionality
I2UA shall be able to import NVG files and display as overlays in GeoView
I2UA shall be able to import KML and zipped KML (KMZ) files and display as overlays in GeoView
I2UA shall be able to export the visual viewport of the GeoView as a Portable Network Graphics (PNG) file.
I2UA shall be able to export the visual viewport of the GeoView as a NVG file.
I2UA shall be able to export the visual viewport of the GeoView as a KML file and as a KMZ file.

[GUA-643] I2UA shall be able to command decoration of APP-6 symbols in the GeoView with nationality flags, including fictitious and configurable country flags (when running in exercise mode).

Verification: Demonstration

2.10 General requirements for usage of the Chart View Component

[GUA-144] The Chart View functionality shall be implemented as a reusable UI component that can be used in many of the I2UA applications.

Verification: Demonstration and Inspection

[GUA-145] The Chart View shall be able to present data sets as pie charts, horizontal and vertical bar charts, stacked bar charts, histograms, scatter charts, line charts, area charts, radar charts, and polar coordinate system charts.

Verification: Demonstration

[GUA-146] The Chart View shall have support for using multiple (dynamically specified) font types, font sizes, and font colours within a chart.

Verification: Demonstration

[GUA-147] The Chart View shall have support for multiple (dynamically specified) colours of chart elements.

Verification: Demonstration

3 Functional requirements user account management

[234] In INTEL-FS Spiral 1 user account management was an integrated function of the application. In INTEL-FS Spiral 2 user account management will be done externally to the INTEL-FS application in a new user account management application that will be based/ built on tooling provided by the SOA & IdM Platform, see [SOA-IdM].

[235] Of principal relevance for the I2UA are the SOA & IdM Platform Security Platform Identity and Access Management (IAM) Services including:

(1) Authentication and Authorisation
(2) Identity Management

3.1 Externalized user account management

3.1.1 User Management Application

[236] Note: The User Management Application will be required early in phase 1 (see section 4.1).

[237] The I2UA User Management Application should make use of the SOA & IdM Platform Identity and Access Management (IAM) Components and Services defined in the [SOA-IdM].

3.1.1.1 UI functionalities supporting user stories

[FUA-1] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 1]: As an Authorized User I want to define the policies to be used by the INTEL-FS2 policy decision point (PDP) so users can be given the correct access privileges.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-2] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 2]: As an Authorized User I want to create user accounts so that the new users can get access to INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-3] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 3]: As an Authorized User I want be able to modify user accounts so that I can keep the user accounts and their privileges current.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-4] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 4]: As an Authorized User I want to define default user configuration settings to establish a baseline configuration so that the users will have a baseline to start from, or return to.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-5] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 5]: As an Authorized User I want to be able to control

which domain values that are available at an ON so that only relevant information is presented to the users.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-6] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 6]: As an Authorized User I want to be able to send email to users so that I can provide them with information relevant to their usage of INTEL-FS2 (e.g. planned outages due to maintenance, changes to the user's account settings, etc.)

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-7] The User Management Application shall implement functionalities to fulfil the acceptance criteria of [US 7]: As an Authorized User I want to be able to manage a set of standard role-based notifications so that users with specific roles can be automatically informed of any change of interest to the role.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

3.1.1.2 Standalone application

[238] The I2UA User Management Application should make use of the Identity Management Components and Services defined in the [SOA-IdM]. These include all aspects of the identity lifecycle: management, provisioning, workflow (onboarding, etc.), persistence, governance, portal access, etc.

[FUA-10] The User Management Application shall be implemented as a standalone application, and where this standalone User Management application can also manage user accounts for other applications than INTEL-FS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

3.1.1.3 User Accounts administration functionalities

[FUA-12] The User Management Application shall include a dedicated User Interface allowing users to request user accounts where the requester can select from a number of predefined user role/ type configurations.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-13] The User Management Application shall have support for redirecting account requests to relevant ONs for processing.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-14] The User Management Application shall include a notification mechanism that alerts the appropriate user account administrator of pending new user account requests.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-15] The User Management Application shall upon any change to a user account automatically notify, by email, the user with information on the change to the

user account (this includes a welcome email to a user for whom a new user account has just been created). The email shall contain details on the change (i.e. what was changed).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-16] The User Management Application shall include support for resetting the password for a user with no domain account to enable the user to access INTEL-FS2 again.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-17] The User Management Application shall manage the user's attributes (including assertions/ claims required for access control) locally to the I2UA application. This means that I2UA shall provide its own application attribute store.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-18] The User Management Application shall backup its user account database at regular (and configurable) intervals.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-19] It shall be possible to restore the User Management Application user account database from a backup.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-20] In case the User Management Application is implemented using a solution based on the Windows operating System, the I2UA user accounts shall be declared in an Active Directory inheriting NATO Group Policy Object (GPO) declared at the network domain level for password policy (e.g. complexity, history, minimum age, maximum age, length).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

3.1.1.4 Initial policy definitions

[FUA-21] The User Management Application shall be populated with an access control policy set that enables user access controls to I2UA that are comparable with the mainstream access privileges currently in use in INTEL-FS Spiral 1 (see also examples in Chapter 3 of [INTEL-FS2-UserStories]).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4 Functional requirements user applications

4.1 Phase 1 – Upgrade UI, initial BMD OPFOR ORBAT Management, and new User Management

[35] The current INTEL-FS Spiral 1 was implemented using aspect-oriented programming (AOP). As part of the AOP, the UI of the current INTEL-FS Spiral 1 was auto-generated from aspects to the classes in the back-end software. For INTEL-FS Spiral 2 AOP will not be used to auto-generate the UI.

[36] The main activity in phase 1 is to re-implement and improve the current INTEL-FS UI.

[37] In addition to the UI upgrade, phase 1 will also bring dedicated functionality for managing the BM opposing order of battle (OPFOR ORBAT) and new analysis functionalities.

[38] While the INTEL-FS Spiral 1 UI was designed to look like MS Outlook the new INTEL-FS Spiral 2 UI will be designed to look like modern web applications, e.g. something similar to the Google platform with similar UI widgets and look-and-feel across multiple (e.g. Gmail, Google Search, Google Drive, etc.)

4.1.1 Dashboard Application

4.1.1.1 UI functionalities supporting user stories

[FUA-22] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 8]: As an Authorized User I want to see, and have dynamically updated, information on the latest updates to IIEs of interest to me on my Dashboard so that I obtain this information without having to manually search for it.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-23] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 9]: As an Authorized User I want to see my notifications on my Dashboard so that I can dynamically see updates to these as they are generated.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-24] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 10]: As an Authorized User I want to access favourites/ links from my Dashboard so that I can quickly retrieve resources of relevance to my tasking.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-25] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 11]: As an Authorized User I want to customize the information to be shown in the Table View for the latest updated IIEs so that the information shown there is of relevance to me.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-27] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to

access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.2 Table Views

[FUA-29] The Dashboard Application shall by default display the latest-updated-products, the RFI statuses, the CR statuses, and the Notifications in different Table Views using the Table View Component as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-30] It shall, in a Table View, be possible to select one or multiple notifications and flag them (i.e. mark as "to do"), and to mark them as "read" or "unread", and to archive them (and thus hide them), and to delete them.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.3 Relationship View

[FUA-31] The Dashboard Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-32] The Dashboard Application shall be able to display the IIEs (filtered according to the user's preferences) with the latest updates in the Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-33] Items selected in Relationship View shall be displayed/ previewed in the Dashboard Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.4 GeoView

[FUA-34] The Dashboard Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-35] The Dashboard Application shall display the IIEs (filtered according to the user's preferences) with the latest updates in the GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-36] An item selected in GeoView shall be displayed/ previewed in the Dashboard Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.5 UI functionalities for managing cross-cutting configuration settings (for all applications)

[41] The Dashboard Application should be where the user will manage configuration settings that is applicable for many applications.

[FUA-37] It shall be possible for the user to specify which data source (operational data, exercise data, training data) to use.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-38] It shall be possible to configure the default user interface customization settings as defined in the table below to be used in the user interfaces across all I2UA applications.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-1 Cross-cutting user interface configurations

Configurable	Supported variants
Date/ time format	YYYY-MM-DD, or DD-MM-YYYY, and time values in 24-hour clock (local or zulu), or AM/PM clock (local or zulu). The user shall be able to see from any time value on the screen which format that is being used (e.g. adding a 'Z' to indicate zulu time)
Coordinate system	Degrees-Minutes-Seconds (DMS) as decimal degrees, DMS as degrees and decimal minutes, DMS as degree, minutes and decimal seconds, MGRS, and UTM
Measure of units	Metres, kilometres, miles, nautical miles, degrees, minutes, seconds

[FUA-39] Changes to configuration settings shall be persisted for each individual user, and loaded upon the start of each new user session (logon).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.6 UI functionalities for managing configuration settings for the Dashboard views

[FUA-40] It shall be possible to change the default time window for the latest-published-products view (Table View).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-41] It shall be possible to apply filters to tailor which products to be shown in the latest-published-products view. Supported filters shall include product type, geospatial coverage (location of the reported information), source/ producer of the information, a set of IRs, etc.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.1.7 Messaging with INTEL-FS Backend (I2BE)

[FUA-42] The I2UA shall implement the service-to-service messaging protocol as supported by the SOA & IdM Platform for communication with the I2BE.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2 Products Management Application

4.1.2.1 UI functionalities supporting user stories

[FUA-43] The Products Management Application shall implement functionalities to fulfil the acceptance criteria of [US 15]: As an Authorized User I want to create/ update products, so that I can share intelligence and information with other users.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-44] The Products Management Application shall implement functionalities to fulfil the acceptance criteria of [US 16]: As an Authorized User I want to be able to use templates when creating products, so that I can automatically prefill repeatable metadata for products that I create on a regular basis.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-45] The Products Management Application shall implement functionalities to fulfil the acceptance criteria of [US 17]: As an Authorized User I want to create products with associations to other IIEs of different types and export these so that these products can be used for automated ingestion during training exercises.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[46] Note: These pre-canned products that will be prepared in advance of an exercise will not be submitted to the backend, the Products and its associated metadata shall be exported to a file in a structured format, see also [FUA-64].

[FUA-47] The Products Management Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.2 Integrated search and basic actions on search results

[FUA-48] The Product Management Application shall include an integrated search function allowing the user to identify products that can subsequently be selected for editing and for workflow management.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-49] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-2 Product Management Application integrated search and search results actions

Search result	**Supported actions**
Any Product	Single and multi-select items and tag them as soft-deleted
Soft-deleted Products	Single and multi-select items and un-delete them
Any Product	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
Products in Draft workflow state	Single and multi-select items and submit approval request for them
Products in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
Products in a workflow state of awaiting to be published	Single and multi-select items and publish them
Products in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a Product, obtain rejection reason, open the Product for further editing
Any Product	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.1.2.3 Create and/ or update functionalities

[FUA-50] The Product Management Application shall through submitting the product file (in PDF or MS Word format) to an I2BE metadata extraction service obtain Keywords and Locations from the product file and pre-fill the Keywords and Locations in the product entry forms.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-51] The Product Management Application shall through submitting imagery and video product files (in STANAG 4545 and STANAG 4609 format) to a I2BE metadata extraction service obtain product metadata values and pre-fill the metadata attributes in the product entry forms.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-53] The Product Management Application shall be able to use templates to prefill values to selected metadata attributes. As a minimum it shall use default values to prefill the Authority, Classification, and Releasability attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-54] The Product Management Application shall, when a new product is linked to a RFI, IR, CR, or collection/ exploitation task, provide functionality to set the

status of the linked IIE to completed or fulfilled (as appropriate for the linked IIE type).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-55] The Product Application can create different types of products (as defined by [INTEL-FS2 InformationModel]), and the user shall have the possibility to specify the type of product when activating the create form/ panel.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.4 Application Data Set (ADS)

[FUA-555] It shall be possible to perform multiple, consecutive queries to add products to the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.5 IIE View/ Entry Panel

[FUA-556] The Product Management Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.6 Relationship View

[FUA-56] The Product Management Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-57] The Product Management Application shall be able to display products (identified through the integrated search) in the Relationship View. The user can expand the information in the Relationship View by selecting individual products and view all IIEs (of any type) linked to the selected products.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-58] By selecting an item in Relationship View the full detail of the item shall be displayed/ previewed in the Product Management Application (e.g. in a dialog window).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.7 GeoView

[FUA-59] The Product Management Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-60] The Product Management Application shall display products (from the integrated search) in GeoView. In case a product is associated with multiple

locations then all locations shall be indicated on the map while visually depicting that they all belong to the same product (e.g. by using annotation in glyphs).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-61] The Product Management Application shall be able to use the GeoView to define the geolocation of a new product by selecting a position in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.2.8 Export functionalities

[FUA-62] It shall be possible to search for products, select one or multiple products and export the metadata of selected products to a single XML file, and exports the products icon, symbol, or thumbnail. The resulting file shall include information of the security classification of the exported data, and the file name shall include prefix that informs about the highest classification of the information in the file (e.g. using an (NR) prefix for files with NATO RΞSTRICTED information).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-63] It shall be possible to transform the exported data resulting from [FUA-62] into humanly readable document using a separate/ external and customizable transformations (e.g. XSLT-FO). The transformations shall use the exported XML file, icons, symbols, and thumbnails and produce a PDF file. The resulting file shall include information of the security classification of the exported data, and the file name shall include prefix that informs about the highest classification of the information in the file (e.g. using an (NR) prefix for files with NATO RΞSTRICTED information).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-64] In support of exercises (see [FUA-45]), it shall be possible to define a new product entirely on the client side (not submitting the product to the I2BE backend) where this product includes a full set of metadata and a number of attachments. It shall be possible to export this product (metadata and attachments) in to a file in a structured format. The resulting file shall include information of the security classification of the exported data, and the file name shall include prefix that informs about the highest classification of the information in the file (e.g. using an (NR) prefix for files with NATO RΞSTRICTED information).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-65] For the type of product export files that are used for exchange with the Joint Exercise Management Module (JEMM) system (see [FUA-45]) it shall be possible to manage these outside of the INTEL-FS repository. It shall be possible to load a previously exported product file and edit/ refine it and save it back to the same file, or to save it under another file name.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3 Battlespace Object (BSO) Management Application

4.1.3.1 UI functionalities supporting user stories

[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.

[FUA-66] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 18]: As an Authorized User I want to create or update a BSO or a BSR so that this new intelligence can be used in analysis and shared with other users.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-67] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 19]: As an Authorized User I want to manage reporting on IED incidents in order to build a complete picture of adversary IED activities in the area of intelligence interest (AOII) and thereby contribute to the counter-IED (C-IED) mission.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-68] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 21]: As an Authorized User I want to use the Relationship View for creating/ updating BSOs and relationships between BSOs and other IIEs as this is a highly efficient way of managing BSOs and their relationships.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-69] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 22]: As an Authorized User I want to use the Map View for creating/ relationships between BSOs and other IIEs.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-70] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 23]: As an Authorized User I want to have the report to be collated imported into an editable scratch panel and the original and formatted report available in a PDF viewer so that I can start executing the collation work.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-71] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 24]: As an Authorized User I want to use the report extracted to a scratch panel as the source for my collation work so that I can efficiently identify BSOs and copy/ paste text into BSRs.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-72] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 25]: As an Authorized User I want to be able to compare BSOs to detect if they are duplicates so that I can subsequently merge the BSOs (and their reports) into a single BSO.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-73] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 26]: As an Authorized User I want to have my collation tasks organized in a task list so that I can better plan my collation work.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-74] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 27]: As an Authorized User I want to manage the collation tasking so that I can plan, prioritize, and track the progress of the collation work.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-75] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 28]: As an Authorized User I want to create or update an OPFOR ORBAT in order to model a real world ORBAT so that this can be persisted, used in analysis and shared with other users.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-76] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 29]: As an Authorized User I want to inspect the OPFOR ORBAT in order to track changes, understand and analyse the ORBAT.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-78] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.2 Integrated search and basic actions on search results

[FUA-80] The BSO Management Application shall include an integrated search function allowing the user to identify IIEs that can subsequently be selected for BSO management and for workflow management. I.e. it shall be possible to search for all OPFOR ORBATs, BSO types, IED incidents, products, etc.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-81] The BSO Management Application shall when displaying a BSO show the latest assessed status information.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-82] It shall be possible from the integrated search function to use an OPFOR ORBAT as a search criteria and find all IIEs (e.g. BSOs, Products, RFIs and RFI Responses, Collection Requirements, etc.) associated with elements of the ORBAT.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-83] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-3 BSO Management Application integrated search and search results actions

Search result	**Supported actions**
Any BSO and/ or BSR and BM ORBAT	Single and multi-select items and tag them as soft-deleted
Soft-deleted BSO and/ or BSRs and BM ORBAT	Single and multi-select items and un-delete them
Any BSO and/or BSRs and BM ORBAT	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
BSO/ BSRs and BM ORBATs in Draft workflow state	Single and multi-select items and submit approval request for them
BSO/ BSRs and BM ORBATs in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
BSO/ BSRs and BM ORBATs in a workflow state of awaiting to be published	Single and multi-select items and publish them
BSO/ BSRs and BM ORBATs in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected BSO/ BSR, obtain rejection reason, open the BSO/ BSR for further editing
Any BSO/ BSR and BM ORBATs	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

[50] Note: From within the BSO Management Application the user will also need to be able to search for other IIE types besides BSOs/ BSRs (e.g. IRs, products etc. to be able to be able to fulfil user story acceptance criteria pertinent to this application).

4.1.3.3 Application Data Set (ADS)

[FUA-84] It shall be possible to perform multiple, consecutive queries to add data to the data set (OPFOR ORBATs, BSOs, IED Incidents, and other IIEs). I.e. the user can chose whether to use the result of the new query to augment or replace the content of the application data set. When a new query is adding to the content

of the data set, any duplicate IIEs from the multiple queries shall be resolved. Any change to the data set shall be reflected in all the application views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-85] It shall be possible to filter the data set based on IIE types, and attributes of the IIEs and remove/ hide IIEs of "unwanted" types in all views. It shall be possible to filter on OPFOR ORBAT attributes, all BSO types, all attributes of the individual BSO types, and IED Incidents, as defined in [INTEL-FS2-InformationModel].

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-86] It shall be possible to filter the OPFOR ORBAT to a specified level (e.g. only down to Battalion level) remove/ hide ORBAT elements below that level in all views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-87] It shall be possible to apply a geographical coverage area filter to filter out information from the application data set, and dynamically update all the views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-88] It shall be possible to filter the application data set based on a time window (e.g. using a time slider UI widget) and remove/ hide IIEs outside the of the active time window and dynamically update all the views. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.4 IIE View/ Entry Panel

[FUA-588] The BSO Management Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.5 Table Views

[FUA-89] The BSO Management Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-90] The Table View shall show the maximum set of IIE attributes that are common across all IIEs in the application data set and support editing of the attributes within the table.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-91] When the data set only contains IIE of one particular data type, then all attributes of that type shall be shown in the table (e.g. if the data set only contains BM TECHINT of a certain equipment type, all parameters of that particular equipment type shall be shown in the Table View).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-92] It shall, when the Table View is showing IIEs grouped by ORBATs, be possible to copy data from one ORBAT to another and update and save (and subsequently approve and publish) the changed ORBAT.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.6 Relationship Views

[FUA-93] The BSO Management Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-94] It shall be possible, from within the BSO Application, to expand the view with additional BSOs by specifying a degree of separation from the original BSO set and request import (note: a degree of separation greater than 2 is probably not practical). The Relationship View shall automatically re-render its layout and display all the BSOs including the newly added ones.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-95] It shall be possible to select an IIEs in the Relationship View and get all details of the IIE presented within the BSO Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-96] It shall be possible to animate the change over time of the ORBAT e.g. using a time slider UI widget) in the Relationship View (using a hierarchical layout).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-97] Items selected in Relationship View shall be displayed/ previewed in the BSO Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.7 Timeline Views

[FUA-98] The BSO Management Application shall use a Timeline View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-99] It shall be possible to view the entire history of a selected BSO's status reports in a Timeline View that shows when changes occurred. For each change, it shall be possible to identify what was changed. It shall be possible to hide (and

unhide) status reports classified as 'contributing' from this history view (reports classified as 'assessed' shall always be shown).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-100] It shall be possible to view the entire change history for a selected OPFOR ORBAT in a Timeline View that shows all changes in the ORBAT and when the changes occurred. For each change, it shall be possible to identify what was changed.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-101] An Item selected in Timeline View shall be displayed/ previewed in the BSO Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.8 GeoView

[FUA-102] The BSO Management Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-103] The BSO Management Application shall display BSOs and Relationships in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-104] The BSO Management Application shall be able to create new, or update, relationships between BSOs from within the GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-105] An Item selected in GeoView shall be displayed/ previewed in the BSO Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.9 ORBAT View

[FUA-106] It shall be possible to view the ORBAT with all its information as defined in the [INTEL-FS2-InformationModel] in a human readable document format.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-107] The BSO Management Application shall in the ORBAT View be able to display the historical changes of the ORBAT over time.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-607] The BSO Management Application shall be able to export the ORBAT View as a PDF file.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.3.10 Report Collation View

[FUA-608] It shall be possible from within the Report Collation View (as described by [FUA-71]), at any time, to close down the collation of a report by setting the status of the report collation to Completed, Aborted, NoInformationValue, or ReviewedNotCollated. When setting the collation status to any of these values, the BSO Management Application shall exit from the Report Collation View and return to the Collation Task List (as described by [FUA-73]).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-609] It shall be possible to sort the list of automatically identified BSOs (from the report) BSO Name and by BSO type.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-610] It shall be possible to collapse multiple findings of a particular BSO in the report text in the list of identified BSOs, and it shall be possible to expand the collapsed findings for a BSO to see all matches (as text snippets) in the report text.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-611] It shall be possible to select any of the multiple matches for each of the BSOs in the list of identified BSOs and have that particular text match highlighted in the text in the scrap panel, and to reposition the curser in the scrap panel on the matched text (i.e. center the scrap panel view on the matched text).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.4 Targets Application

[51] The Targets Application will be implemented in Phase 3.

4.1.5 Intelligence Situation Application

4.1.5.1 UI functionalities supporting user stories

[FUA-108] The Intelligence Situation Application shall implement functionalities to fulfil the acceptance criteria of [US 34]: As an Authorized User I want to create/ load overlays so that I can study the Intelligence Situation.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-109] The Intelligence Situation Application shall implement functionalities to fulfil the acceptance criteria of [US 35]: As an Authorized User I want to expose a named overlay as the Intelligence Situation so that it becomes available at all

Organizational Nodes (ON) and can be shared with other applications such as NATO Common Operating Picture (NCOP).

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-111] The Intelligence Situation Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.5.2 Integrated search and basic actions on search results

[FUA-112] The Intelligence Situation Application shall include an integrated search function allowing the user to identify IIEs where one or many of the identified IIEs can be selected and added to dedicated overlays.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-113] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-4 Intelligence Situation Application integrated search and search results actions

Search result	**Supported actions**
Overlays	Single and multi-select items and tag them as soft-deleted
Soft-deleted Overlays	Single and multi-select items and un-delete them
Overlays	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
Overlays in Draft workflow state	Single and multi-select items and submit approval request for them
Overlays in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
Overlays in a workflow state of awaiting to be published	Single and multi-select items and publish them
Overlays in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected Overlay, obtain rejection reason, open the Overlay for further editing
Overlays	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)
Any IIE	Single and multi-select items and add to an overlay

4.1.5.3 Application Data Set (ADS)

[FUA-114] The Intelligence Situation Application shall be able to work with multiple overlays concurrently.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-115] It shall be possible to search for and load an existing overlay into an overlay data set.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-116] It shall be possible to perform multiple, consecutive queries to add data to an overlay data set. I.e. the user can chose whether to use the result of the new query to augment or replace the content of the application data set. When a new query is adding to the content of the data set, any duplicate IIEs from the multiple queries shall be resolved.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-117] It shall be possible to filter an overlay data set based on IIE types, and attributes of the IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-118] It shall be possible from the overlay data set to create, or update, and submit for approval, the new/ changed overlay.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.5.4 IIE View/ Entry Panel

[FUA-618] The Intelligence Situation Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.5.5 Table Views

[FUA-119] The Intelligence Situation Application shall be able to visualize and edit overlays in the Table View Components as defined in chapter 2, and support editing of the overlay attributes within the table.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.5.6 Relationship View

[FUA-120] The Intelligence Situation Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-121] The Intelligence Situation Application shall be able to display the IIEs of an overlay in the Relationship View. The user can expand the information in the

Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-122] Items selected in Relationship View shall be displayed/ previewed in the Intelligence Situation Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.5.7 GeoView

[53] INTEL-FS2 overlays typically consists of IIEs that are organized as a "collection" of geo-located IIEs. In addition to containing IIESs, overlays can also include annotations.

[FUA-123] The Intelligence Situation Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-124] The Intelligence Situation Application shall be able to create, update, or delete overlays from within the GeoView where subsequently the overlays changes are persisted in INTEL-FS2 and processed through the approval workflow process.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-125] The Intelligence Situation Application shall be able to visualize its overlay data set in GeoView and control how the overlays are visualized in GeoView (e.g. hide/ unhide, hierarchical ordering, remove overlay, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-126] The Intelligence Situation Application shall be able to dynamically update GeoView's visualization of overlays whenever there is a change to the overlay's data set (e.g. an IIE is added or removed, the position of an IIE is changed, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-127] It shall be possible to multi-select IIEs in the GeoView and copy or move the selected IIEs from one overlay to another overlay.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-128] The Intelligence Situation Application shall be able to obtain graphical representation of the recognized maritime picture (RMP) as NVG or KML from NCOP (see [NCOP-ICD]), display it in GeoView, and regularly update the RMP overlay in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-129] The Intelligence Situation Application shall be able to obtain graphical representation of the recognized ground picture (RGP) as NVG from the NCOP

system (see [NCOP-IDC]), display it in GeoView, and regularly update the RGP overlay in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-130] The Intelligence Situation Application shall be able to obtain graphical representation of the chemical, biological, radiological and nuclear (CBRN) hazard areas (as NVG) from services in the CBRN FS system, display the areas in GeoView, and regularly update the hazard areas overlay in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-131] The Intelligence Situation Application shall be able to obtain graphical representation of the weather situation through OpenGIS® Web Map Service (WMS) Interface provided by the NATO Automated Meteorological Information System [NAMIS] and display the data in GeoView, and regularly update this overlay in GeoView. If the information is available from NAMIS the application shall be able to display: Cloud Cover, Humidity data, Atmospheric Pressure data, Precipitation data, Thunderstorm data, Temperature data, and Wind Speed data at different altitudes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.6 BM JIPOE Application

[54] The BM JIPOE Application will be implemented in Phase 2 and Phase 3.

4.1.7 Search Application

4.1.7.1 UI functionalities supporting user stories

[56] In Phase 1 the search function will be limited to search over the OData REST API. When integrated with the new backend, an additional faceted search/ browsing feature will be implemented. The search engine for the faceted search will be implemented in the new backend (I2BE).

[FUA-132] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 48]: As an Authorized User I want to combine free-text search with specific metadata search so that I can narrow down the search result set.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-133] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 49]: As an Authorized User I want to save the combined search so that this specific combined search can be repeated and subscribed to.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-134] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 51]: As an Authorized User I want to preview IIEs and their attachments and related files so that I can precisely identify and select existing data, information and intelligence.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-135] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 52]: As an Authorized User I want to export search results to support further analysis of the selected information to be done externally to INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-137] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.7.2 Relationship View

[FUA-138] The Search Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-139] The Search Application shall be able to display the search results in the Relationship View while using some form of extent management or lazy loading to provide the search results to the user within a minimum response time. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.7.3 GeoView

[FUA-140] The Search Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-141] The Search Application shall be able to use GeoView to define geo-location constraints to be used in the search criteria.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-142] The Search Application shall be able to display search results in GeoView as thumbnails or icons while using some form of extent management or lazy loading to provide the search results to the user within a minimum response time.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-143] An Item selected in GeoView shall be displayed/ previewed in the Search Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.7.4 Search Results functionalities

[FUA-144] The search result list shall include icons for each of the IIEs in the list using file type symbols (e.g. standard PDF icon, MS Office icons, etc) and for non-file-type IIEs use APP-6 symbols when applicable (e.g. for BSOs). The icons and symbols shall be decorated with the workflow status of the IIE.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-644] It shall be possible to decorate the APP-6 symbols in the search list with nationality flags, including fictitious and configurable country flags (when running in exercise mode).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-145] It shall be possible to rearrange the sequence of the columns in the search result list.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-146] It shall be possible to customize the information being shown in the result list (hide and unhide/add columns.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-147] The Search Application shall from the result set support selection of single, or multiple, video products and/ or image products and export these for use by Google Earth. I.e. the products (metadata and videos/ images) are exported in the KML file format. The resulting file shall include information of the security classification of the exported data, and the file name shall include prefix that informs about the highest classification of the information in the file (e.g. using an (NR) prefix for files with NATO RΞSTRICTED information).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-148] The Search Application shall from the result set support selection of single, or multiple BSOs and export those BSOs with their BSRs, and with their relationships to other BSOs (and their BSRs) to a user-specified degree of relationship separation from the selected set of BSOs. The export file shall be in XML format and shall preserve all relationships between all BSOs exported format.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[57] Note the purpose of the requirement above is to export BSO data for network analysis. It should be possible to transform the resulting XML file into a format that can be imported by Off-the-shelf external network analysis tools (e.g. the i2 Analyst Notebook (ANB)).

4.1.7.5 Report Reader

[FUA-150] The Search Application shall implement a dedicated Report Reader Component that can load a result document attachment in PDF format and thus enable the user to read the entire document.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-151] The Report Reader Component shall be implemented such that it can be reused by other I2UA applications.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

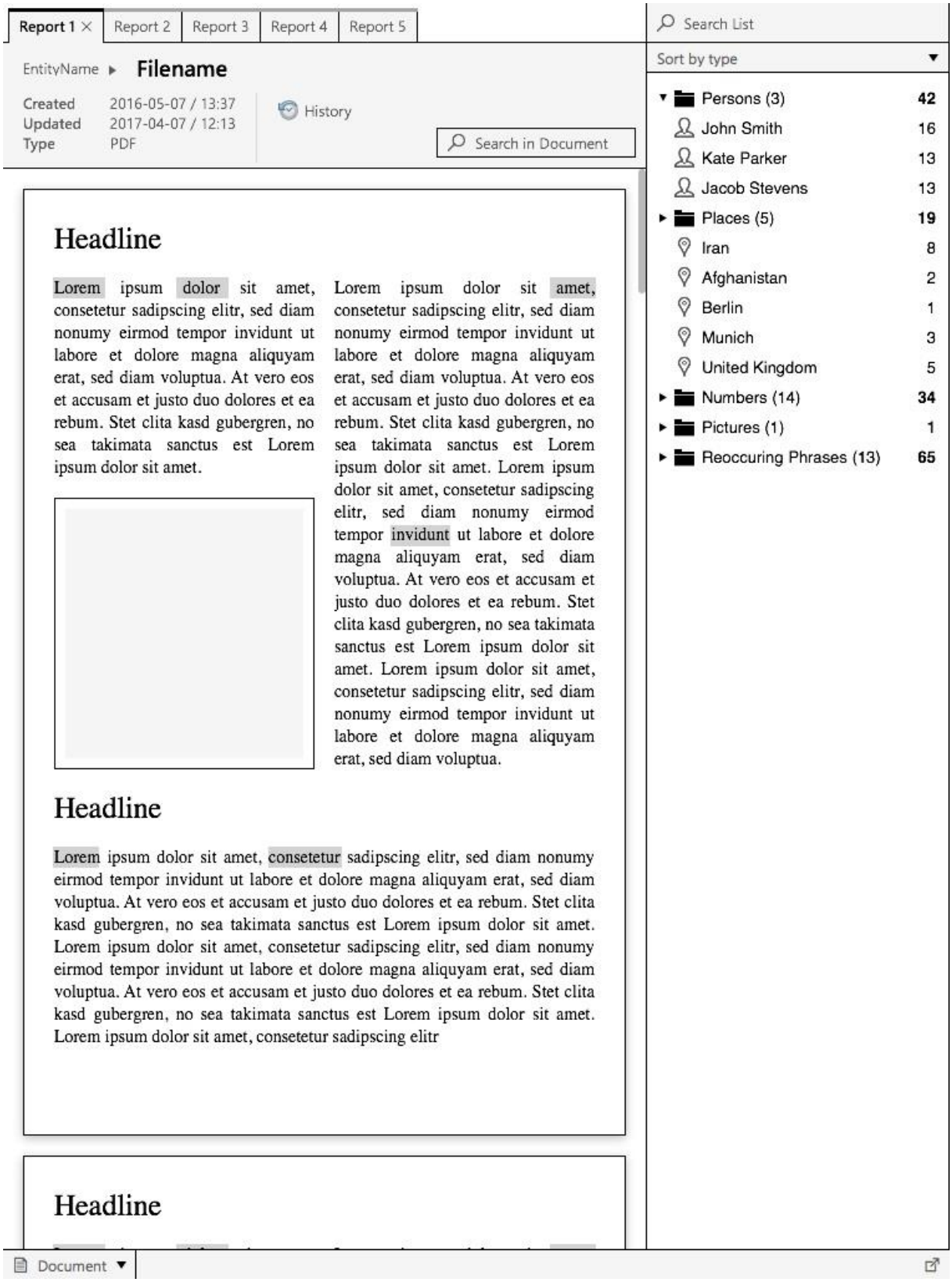
[FUA-152] The Previewing Report Reader shall support text search within the previewed document.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-153] The Previewing Report Reader shall support identification of existing BSOs in the text (an example of a Report Reader with BSO identification is shown in the figure below. For BSOs that already exist as objects in the INTEL-FS repository, and that are found in the text, the user can use the automatically created list (to the right in the example Report Reader) to navigate to that entity.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Figure 4-1 Report Reader

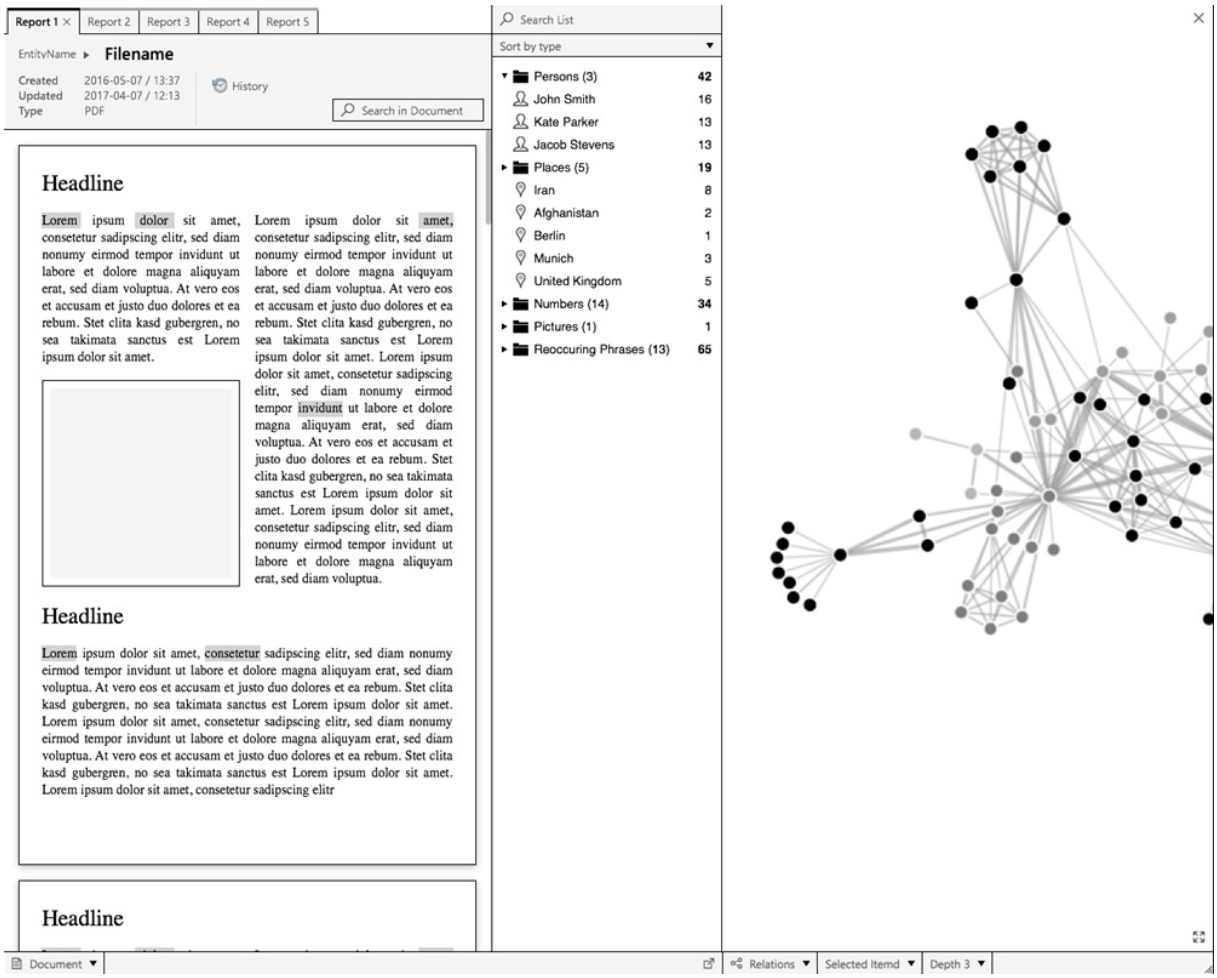


[FUA-154] It shall be possible to extend the Report Reader with a Relationship View in another Panel. The Relationship View shall be implemented using, or including,

the Relationship View Component with all its features as defined in chapter 2. The Relationship View shall show the BSOs found in the report and include relationships between these (if any), as shown in the figure below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Figure 4-2 Report Reader extended with Relationship View of BSOs in the report



4.1.7.6 Saved searches and search history functionalities

[FUA-155] The Search Application can export and import saved searches allowing users to share defined searches without using the global/ published search mechanism (i.e. the saved searches stays private to the individual users).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-156] It shall be possible to manage (rename or delete) saved searches.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-157] The user shall be able to access his search history to be able to redo a search.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8 Analysis Application

4.1.8.1 UI functionalities supporting user stories

[FUA-158] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 53]: As an Authorized User I want to be able to build advanced queries so that I can perform analysis to obtain answers to intelligence questions.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-159] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 54]: As an Authorized User I want to save the results of a query-based analysis so that I can revisit the results at a later time, repeat the analysis, and share the analysis.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-160] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 55]: As an Authorized User I want to perform additional link analysis in ANB on the query-based analysis data set so that I exploit the full functionality of ANB to enhance my analysis.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-161] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 56]: As an Authorized User I want to have tool support to find connection path between entities so that I can investigate if a connection between the entities exist.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-162] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 57]: As an Authorized User I want to perform pattern of life analysis on events so that I can understand historical activity.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-164] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.2 Application Data Set (ADS)

[FUA-166] It shall be possible to perform multiple, consecutive queries to add data to the set of IIEs to Analysis Data Set (ADS). I.e. the user can chose whether to use the result of the new query to augment the ADS or to replace the ADS with the new query result. When a new query is adding to the ADS, any duplicate IIEs

from the multiple queries shall be resolved. Any change to the ADS shall be reflected in all ADS views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-167] In case of BSO data in the ADS, it shall be possible to expand the ADS by adding linked BSOs to a user-selected degree of separation from the original BSO set and dynamically update all ADS Views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-168] It shall be possible to filter the ADS based on IIE types and remove/ hide IIEs of "unwanted" types and dynamically update all ADS View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-169] It shall be possible to filter the ADS based on relationship types and remove/ hide relationships of "unwanted" types and dynamically update all ADS View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-170] It shall be possible to filter the ADS based on a Degree Centrality and remove/ hide IIEs falling outside a Degree Centrality window (defined by a lower and an upper and lower limit) and dynamically update all ADS View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-171] It shall be possible to select individual IIEs from either of the Table View, GeoView, Relationship View, or Timeline View and remove/ hide such IIEs from the ADS and dynamically update all ADS views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-172] It shall be possible to apply a geographical coverage area filter to filter out information from the ADS and dynamically update all ADS views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-173] It shall be possible to filter the ADS based on a time window (e.g. using a time slider UI widget) and remove/ hide IIEs falling outside the of the active time window and dynamically update all ADS views. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-174] It shall be possible to apply temporal interval filters. Supported interval filters shall include: filtering out information for specific months of the year in the Gregorian and/ or in the Islamic calendar, and filtering out information from specific weekdays.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.3 Table Views

[FUA-175] It shall be possible view all common metadata attributes for ADS IIEs in a Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-176] The Analysis Application shall support in-place editing of single fields in the Table View (to correct data mistakes that is preventing or hampering the analysis). It shall be possible to handle the edit as local to the analysis, and it shall also be possible (for an authorized user) to commit the edit back to the INTEL-FS repository.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-676] It shall be possible to calculate centrality values for the data in the ADS and have the centrality values presented in a Table View for all the ADS items where a centrality value can be calculated. The table shall include centrality values for Degree Centralities, Betweenness Centrality, and Closeness Centralities, where the table can be sorted on any of the centrality types and on IIE/ BSO name.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-677] It shall be possible to select any IIE in the table showing centrality values and have the Relationship View centre on this IIE, and highlight the selected IIE in the Relationship View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.4 Relationship Views

[FUA-177] The Analysis Application shall be able to render the entire ADS and the relationships between the ADS IIEs in a Relationship View using the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-178] Items selected in Relationship View shall be displayed/ previewed in the Analysis Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.5 Timeline Views

[FUA-179] The Analysis Application shall use a Timeline View Component with all its features as defined in chapter 2.

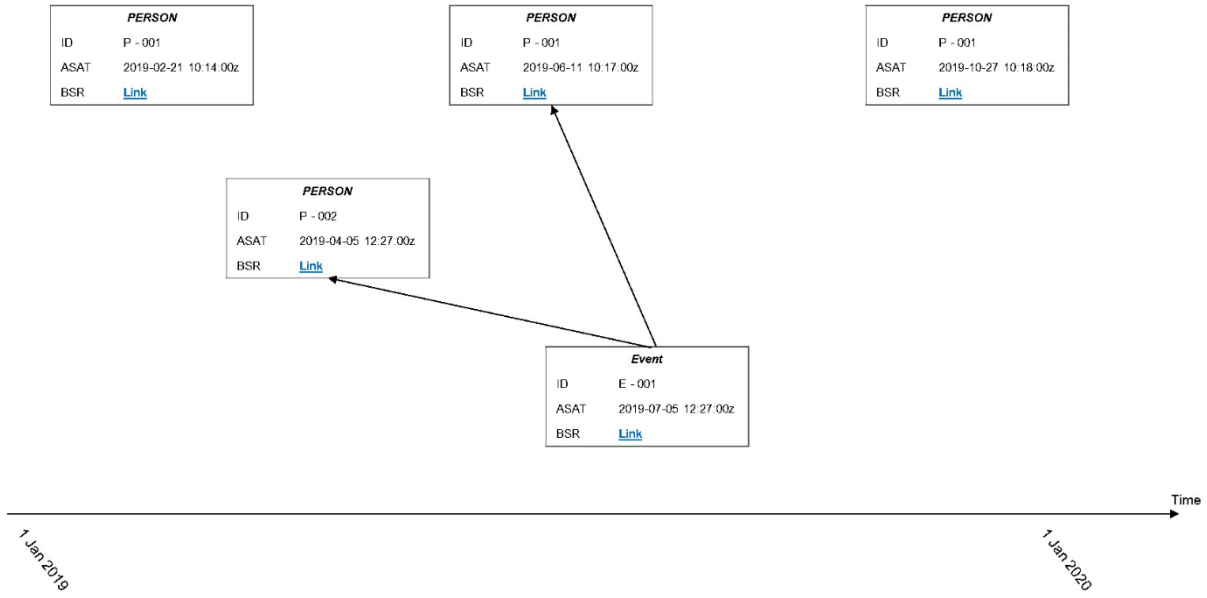
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-180] The Analysis Application shall plot the temporal updates to the IIEs in the ADS. The plot shall include relationships between the objects (e.g. see example in the figure below where relationships drawn between an event and two persons). Normally the BSOs shall be placed on the timeline according to the relevant

status report ASAT time. However, for some BSO types it shall be possible to select the time value to use for the “placing” of the BSO on the timeline; this include for event BSOs the option of selecting between ASAT time and the event start time for placing the event.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Figure 4-3 Example Timeline View



[FUA-680] It shall be possible from within the Timeline View to suppress/ remove IIEs from the view. It shall be possible to select a single or multiple BSOs and remove all updates for the BSO (or BSOs) in the view.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.6 GeoView

[FUA-181] It shall be possible to render the entire ADS and the relationships between the ADS IIEs in GeoView defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-182] The Analysis Application shall be able to display all its data (in the ADS) in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-183] It shall be possible to enable and disable a "dynamic update mode" in the Analysis Application where in enabled mode the Analysis Application dynamically updates GeoView whenever there is an update to any of the entities in the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-184] An Item selected in GeoView shall be displayed/ previewed in the Analysis Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.7 Animation

[FUA-185] It shall be possible to dynamically animate the visualization of the ADS in the GeoView and in the Relationship View and in the Timeline View by dragging a time "handle" in the time slider tool.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-685] During animation, the BSO location on the GeoView shall be the location of the last location update in the status reports. It shall be possible to specify if only 'assessed' reports will be used to update BSO locations or if location from 'contributing' status reports will also be used.

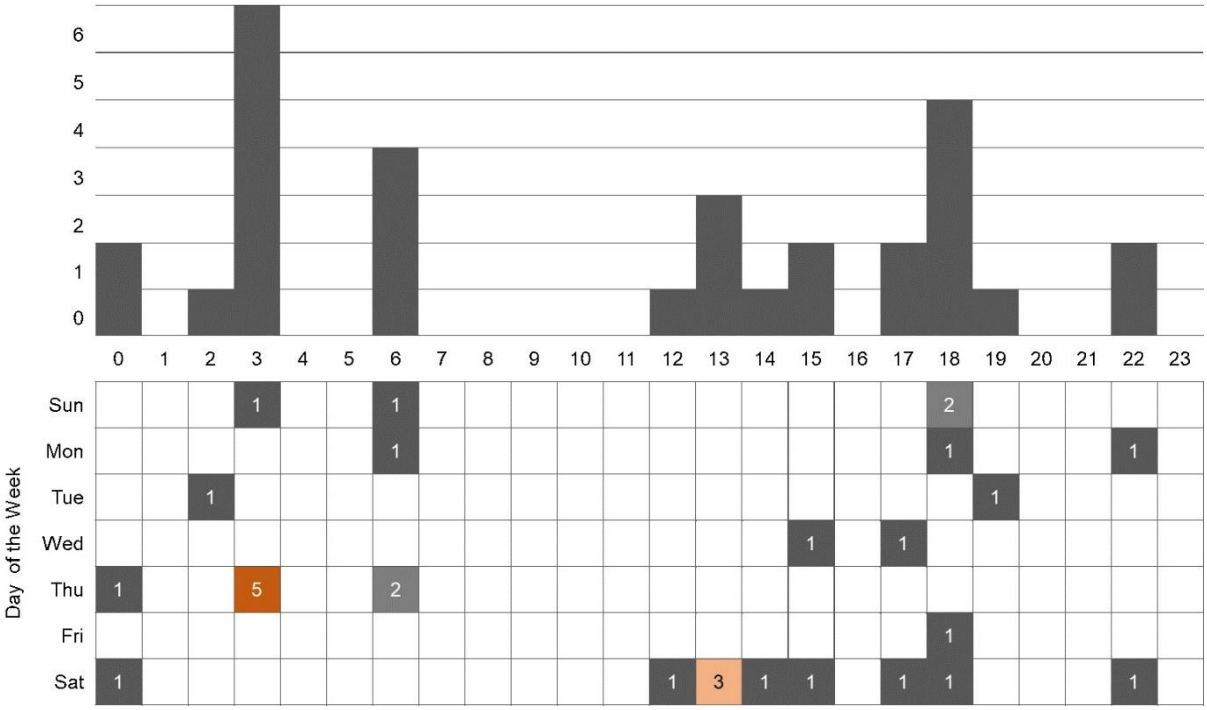
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.8 Pattern of life (PoL) analysis functionalities

[FUA-186] It shall be possible to render/ plot temporal information in a Histogram vs Timeline View as shown in example in the figure below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

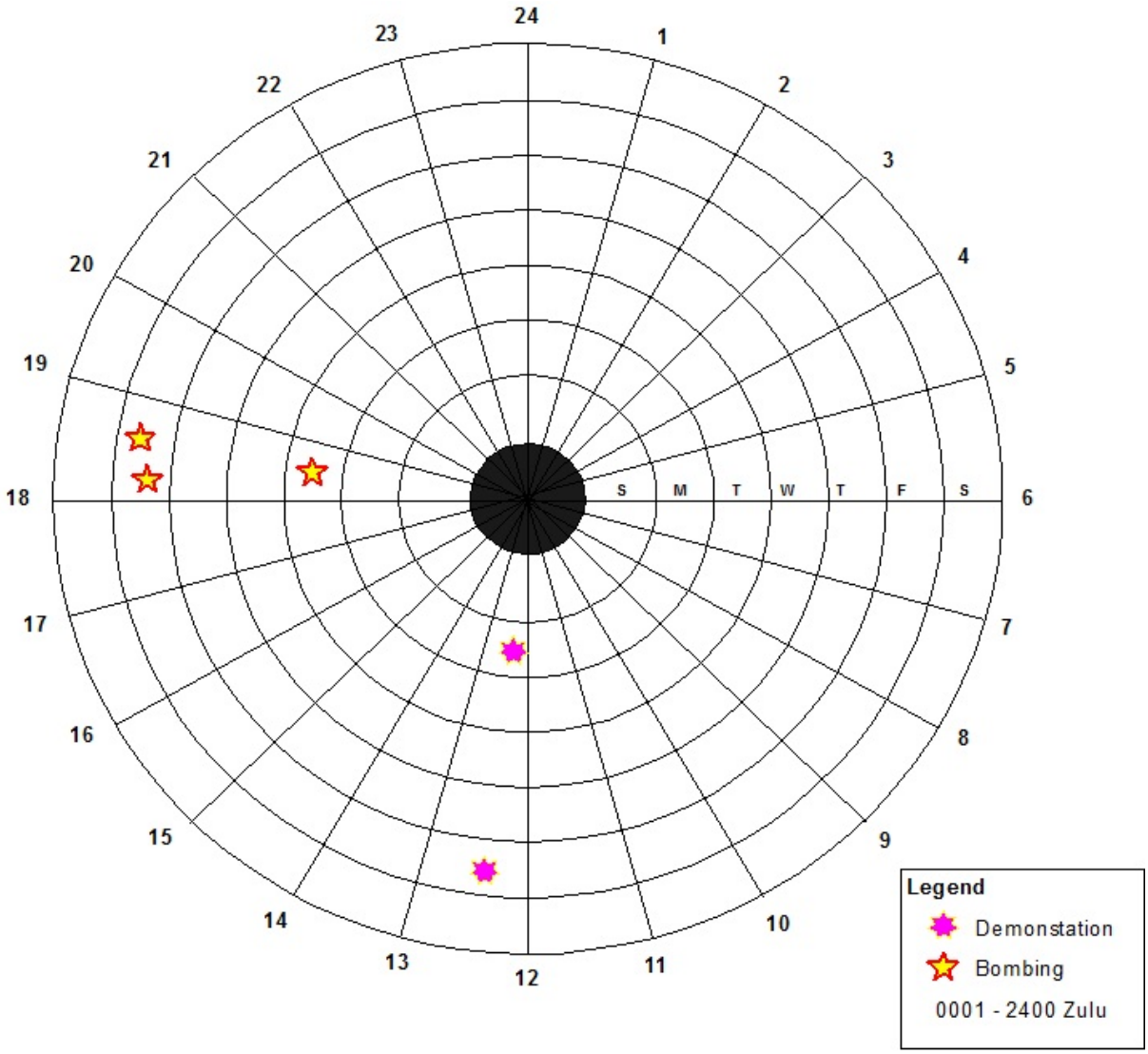
Figure 4-4 Event histogram combined with day of week and time of day



[FUA-187] It shall be possible to render/ plot temporal information in a Polar Coordinate System View as shown in example in the figure below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Figure 4-5 Individual events plotted in a Polar Coordinate System View with day-of-week on the radial axis and time-of-day on the circumference



[FUA-188] It shall be possible to plot any type/ category of data in the Polar Coordinate System View both with and without visually distinguishing between the types/ categories (in the figure above the types are visually distinguishable). When distinguishing types/ categories it shall be able to visually distinguish up to 10 different types/ categories of in the diagram.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-189] It shall be possible from the temporal information to calculate statistics (occurrences by type or other classifier) that is shown in a Radar Plot View as shown in example in the figure below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Figure 4-6 Events plotted in a Radar Chart View with number of occurrences on the radial axis, month of the year on the circumference, and the different plots representing different categories of events

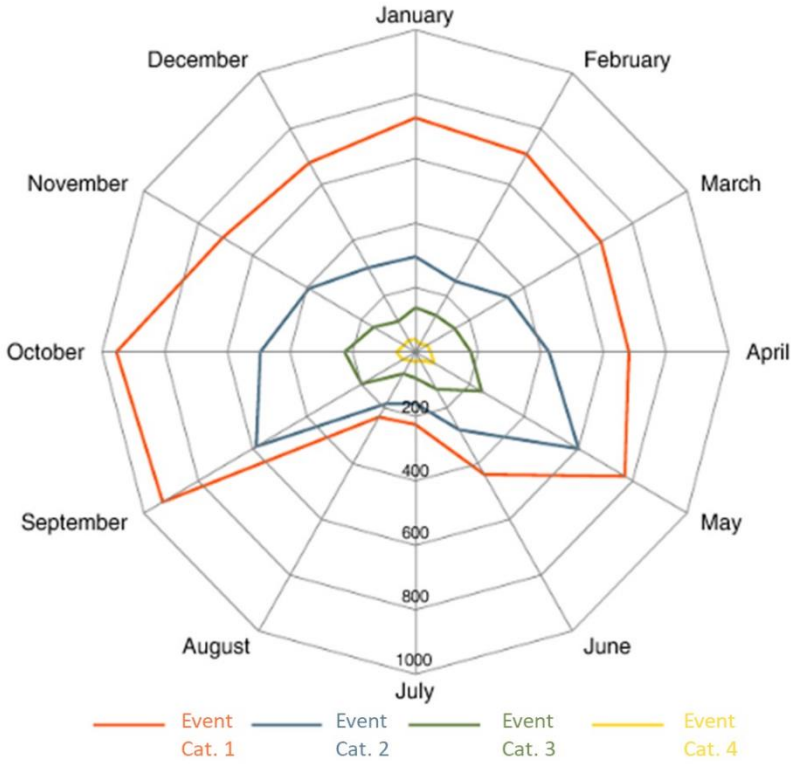
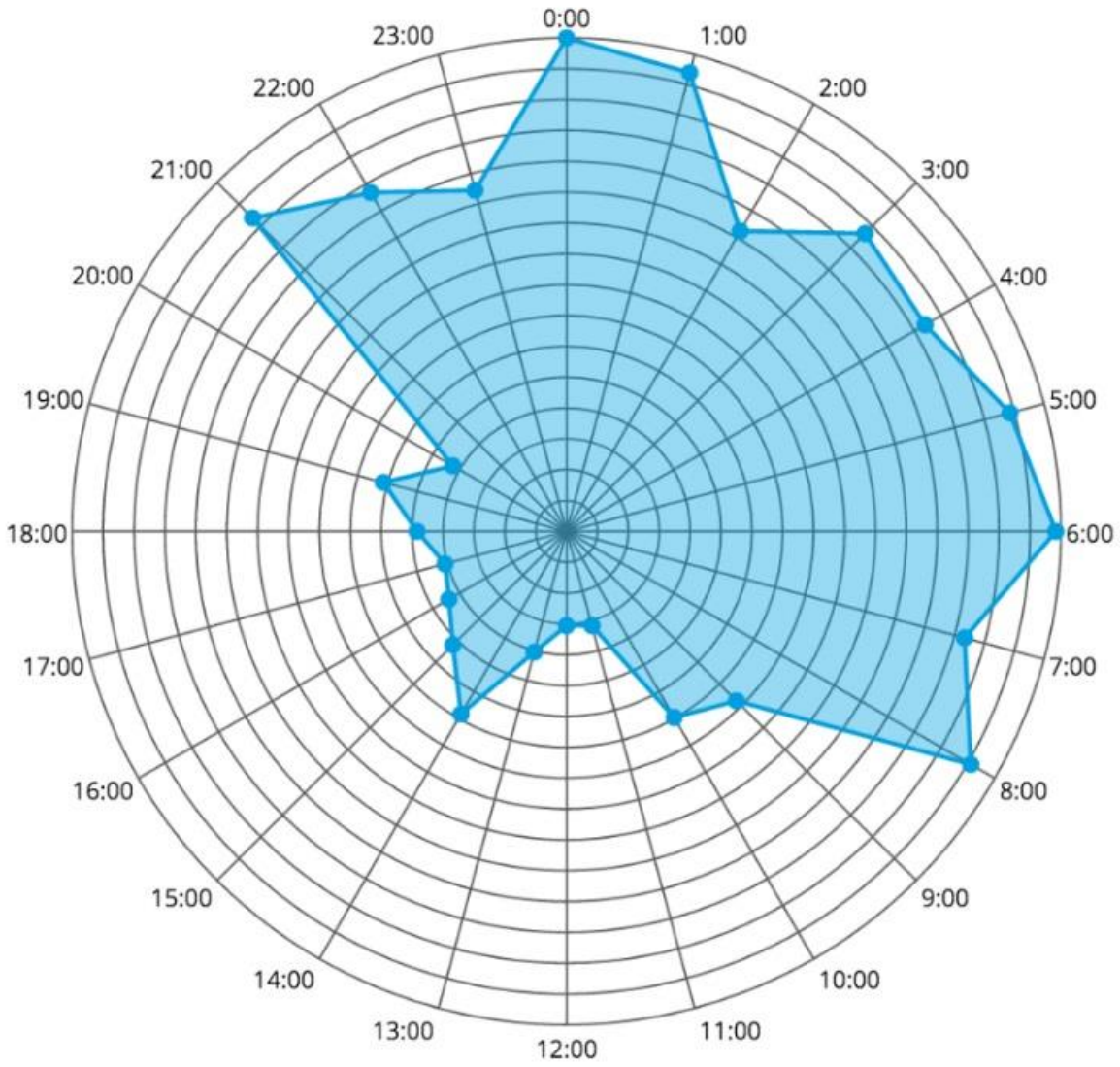


Figure 4-7 Another example of Radar Chart Visualisation of Temporal Data; this time with time-of-day on the circumference



[FUA-190] The three Pattern of Life Views (Histogram, Polar Coordinate System, and Radar Chart) shall have support for using different date-time types and intervals to include hours of the day, days of the week (Sunday through Saturday), days of the year, and months of the year in both Gregorian and Islamic calendar. In particular the Polar Coordinate System shall include the five different radial/circumference coordinate pairs as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-5 Supported radial/circumference coordinate pairs for the Polar Coordinate System diagram

	Radial Value	**Angular Value**
1	Weekday as Sunday through to Saturday	24-hour time of day with decimal precision
2	Weekday as Sunday through to Saturday	Day of the year in Gregorian calendar as 1 January through to 31 December. Note: The diagram shall indicate the month of the year.
3	Weekday as Sunday through to Saturday	Day of the year in Islamic calendar. Note: The diagram shall indicate the month of the year

		(Muḥarram through Dhū al-Ḥijjah
4	Month of the year in Gregorian calendar as 12 discrete values representing January through December	24-hour time of day with decimal precision
5	Month of the year in Islamic calendar as 12 discrete values representing Muḥarram through Dhū al-Ḥijjah	24-hour time of day with decimal precision

[FUA-191] It shall be possible to toggle between the supported date-time types when viewing the temporal data in any of the three pattern of life diagrams (histogram, polar coordinate, and radar chart).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-192] It shall be possible to compute frequency-based heat maps from temporal information (events) and have the heat-map visualized in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-193] It shall be possible to compute and display a concentration-based heat-map based on the geo-locations of the IIEs in the ADS and have the heat-map visualized in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.8.9 Save and export functionalities

[FUA-194] When saving an Analysis it shall be possible to save the visual layout of the Relationship View including manual adjustments and recreate the layout when re-loading the Analysis.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-195] It shall be possible to save the ADS as a set of queries and filter operations such that the Analysis Application is able to recreate the ADS (by re-running the queries and filter operations).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.9 ISR Organization Management Application

[60] In Phase 1 the ISR Organization Management Application is expected to interface directly with the STANAG 4559/AEDP-19 services, see [AEDP-19]. For that reason the normal submit for approval, approve, and publish INTEL-FS workflow is not expected in Phase 1. This will be implemented in Phase 3 when the new I2BE API is available.

[61] When the I2BE API becomes available the ISR Organization entities will be managed as BSOs through the BSO Management Services of the I2BE API

4.1.9.1 UI functionalities supporting user stories

[FUA-196] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US 58]: As an Authorized User I want to

create, update, and delete an operation and/ or a named collection so it can be used as mechanism for INTEL-FS2 to support multiple ongoing operations.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-197] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US 59]: As an Authorized User I want to create, update and delete ISR units and/or ISR systems so that the ISR unit/ ISR system can be tasked appropriately.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-198] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US 61]: As an Authorize User I want to create/ update an ISR ORBAT so Collection Requirements (CR) and collection and exploitation tasks can be distributed to the appropriate ISR units and ISR systems.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-199] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US 62]: As an Authorized User I want to view the details of the ISR ORBAT for my situational awareness.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-201] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.9.2 Integrated search and basic actions on search results

[FUA-202] The ISR Organization Management Application shall include an integrated search function allowing the user to identify Operational Activities, ISR ORBATs, Units, and ISR Systems can subsequently be selected for inspection and editing.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-203] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-6 ISR Organization Management Application integrated search and search results actions

Search result	Supported actions
Operational Activities, ISR ORBATs, Units, and ISR Systems	Single and multi-select items and tag them as soft-deleted

Soft-deleted Operational Activities, ISR ORBATs, Units, and ISR Systems	Single and multi-select items and un-delete them
Operational Activities, ISR ORBATs, Units, and ISR Systems	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
Operational Activities, ISR ORBATs, Units, and ISR Systems in Draft workflow state	Single and multi-select items and submit approval request for them
Operational Activities, ISR ORBATs, Units, and ISR Systems in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
Operational Activities, ISR ORBATs, Units, and ISR Systems in a workflow state of awaiting to be published	Single and multi-select items and publish them
Operational Activities, ISR ORBATs, Units, and ISR Systems in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected entity, obtain rejection reason, open the entity for further editing
Operational Activities, ISR ORBATs, Units, and ISR Systems	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.1.9.3 Application Data Set (ADS)

[FUA-704] It shall be possible to filter the ADS on attributes of the IIEs in the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-705] It shall be possible to apply a geographical coverage area filter to filter out information from the ADSs, and dynamically update all the views of the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.9.4 IIE View/ Entry Panel

[FUA-706] The ISR Organization Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.9.5 Table Views

[FUA-204] The ISR Organization Management Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-205] It shall be possible to view ISR Systems in a Table View where each row represents an ISR System, and the systems attribute values are shown across

multiple columns in the table. The Unit that the ISR System is assigned to shall be included as one of the column attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-206] It shall be possible to view Units in a Table View where each row represents a Unit, and the Unit attribute values are shown across multiple columns in the table.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-707] It shall be possible to select an ISR ORBAT and populate the Table View with all ISR Units in the ISR ORBAT, and by selecting an ISR ORBAT populate the Table View with all ISR Systems in the ISR ORBAT.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-207] It shall be possible from a Table View of Units to create/ add new Units and to edit, in-place in the Table, existing Units.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-208] It shall be possible from a Table View of ISR Systems to create/ add new ISR Systems and to edit, in-place in the Table, existing ISR Systems.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-209] It shall be possible from a Table View of ISR Systems to reassign ISR Systems from one Unit to another by dragging and dropping ISR Systems from one Unit group to another Unit group.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.9.6 Relationship Views

[FUA-210] The ISR Organization Management Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-211] It shall be possible from a Hierarchy (organigram) layout of the ISR ORBAT in the Relationship View to move a Unit's position in the command hierarchy by dragging and dropping a Unit (and its subordinate Units) with the ISR ORBAT hierarchy.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-212] Items selected in Relationship View shall be displayed/ previewed in the ISR Organization Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.9.7 GeoView

[FUA-213] The ISR Organization Management Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-214] The ISR Organization Management Application shall be able to display Units and ISR Systems the GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-215] An item selected in GeoView shall be displayed/ previewed in the ISR Organization Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10 Intelligence Requirements (IR) Management (IRM) Application

4.1.10.1 UI functionalities supporting user stories

[FUA-216] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 64]: As an Authorized User I want to be able to create and update PIRs, SIRs, EEIs, and Indicators to guide/ direct the intelligence collection process.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-217] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 65]: As an Authorized User I want to track the status of PIRs, SIRs, EEIs and indicators so I can understand whether they are being addressed or not.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-218] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 66]: As an Authorized User I want to create/ update an Intelligence Collection Plan (ICP) so I can capture all related PIRs, SIRs, EEIs, and indicators relevant to an operation.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-219] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 67]: As an Authorized User I want to create/ update an RFI so that I can formulate a question to be answered by a higher, lower, adjacent command, or by a nation to address my intelligence gap.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-220] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 69]: As an Authorized User I want to forward a RFI that cannot be

answered within my own organization to a different organization so that the RFI can be answered.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-221] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 70]: As an Authorized User I want to update the status of an RFI to control the workflow of the RFI (e.g. to cancel RFIs that will no longer provide any value).

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-222] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 71]: As an Authorized User I want to be able to view the status of the RFIs to check that the RFIs are being actioned.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-223] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 72]: As an Authorized User I want to create/ update a response to the RFI so the RFI originator can receive the relevant intelligence to answer the intelligence gap.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-224] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 73]: As an Authorized User I want to transform RFI to a readable format (PDF) so that the RFI can be shared with users not having access to INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-225] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.2 Integrated search and basic actions on search results

[FUA-226] The IRM Application shall include an integrated search function that supports searching for ICPs, PIRs, SIRs, EEIs, Indicators, RFIs, RFI responses, NAIs, Products, BSOs and Targets in different workflow states (see NATO::JISR::Metadata::PublishedStatusType in [INTEL-FS2-InformationModel]). It shall be possible to add all search results to the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-227] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-7 IR Management Application integrated search and search results actions

Search result	Supported actions
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses	Single and multi-select items and tag them as soft-deleted
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses	Single and multi-select items and un-delete them
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses	Single and multi-select items and hard-delete (purge) them
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses in 'Draft' workflow state	Single and multi-select items and submit approval request for them
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses in a workflow state of awaiting to be published	Single and multi-select items and publish them
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected entity, obtain rejection reason, open the entity for further editing
PIRs, SIRs, EEIs, Indicators, RFIs, and RFI Responses	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.1.10.3 Application Data Set (ADS)

[FUA-228] It shall be possible to filter the ADS on attributes of the IIEs in the ADS, including constraining the ADS to a specific operation or named collection, to a specific ICP, originator of the data, status values of IRs and RFIs, etc. and dynamically update all the views of the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-229] It shall be possible to apply a geographical coverage area filter to filter out information from the ADSs, and dynamically update all the views of the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-230] It shall be possible to filter the ADS based on a time window (e.g. using a time slider UI widget) and remove/ hide IIEs falling outside the of the active time window (e.g. using Last Report Date and latest time information is of value (LTIOV) attributes, BSO ASAT times, product modification times, etc.) and dynamically update all the views of the ADS. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-231] It shall be possible to save search + filter settings as named user-specific filters for the IRM Application to be able to recreate the ADS.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.4 IIE View/ Entry Panel

[FUA-731] The IRM Management Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.5 Table Views

[FUA-232] The IRM Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-233] It shall be possible to view a set of IRs in a Table View where each row represents an IR, and the IR attribute values are shown across multiple columns in the table. The operation or named collection, the ICP, the indicator (in case a IR is linked to more than one indicator then the indicator shall be delimited within the same column, etc. shall all be included as column attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-234] It shall be possible to select between a set of standard and predefined layouts of the Table View (the purpose of this is to allow the user to quickly organize the Table View for the task at hand; e.g. there might be a particular layout for the export to comma-separated values (CSV) files, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-235] It shall be possible to edit (including deleting) IRs directly in a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-236] It shall be possible to view a set of Indicators in an (Indicator) Table View where each row represents an Indicator and the Indicator attribute values are shown across multiple columns in the table. The IR that the Indicator is linked to, and all other IIEs of different types that the Indicator is linked to shall all be included as column attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-237] It shall be possible to select the IIEs the Indicator is linked to within the Table View and have all the details of the IIE presented previewed in a dialog window.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-238] It shall be possible to view a set of RFIs in a Table View where each row represents an RFI, and the RFI attribute values are shown across multiple

columns in the table. The IR that the RFI is linked to shall be included as one of the column attributes. RFI responses shall also be reported on in each row.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-239] It shall be possible display the RFI responses grouped by RFIs in a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-240] It shall be possible to export the content of the Table View to a file in XML format.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.6 Relationships View

[FUA-241] The IRM Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-242] The IRM Application shall be able to display an ICP with its PIRs, SIRs, EEIs and indicators in the Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-243] The IRM Application shall be able to display RFIs, RFI responses and EEIs in the Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-244] It shall be possible to use Degree Centrality filtering to filter out all RFIs with more than a specified number of RFI responses (e.g. to show only unanswered RFIs in the Relationship View), and to filter out RFIs with less than a specified number of RFI responses.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-245] Items selected in Relationship View shall be displayed/ previewed in the IRM Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.7 Gantt Views

[FUA-246] The IRM Application Gant View shall be implemented using, or including, the Gant View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-247] It shall be possible to visualize the selected set of IRs in a Gantt View grouped by IR hierarchy (PIR/SIR/EEI) where also linked Indicators at all levels in the IR hierarchy is visualized.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-747] It shall be possible to delete an IR in an IR hierarchy and have also all child IRs of the IR deleted (e.g. by deleting a PIR, all SIRs linked to that PIR shall be deleted, and all EEIs linked to these SIRs are also deleted), pending that the child IRs are not linked to any other superior IRs (e.g. EEIs can be typically reused in different SIRs that may be subordinate to different PIRs).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-248] It shall be possible to visualize the selected set of IRs in the Gantt View grouped by multiple ICPs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-249] It shall be possible when visualizing the selected IRs in the Gantt View to also present information on the IRs' associated BSOs and Targets.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-250] It shall be possible within the timeline part of the Gantt View to display IR time-based attributes (e.g. Latest Report Time and LTIOV as milestone symbols).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-251] The Gantt View shall show the RFIs (and RFI responses) grouped by IRs (when the RFI is linked to an IR) and where the IR hierarchy (PIR/SIR/EEI) is also shown/depicted. RFIs with no IR association shall be grouped under a "no IR" group. RFI responses shall be grouped under their respective RFIs in the Gantt View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-252] It shall be possible within the timeline part of the Gantt View to display status value changes as annotated events/ milestones.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.8 GeoView

[FUA-253] The IRM Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-254] The IRM Application shall be able to show PIRs, SIRs, EEI, indicators, and RFIs in GeoView where status values of the IRs and RFIs can be used to select how they are rendered (options to include symbols vs shapes and colour coding).

E.g. using colours based on the RFIs status values (SUBMITTED, RESUBMITTED, FULFILLED or STOPPED)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-255] The IRM Application shall display geographical areas of interests, BSOs, Targets, and Products linked to IRs and/ or RFIs in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-256] Items selected in GeoView shall be displayed/ previewed in the IRM Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.9 Chart Views (statistical analysis)

[FUA-257] The IRM Application Chart View shall use the Chart View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-258] From the set of RFIs identified through search and filtering operations it shall be possible to plot Number of RFIs (in the set) by Status values, and by Organization, as bar charts and pie charts.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-259] From the set of RFIs identified through search and filtering operations it shall be possible to plot Number of RFI Responses (in the set) by Status, and by Organization, as bar charts and pie charts.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-260] It shall be possible to turn developed charts into named templates to be reused again and again to reproduce statistical diagrams with the same layout for other sets of RFIs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.10.10 Document View

[FUA-261] The IRM Application Document View shall be able to collect all information about an RFI (including all ForAction information and RFI responses) and present the information in a readable form. It shall be possible to export this RFI document view to a PDF file.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.11 Collection Requirement (CR) Management (CRM) Application

[66] In Phase 1 the CRM Application is expected to interface directly with the STANAG 4559/AEDP-19 services. For that reason the normal submit for approval, approve, and

publish INTEL-FS workflow is not expected in Phase 1. This will be implemented in Phase 3 when the new I2BE API is available.

[67] Phase 1 will only deliver interim CR functionality based on the INTEL-FS Spiral 1 ISR Synch Mechanism, and fulfilment of User Stories will first be achieved in Phase 2 and Phase 3.

4.1.11.1 Basic CR functionalities using STANAG 4559 services

[FUA-283] The CRM Application shall enable the user to create ISR Requests (i.e. a CR with addressee information) and submit these to the STANAG 4559/AEDP-19 workflow services.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-284] The CRM Application shall enable the user to link ISR Requests to resulting exploitation products using the STANAG 4559/AEDP-19 workflow services.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-285] The CRM Application shall enable the user to view the status of ISR Requests using the STANAG 4559/AEDP-19 workflow services.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.1.12 Collection Operations Management (COM) Application

[69] The COM Application will be implemented in Phase 2 and Phase 3.

4.2 Phase 2 – New user interfaces

[70] In anticipation that the I2BE backend services are not available at a time that when the Contractor has completed Phase 1, the work Phase 2 will continue evolving the INTEL-FS2 User Interfaces by implementing new UI functionality against mock backends.

4.2.1 Dashboard Application

[73] No feature changes for the Dashboard Application is expected in Phase 2.

4.2.2 Product Management Application

[74] No feature changes for the Product Management Application is expected in Phase 2.

4.2.3 Battlespace Object (BSO) Management Application

[75] No feature changes for the BSO Management Application is expected in Phase 2.

4.2.4 Targets Application (new implementation)

[76] The Targets Application will be implemented in Phase 3.

4.2.5 Intelligence Situation Application

[77] No feature changes for the Intelligence Situation Application is expected in Phase 2.

4.2.6 BM JIPOE Application (using mock backend)

[78] The BM JIPOE Application will include all the functionality of the Intelligence Situation Application, and the BMF JIPOE functionality may be implemented as an integrated part of

the Intelligence Situation Application or as a separate application that includes all of the features from the Intelligence Situation Application.

[79] The initial BM JIPOE Application user interface functionality will be implemented against mock backend as it is assumed that the I2BE API is not ready at the start-up of this work.

4.2.6.1 UI functionalities supporting user stories

[FUA-286] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 42]: As an Authorized User I want to create/ update a multi-criteria decision analysis (MCDA) comparison framework so that I can rank the different OPFOR COAs (e.g. as most likely and most dangerous).

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.2.6.2 Dynamic Intelligence Report (DIR) editor and message publisher

[80] From [APP11D-DIR]: The DIR (Dynamic Intelligence Report) is used for the dissemination of TBM (Theatre Ballistic Missile) threat data updates.

[FUA-288] The BM JIPOE Application shall provide a tool or editor that enable the user to create Dynamic Intelligence Reports with the information content as specified in [APP11D-DIR]. The DIR, as an [APP11D-DIR] XML message, shall be posted onto the SOA & IdM Platform.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.2.7 Search Application

[81] No feature changes for the Search Application is expected in Phase 2.

4.2.8 Analysis Application

[82] No feature changes for the Analysis Application is expected in Phase 2.

4.2.9 ISR Organization Management Application

[83] No feature changes for the ISR Organization Management Application is expected in Phase 2.

4.2.10 IRM Application (using mock backend)

[84] The IRM Application's user interface functionality will in Phase 2 be augmented by using a mock backend.

4.2.10.1 UI functionalities supporting user stories

[FUA-291] The IRM Application shall implement functionalities to fulfil the acceptance criteria of [US 68]: As an Authorized User I want to attach an effect/ task verb to the RFI so that I can specify what is required from the tasked unit and subsequently support the MOE analysis post completion.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.2.10.2 GeoView (enhanced)

[FUA-292] When using geometric shapes in the GeoView then it shall be possible, from a palette of different shapes, to select shapes to be used for RFIs with different effects/ tasks verb.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.2.10.3 Chart Views (enhanced)

[FUA-293] From the set of RFIs identified through search and filtering operations it shall in the Chart View be possible to plot Number of RFIs (in the set) by Status values, and by effect/ task verb, by degree of effectiveness, etc. as bar charts and pie charts.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.2.11 CRM Application (using mock backend)

[86] The purpose of augmenting the CRM Application's user interface functionality in Phase 2 against a mock backend is to focus on (and gain more time to) developing good user experience (UX) for the more elaborate and complex features of the CR Management Application. Implementation of the full UI functionality for the CR Management Application will be done in Phase 3.

4.2.11.1 UI functionalities supporting user stories

[FUA-294] The CRM Application shall implement functionalities to fulfil the acceptance criteria of [US 74]: As an Authorized User I want to create a prioritization scheme so all CRs can be ordered in terms of priority ranking based on a prescribed criteria and weighting.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-295] The CRM Application shall implement functionalities to fulfil the acceptance criteria of [US 75]: As an Authorized User I want to create a CR so it can be prioritised and assigned for collection and exploitation.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.2.11.2 IIE View/ Entry Panel

[FUA-297] The CRM Application shall implement data entry forms (using the IIE View/ Entry Panel as defined in chapter 2) that enables the user to enter/ update all attributes of a CR and related CR workflow information (For Action, For Information, etc.) as defined by [INTEL-FS2-InformationModel].

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.2.12 COM Application (using mock backend)

[87] The initial COM Application user interface functionality will be implemented against mock backend as it is assumed that the I2BE API is not ready at the start-up of this work.

4.2.12.1 UI functionalities supporting user stories

[FUA-298] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 82]: As an Authorized User I want to create/ update a collection or exploitation task so the ISR systems under my command receives clear tasking.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.2.12.2 IIE View/ Entry Panel

[FUA-300] The COM Application shall implement data entry forms (using the IIE View/ Entry Panel as defined in chapter 2) that enables the user to enter/ update all attributes of a Collection and Exploitation Plan (CXP) as defined by [INTEL-FS2-InformationModel].

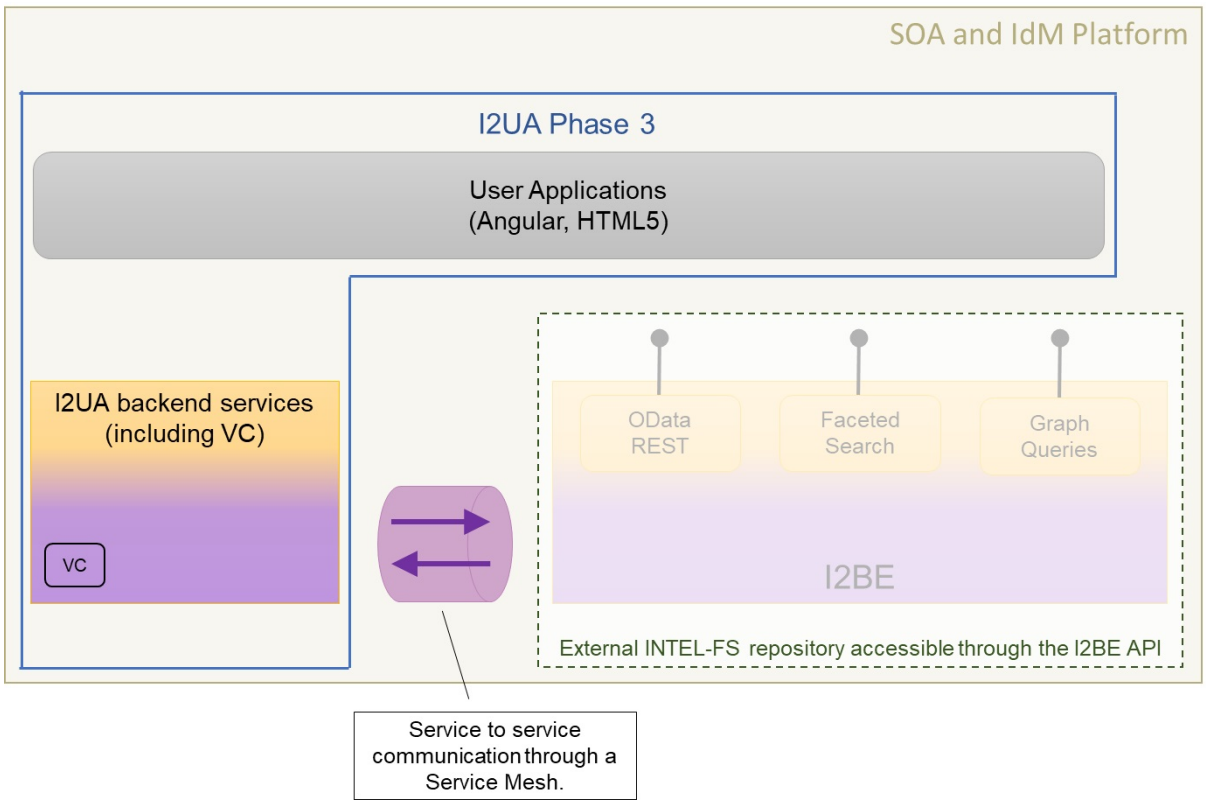
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3 Phase 3 – Full integration with new backend API

[88] In phase 3, the I2UA will stop using the legacy INTEL-FS Spiral 1 data repository and switch over to accessing an externally provided intelligence repository. The new, and externally provided data repository, will be accessible through an application programming interface (API), see figure below. The externally provided data repository is referred to as INTEL-FS2 Backend (I2BE).

[89] The I2UA and I2BE will be hosted on the same SOA and IdM platform and whenever the I2UA backend needs to communicate with the I2BE this will be done through a Service Mesh capability provided by the SOA & IdM Platform (see [SOA-IdM]).

Figure 4-8 Phase 3 - I2UA integrated with external repository over I2BE API



[90] The I2BE API will, as shown in in the figure above, include services for faceted search and graph queries I addition to a OData REST interface to all IIEs.

4.3.1 Dashboard Application (new backend)

4.3.1.1 UI functionalities supporting user stories

[FUA-301] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 12]: As an Authorized User I want to configure INTEL-FS2 so that I receive e-mail notifications (in my normal email tool; i.e. Microsoft Outlook) when new data that I am interested in is entered to INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-302] The Dashboard Application shall implement functionalities to fulfil the acceptance criteria of [US 14]: As an Authorized User I want to configure INTEL-FS2 so that I receive notifications to my Dashboard Application when new data that I am interested in is entered to INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.1.2 UI integrated with new backend (no regression)

[FUA-303] The I2UA with Dashboard Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented

functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.1.3 Messaging with I2BE

[93] The I2BE System Administrator will at times publish notification message (e.g. for planned outages). The I2BE Services may also submit notification messages of interest to the I2UA

[FUA-304] The I2UA with Dashboard Application shall implement Service Mesh service-to-service messaging with the I2BE. I.e. I2UA server-side services shall be able to send and receive messages from the I2BE.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-305] The I2UA shall when receiving such notification messages from the I2BE push the notifications (when relevant) to the appropriate users so that the messages appear in their application user interface the messages (e.g. using WebSocket) and appear on the Dashboard.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-306] The I2UA shall place a visual indication of a received notification in all of I2UA user applications (not only in the Dashboard Application), and make the details of the notification available on the Dashboard Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-307] It shall be possible to create and/or update (i.e. subscribe to) notifications from saved and named searches and queries such that any new results from such searches or queries will be sent as a notification to the user. It shall also be possible to remove/ delete previously defined notification subscriptions.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-308] It shall be possible to associate notifications with user-defined categories so that the notifications in its Table View can be grouped by the categories, and collapse/ expand notification categories to control what is being displayed on the screen.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.2 Products Management Application (new backend)

4.3.2.1 UI integrated with new backend (no regression)

[FUA-309] The I2UA with Products Management Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.2.2 Video Player

[95] To play videos the I2UA will consume a video conditioning service hosted by the I2BE that will synchronously stream the video and the video metadata in different channels

[96] Web-client source code that implements the video player can be provided as PFI to the Contractor

[FUA-310] The Products Management Application shall be able to play STANAG 4609 videos and support playing, pausing, timeline scrubbing forward and backward in the video to position the video at a new start point for the video playback.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-311] The Products Management Application shall when playing STANAG 4609 videos display, and dynamically update, metadata received in the video stream. The metadata that shall be displayed and dynamically updated shall as a minimum include (if included in the video stream) the metadata listed in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-8 Video metadata to be displayed

1	Security classification of the video
2	Sensor platform identification
3	Latest timestamp received
4	Latest geographical coordinates for the video footprint
5	Latest geographical position of the sensor platform

[FUA-312] The Products Management Application shall when playing STANAG 4609 videos synchronously display the video frame footprint (ground coverage area) and the video sensor platform in GeoView dynamically updating the footprint and sensor position.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.3 Battlespace Object (BSO) Management Application (new backend)

4.3.3.1 UI functionalities supporting user stories

[FUA-313] The BSO Management Application shall implement functionalities to fulfil the acceptance criteria of [US 20]: As an Authorized User I want to be able to link to EOB data and associated electronic warfare derived TECHINT so that a complete understanding across all components of an opposing force (OPFOR) ORBAT can be obtained.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.3.2 UI integrated with new backend (no regression)

[FUA-314] The I2UA with BSO Management Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented

functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.3.3 UI extended with support for BM BSO extensions

[FUA-315] All user interfaces of the BSO Management Application shall be updated/ enhanced so support management of BSOs and BSRs on all BM-related BSOs and BSRs as defined [INTEL-FS2-InformationModel] (e.g. BM equipment, BM equipment types (BM TECHINT), BM historical firing events (HFE), BM units, BM locations, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-316] It shall be possible to link BM ORBAT holdings with BM TECHINT data as in accordance with [INTEL-FS2-InformationModel].

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-317] Relevant user interfaces of the BSO Management Application shall be updated/ enhanced so support viewing of BSOs and BSRs on all electronic order of battle (EOB) related BSOs and BSRs as defined [INTEL-FS2-InformationModel].

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.3.4 EOB equipment and EOB-associated equipment types functionalities

[FUA-318] The BSO Management Application integrated search function shall be enhanced to support searching for EOB equipment and EOB-associated equipment types.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-319] The BSO Management Application filtering functionality shall be enhanced to support filtering on an attributes of EOB equipment and EOB-associated equipment types as defined in [INTEL-FS2-InformationModel].

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.4 Targets Application

[97] The different target lists are created and maintained by the NJTS system, and are dynamically made available to the I2UA through the new INTEL-FS2 (I2BE) backend through the I2BE API

4.3.4.1 UI functionalities supporting user stories

[FUA-320] The Targets Application shall implement functionalities to fulfil the acceptance criteria of [US 30]: As an Authorized User I want to view targets from various types of target lists superimposed on a map so that I improve my situational awareness of BSOs relevant to me.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-321] The Targets Application shall implement functionalities to fulfil the acceptance criteria of [US 31]: As an Authorized User I want to view targeting attributes of the individual targets/ BSOs from the various target lists so that I improve my situational awareness of targets/ BSOs relevant to me.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-322] The Targets Application shall implement functionalities to fulfil the acceptance criteria of [US 32]: As an Authorized User I want to improve and enhance information on targets/ BSOs so that I can provide support to targeting.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-324] The Targets Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.4.2 Integrated search and basic actions on search results

[FUA-326] The Targets Application shall include an integrated search function allowing the user to identify target lists that can subsequently be viewed.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-327] The integrated search function shall be able to find information associated with targets in the target list like BSOs, battle damage assessment (BDA) reports, collection requirements (CR), and ISR Systems tasked to the linked CR.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-328] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-9 Targets Application integrated search and search results actions

Search result	Supported actions
BSOs	Single and multi-select items and add to, or remove from, a Candidate Target List or a No-strike List

4.3.4.3 Application Data Set (ADS) management functionalities

[FUA-329] It shall be possible to filter the set of targets to be viewed on specific target lists, Basic Encyclopaedia (BE) Number, target identifier, etc. and hide filtered-out targets (and target lists), and dynamically update the information/ content in the different target views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.4.4 IIE View/ Entry Panel

[FUA-829] The Targets Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.4.5 Table Views

[FUA-330] The Targets Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-331] It shall be possible to view a set of targets in a Table View where each row represents a target, and the target attribute values are shown across multiple columns in the table. The Target List that the target is linked to shall be included as a column attribute.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.4.6 Relationships View

[FUA-332] The Targets Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-333] The Targets Application shall have functionality for selecting a particular target list and have all targets on that list displayed in a Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-334] The Targets Application shall have functionality for selecting a No-strike List and have all BSOs on that list displayed in a Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-335] The Targets Application shall have functionality for selecting a Candidate Target List and have all BSOs on that list displayed in a Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-336] Items selected in Relationship View shall be displayed/ previewed in the Targets Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.4.7 GeoView

[FUA-337] The Targets Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-338] The Targets Application shall have functionality for selecting a particular target list and have all targets on that list displayed and highlighted in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-339] The Targets Application shall have functionality for selecting a No-strike List and have all BSOs on that list displayed and highlighted in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-340] The Targets Application shall have functionality for selecting a Candidate Target List and have all BSOs on that list displayed and highlighted in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-341] Items selected in GeoView shall be displayed/ previewed in the Targets Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.5 Intelligence Situation Application (new backend)

4.3.5.1 UI integrated with new backend (no regression)

[FUA-342] The I2UA with Intelligence Situation Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6 BM JIPOE Application (new backend)

4.3.6.1 UI functionalities supporting user stories

[FUA-343] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 36]: As an Authorized User I want to create/ update areas, so that I can confine/ focus my operating environment (OE) analysis.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-344] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 37]: As an Authorized User I want to create/ update a

named collection for the OE, so that I can establish a grouping of the information for the collaborative JIPOE process.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-345] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 38]: As an Authorized User I want to organize information items in overlays to support multiple analyses of the OE.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-346] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 39]: As an Authorized User I want to exploit a multitude of overlays so that I can evaluate the OE.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-347] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 40]: As an Authorized User I want to create/ update actors (e.g. Nations of Concern), so that I can include actor analysis into the JIPOE process.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-348] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 41]: As an Authorized User I want to view the actor information in different views to support my analysis of the actor.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-349] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 43]: As an Authorized User I want to be able to create/ update and define OPFOR BM COAs so that these can subsequently be used for OPFOR BM COA comparisons and OPFOR BM COA rankings.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-350] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 44]: As an Authorized User I want to be able to compare OPFOR BM COAs so these can be ranked in importance (e.g. most likely OPFOR BM COA and most dangerous OPFOR BM COA).

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-351] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 45]: As an Authorized User I want to assess OPFOR BM COA predictions against actual observations to subsequently improve my OPFOR BM COA predictions.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-352] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 46]: As an Authorized User I want to use new

information that can be extracted from HFEs to update my understanding of the opposing BM force.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-353] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 47]: As an Authorized User I want to fill my intelligence gaps to support the BM JIPOE process.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-355] The BM JIPOE Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.2 UI integrated with new backend (no regression)

[FUA-356] The I2UA with the BM JIPOE Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.3 Create and/ or update functionalities

[FUA-358] The BM JIPOE Application shall when creating BSRs always link these to a COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[99] Note: By creating BSRs in the context of COAs these status report are to be considered predictions and not real observations.

4.3.6.4 Integrated search and basic actions on search results

[FUA-359] The BM JIPOE Application shall include an integrated search function allowing the user to identify Operation Environment Evaluations (OE), Actors Evaluations, Courses of Action (COA), Areas at Risk (AAR), all BSO types, products, PIRs, SIRs, EEIs, RFIs, CR, BM OPFOR Comparison Records, etc.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-360] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-10 BM JIPOE Application integrated search and search results actions

Search result	Supported actions

area of intelligence interest (AOII), area of interest (AOI), area of intelligence responsibility (AOIR), BM OPFOR ORBAT, BM operation areas (BMOA), named area of interest (NAI), indicators, CRs, named collections, overlays, actors, threat analysis, OPFOR COA assessment criteria, OPFOR BM COA, asset lists, BSRs, BM OPFOR Comparison Records	Single and multi-select items and tag them as soft-deleted
IIEs managed within the application	Single and multi-select items and un-delete them
IIEs managed within the application	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
IIEs managed within the application in Draft workflow state	Single and multi-select items and submit approval request for them
IIEs managed within the application in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
IIEs managed within the application in a workflow state of awaiting to be published	Single and multi-select items and publish them
IIEs managed within the application in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected entity, obtain rejection reason, open the entity for further editing
IIEs managed within the application	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.3.6.5 Application Data Set (ADS)

[FUA-361] It shall be possible to perform multiple, consecutive queries to add data to the ADS. I.e. the user can chose whether to use the result of the new query to augment or replace the content of the application data set. When a new query is adding to the content of the data set, any duplicate IIEs from the multiple queries shall be resolved. Any change to the data set shall be reflected in all the application views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-362] It shall be possible search for an actor and expand all the information that is linked to the actor and add the actor and its linked information added to a BM JIPOE data set.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-363] It shall be possible to search for all HFEs associated with a particular BMOA (or with multiple BMOAs) and add to a BM JIPOE data set.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-364] It shall be possible to apply a geographical coverage area filter to filter out information from the BM JIPOE data set, and dynamically update the data set views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-365] It shall be possible to filter the BM JIPOE data set based on the linkage to a set of user-specified nodes and update the data set views. E.g. the user can select some BMOAs and reduce the data set to IIEs that is linked to the selected BMOAs, the user can select some assets and reduce the data set to IIEs linked to those assets, the user can select Areas of Intelligence Interest (AII) and Areas of Intelligence Responsibility (AIR) and reduce the data set to IIEs linked to those AIIs and AIRs, etc.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-366] It shall be possible to filter the BM JIPOE data set based on IIE types, IIE attributes and associations to other IIEs (i.e. using graph-oriented queries) and remove/ hide "unwanted" IIEs and dynamically update the data set views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-367] It shall be possible to filter the BM JIPOE data set based on a time window (e.g. using a time slider UI widget) and remove/ hide IIEs falling outside the of the active time window and dynamically update the data set views. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-368] The BM JIPOE Application shall be able to define data sets for multi-criteria decision analysis (MCDA) comparisons.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.6 Application-supported assessments

[FUA-867] The BM JIPOE Application shall be able to calculate associations between an OPFOR BM HFE and BMOAs by comparing the smallest reported Estimated Launch Point error ellipse, the reported or correlated BM Type and the correlated Trajectory Type with BMOAs, expected BM Types and expected Trajectory Types.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-868] The BM JIPOE Application shall calculate associations between an OPFOR BM HFEs and Assets based on the smallest reported Predicted Impact Point error ellipse and Asset areas or locations.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-369] The BM JIPOE Application shall be able to calculate a total score for BM OPFOR targeting likelihood for each military and non-military asset type, and store the score values for the assets.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.7 IIE View/ Entry Panel

[FUA-869] The BM JIPOE Application shall include an IIE View/ Entry Panel as defined in chapter 2 to display and edit IIEs managed by the application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.8 Table Views

[FUA-370] The BM JIPOE Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-371] It shall be possible view and edit all common metadata attributes for IIEs in the ADS in a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-372] It shall be possible load Asset Lists into a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-872] It shall be possible to load AARs into a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-873] It shall be possible to load a BM OPFOR COA Comparison Record into a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-373] It shall be possible to compare, the observed operational tempo for a BMOA with the expected operational tempo in a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-374] It shall be possible to present threats to assets in a Table View where each row represent an asset, and each column identify a threat (i.e. a red BSO) to that asset.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.9 Relationship Views

[FUA-375] The BM JIPOE Application shall be able to render the entire BM JIPOE Data set in a Relationship View where this view is implemented using the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-376] Items selected in Relationship View shall be displayed/ previewed in the BM JIPOE Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.10 GeoView

[FUA-377] The BM JIPOE Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-378] The BM JIPOE Application shall be able to visualize the entire ADS including all parts of the COAs (e.g. AARs, BMOAs, etc.) in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-379] The BM JIPOE Application shall be able to identify HFEs that are not associated with any BMOAs and highlight these in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-380] The BM JIPOE Application shall be able to identify HFEs that have a different BM type to what is expected for the associated BMOA and highlight these in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-880] The BM JIPOE Application shall highlight OPFOR BM HFEs which have a different Trajectory Type to what is expected for the BM Type when they are displayed.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-881] The BM JIPOE Application shall display all OPFOR BM HFEs in the ADS in the GeoView highlighting events which do not associate with at least one asset type in the expected OPFOR BM Targeting Strategy.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-381] The BM JIPOE Application shall be able to draw multiple parameterized range rings for BSOs (launchers) in the BM JIPOE data set (pulling the parameters for the rings from BSO TECHINT).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-382] The BM JIPOE Application shall be able to load asset lists from files and display the assets in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-383] It shall be possible to select one or many of the geo-referenced entities in the BM JIPOE data set in the GeoView and calculate the intersection with all defined range rings in the INTEL-FS data set using the I2BE API, and subsequently render such range rings in the GeoView (i.e. to visualize threats) and present the intersection calculations in a Table View (see [FUA-374]).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-883] It shall be possible to create an overlay from the launcher positions and identified threatened assets from the intersect calculation above (see [FUA-383]), and it shall be possible to update this overlay with the result of re-calculation of the threat (e.g. to reflect the consequences of movement of launchers and/ or assets).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-884] It shall be possible to visualize a BM OPFOR COA Comparison Record in GeoView. This visualization shall include the BMOAs, assets, and HFEs associated with the BM OPFOR COA Comparison Record.

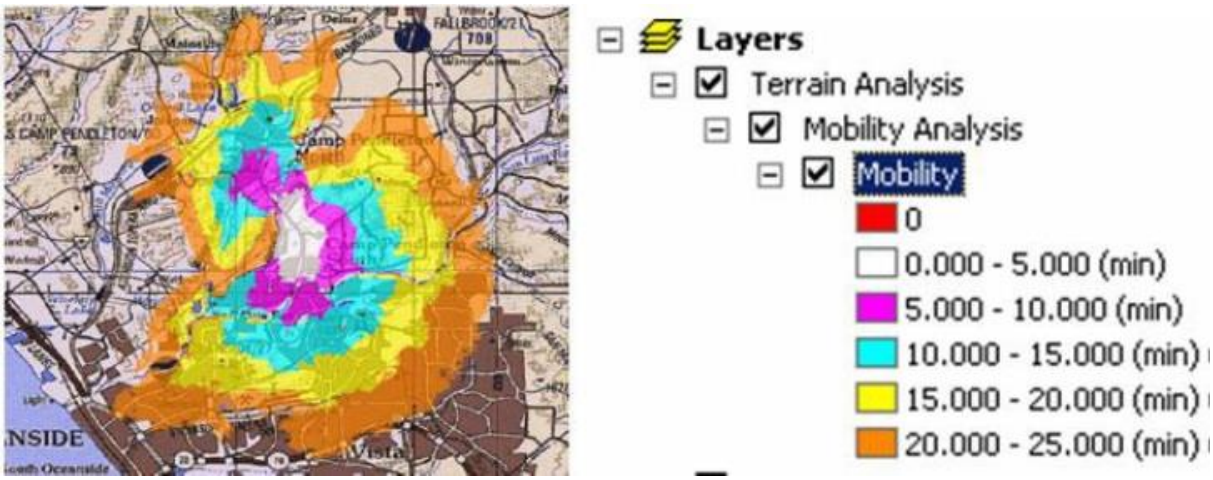
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.11 Terrain and mobility analysis visualization

[100] The development of Ballistic Missile Operating areas (BMOA) is a key aspect of OPFOR BM COA development. In areas where there are major terrain features, such as large lakes, mountain ranges etc., such features may constrain/ refine the BMOAs.

[101] Mobility Analysis is a variant of the Terrain Analysis and will most likely involves similar calculations, but taking into account the relocation speed of the vehicle. The difference is that while the Terrain Analysis focus on where a BM Unit can travel (typically within a BMOA), the focus of the Mobility Analysis is to detect how far a BM unit can travel as a function of time. An example of a visualization of a Terrain and Mobility Analysis is shown in the figure below.

Figure 4-9 Example of Terrain and Mobility Analysis Visualization



[FUA-384] The BM JIPOE Application shall through the I2BE Terrain Analysis API obtain one or several overlays that depicts where BM Units can reach and operate from. The I2BE Terrain Analysis API will be implemented as an Open Geospatial Consortium (OGC) Web Processing Service (WPS) and is expected to require the input parameters as defined in the table below. The BM JIPOE Application shall be able to provide all the parameters when calling the backend Terrain Analysis service.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-11 Expected parameters for the I2BE Terrain Analysis API

Input Parameter	**Remarks**
Coverage area	Geographical area defined by a BMOA to constrain the analysis
Vehicle weights, heights, and widths	Maximum vehicle weights, heights, and widths from BM TECHINT to be matched against road network constraints (e.g. bridges, tunnels, small roads, etc.)
Vehicle turning radius	
Vehicle off-road ability/ Land use	This should include information on type of terrain where the vehicles can go off-road (e.g. sand, snow, wetland, etc.)
Maximum off-road distance	E.g. measured in kilometers
Slope limitations (degrees)	Maximum slope the vehicles can travel from BM TECHINT to be matched against road network data and terrain elevation data (in case the vehicles can go off-road)

[FUA-385] The BM JIPOE Application shall through the I2BE Mobility Analysis API that obtain one or several overlays that depicts how far the BM Units can reach for a set of time intervals The I2BE Mobility Analysis API will be implemented as an OGC Web Processing Service (WPS) and is expected to require the input parameters as defined in the table below. The BM JIPOE Application shall be

able to provide all the parameters when calling the backend Mobility Analysis service.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-12 Parameters for Mobility Analysis function

Input Parameter	**Remarks**
Start position	Geographical location from which the BM Unit will start the movement
Time increments	In unit and extent (e.g. in 5 hour increments)
Vehicle relocation speed on roads	Average/ expected road speed of vehicle from BM TECHINT
Vehicle relocation speed off roads	Average/ expected off-road speed
Vehicle weights, heights, and widths	Maximum vehicle weights, heights, and widths from BM TECHINT to be matched against road network constraints (e.g. bridges, tunnels, small roads, etc.)
Vehicle turning radius	
Vehicle off-road ability/ Land use	This should include information on type of terrain where the vehicles can go off-road (e.g. sand, snow, wetland, etc.)
Maximum off-road distance	E.g. measured in kilometers
Slope limitations (degrees)	Maximum slope the vehicles can travel from BM TECHINT to be matched against road network data and terrain elevation data (in case the vehicles can go off-road)

4.3.6.12 Chart Views (statistical analysis)

[FUA-386] The BM JIPOE Application Chart View shall use the Chart View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-387] The BM JIPOE Application Chart View shall display summary graph of filtered HFE in the application data set.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-388] The BM JIPOE Application shall be able to display HFEs in the application data set as bar chart against time.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-389] The BM JIPOE Application shall calculate the average number of BM launches per 24 hours for each BMOA and present in an appropriate Chart View (e.g. using bar charts).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-889] The BM JIPOE Application shall calculate the average salvo size for each BMOA in the ADS using the specified Salvo Time-out.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-890] The BM JIPOE Application shall calculate the average salvo duration for each BMOA in the ADS using the specified Salvo Time-out.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-891] The BM JIPOE Application shall from the Chart View launch/ salvo calculations store the calculated BM Operational Tempo for each BMOA in the ADS.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.13 Multi-Criteria Decision Analysis (MCDA) View

[FUA-892] The BM JIPOE Application shall implement a MCDA View where the MCDA criteria sets can be defined, updated, and saved.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-893] The MCDA View shall have support for showing both the MCDA criteria and all OPFOR BM COAs to be analysed in a panel, and shall enable the user to make changes to the MCDA criteria and directly see the results on the ranking of the OPFOR BM COAs in the different ratings (most dangerous, most likely).
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-894] It shall be possible for the user to override the automatically calculated rankings from the MCDA criteria (most dangerous, most likely) and manually set rankings of the OPFORM BM COAs.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-895] It shall be possible to store the final MCDA rankings (automatically generated and/ or manually adjusted) of OPFOR BM COAs through the I2BE API.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.14 OPFOR BM COA (Observed vs Expected) Comparison View

[FUA-896] The BM JIPOE Application shall implement a view tailored for comparing observed versus expected OPFOR BM COA where information from BSO status reports are compared with the expected/ predicted OPFOR BM COA activities, and where the comparison results can be organized, annotated, and stored (and retrieved) through the I2BE API (i.e. BM OPFOR Comparison Records can be created, updated, and deleted). Annotations can be made both at the individual comparisons, and as a summary annotation on the Comparison Record (i.e. as an overall compliance assessment/ summary of all the comparisons in the record).
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-897] The OPFOR BM COA Comparison View shall for each BMOAs within the OPFOR BM COA calculate the observed operational tempo and visualize a comparison with the expected operational tempo for the BMOA, and it shall be possible to annotate and store the comparison result (differences) as part of a comparison record (see [InformationModel]) linked to the OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-898] The OPFOR BM COA Comparison View shall for each BMOAs within the OPFOR BM COA retrieve observed BM types and visualize a comparison with the expected BM types for the BMOA, and it shall be possible to annotate and store the comparison result (differences) as part of a comparison record linked to the OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-899] The OPFOR BM COA Comparison View shall for each BMOAs within the OPFOR BM COA retrieve observed BM trajectory types and visualize a comparison with the expected BM trajectory types for the BMOA, and it shall be possible to annotate and store the comparison result (differences) as part of a comparison record linked to the OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-900] The OPFOR BM COA Comparison View shall for each OPFOR BM Force within the OPFOR BM COA retrieve new intelligence (new BSO status reports) on the OPFOR BM Force available warhead types and visualize a comparison with the expected warhead types for the OPFOR BM Force, and it shall be possible to annotate and store the comparison result (differences) as part of a comparison record linked to the OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-901] The OPFOR BM COA Comparison View shall for each OPFOR BM Force within the OPFOR BM COA retrieve observed warhead types employed by an OPFOR BM Force and visualize a comparison with the expected warhead types for the OPFOR BM Force, and it shall be possible to annotate and store the comparison result (differences) as part of a comparison record linked to the OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-902] It shall be possible from within the OPFOR BM COA Comparison View to associate a set of OPFOR BM HFEs (within the ADS) with an OPFOR BM COA Comparison Record.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-903] The OPFOR BM COA Comparison View shall for each OPFOR BM Targeting Strategy associated with the OPFOR BM COA compare the expected BM targeting strategy against observed activity, and it shall be possible to annotate

and store the comparison result (differences) as part of a comparison record linked to the OPFOR BM COA.

[FUA-904] The OPFOR BM Comparison View shall be able to display a time-sorted list of OPFOR BM COA Comparison Records based on the period of validity for each expected OPFOR BM COA.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.15 Document Views

[FUA-390] It shall be possible to view the operating environment evaluation in a customizable and human readable document format and to save/ export this document as a PDF file.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-391] It shall be possible to view the actor analysis in a customizable and human readable document format and to save/ export this document as a PDF file.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-392] It shall be possible to view the BM OPFOR COA in a customizable and human readable document format and to save/ export this document as a PDF file.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.6.16 Animation

[FUA-393] It shall be possible to dynamically animate the visualization of the ADS in GeoView by dragging a time "handle" in the time slider tool.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.7 Search Application (new backend)

4.3.7.1 UI functionalities supporting user stories

[103] Note: The search engine for the faceted search will be implemented in the new backend (I2BE)

[FUA-394] The Search Application shall implement functionalities to fulfil the acceptance criteria of [US 50]: As an Authorized User I want to be able to look for information using faceted search techniques so that I can narrow down search results by applying multiple filters based on faceted classification of the items.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.7.2 UI integrated with new backend (no regression)

[FUA-395] The I2UA with Search Application shall be fully integrated with new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API. This includes verifying that the combined search can search also against the

new IIE types introduced in this phase, and that the faceted search also has support for previewing and exporting of search results.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.7.3 Search results functionalities

[FUA-396] The Search Application shall by default filter out BSRs that are linked to COAs (i.e. these COA-linked BSRs shall normally not be included in the result set). The user shall be able to override this default filtering so that COA-linked BSRs are also reported in the result set, but in this case these BSRs shall be visually distinguishable from the normal BSRs (to alert the user that these are not real observations).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-397] The Search Application shall be able to use the I2BE provided search clustering functionality (exposed through the I2BE search API) to present search results grouped into categories.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.8 Analysis Application (new backend)

4.3.8.1 UI functionalities supporting user stories

[FUA-398] The Analysis Application shall implement functionalities to fulfil the acceptance criteria of [US 49]: As an Authorized User I want to have tool support to find connection path between entities so that I can investigate if a connection between the entities exist.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.8.2 UI integrated with new backend (no regression)

[FUA-399] The I2UA with Analysis Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.8.3 Advanced graph query builder

[FUA-400] The Analysis Application shall be augmented with a visual graph query builder that takes full advantage of the graph query support in the I2BE API and the relational nature of the [INTEL-FS2-InformationModel].

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-401] The Analysis Application shall transform geographical area constraints defined using INTEL-FS2 geographical areas (e.g. NAI, BMOA, etc.) into a geospatial representation supported by the query language exposed through the I2BE API.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.8.4 Centralities analysis

[FUA-402] Within the Analysis Data Set (ADS) it shall be possible to select IIE types and relationship types suitable for centrality calculations, select centrality types, and calculate the centralities for the selected IIEs and relationships. Note: Degree, Closeness, Betweenness, and Eigenvector Centrality calculations will be supported by the I2BE API.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-403] It shall, when using geometric shapes nodes in the Relationship View, and in the GeoView, be possible, from a centralities palette, to specify a centrality type and sizing parameters (minimum and maximum size) to be used for rendering the size of IIEs (nodes) such the size of the rendered shapes correlates with their centrality values.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-404] It shall be possible to view the results of the centrality calculations in a table with the different centrality types reported in different columns and where the table rows represents the IIEs. The Centrality Table shall be sortable (ascending and descending) for each one of the centrality columns.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-405] It shall be possible to select an IIE from the Centrality Table and have that IIE highlighted in the ADS views.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.9 ISR Organization Management Application (new backend)

4.3.9.1 UI functionalities supporting user stories

[FUA-406] The ISR Organization Management Application shall implement functionalities to fulfil the acceptance criteria of [US-63]: As an Authorized User I want to have the operation, ISR ORBAT, ISR units, and ISR systems approved and published so that this information becomes known/ available at all ONs.
Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.9.2 UI integrated with new backend (no regression)

[FUA-407] The ISR Organization Management Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

This means that the usage of the STANAG 4559 services as implemented in Phase 1 shall be stopped. Instead the ISR Organization Management Application shall consume the new I2BE OData REST API for accessing ISR ORBATs, Units, ISR Systems, etc.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.10 IRM Application (new backend)

4.3.10.1 UI integrated with new backend (no regression)

[FUA-409] The I2UA with IRM Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11 CRM Application (new backend)

4.3.11.1 UI functionalities supporting user stories

[FUA-410] The CRM Application shall implement functionalities fulfil [US 76]: As an Authorized User I want to update the status of a CR to control the workflow of the CR.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-411] The CRM Application shall implement functionalities fulfil [US 77]: As an Authorized User I want to track the status of CRs as they go through the tasking, collection, processing, exploitation, and dissemination (TCPED) process so I can understand whether they will be supported or not.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-412] The CRM Application shall implement functionalities fulfil [US 78]: As an Authorized User I want to process CRs into actions so that they ultimately result in collection activities.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-413] The CRM Application shall implement functionalities fulfil [US 79]: As an Authorized User I want to be able to export a set of CRs, a CRL and a CTL so this information can be used outside of INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-417] The CRM Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.2 UI integrated with new backend (no regression)

[FUA-418] The I2UA with the CRM Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.3 Integrated search and basic actions on search results

[FUA-420] The CRM Application shall include an integrated search function allowing the user to identify Intelligence Requirements (IR), BSOs that can subsequently be used for creating CRs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-421] The CRM Application's integrated search function shall support searching for and identifying Operational Activities, CRLs, CTLs, NAIs, Products and BSOs etc. so that the CRs can be linked to IIEs of such types.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-422] The CRM Application's integrated search function shall support searching for CRs (including draft CRs) to be viewed in Table View, GeoView, and Gantt View. Searching for specific CRs based on CR serial number shall be supported.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-423] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-13 CRM Application integrated search and search results actions

Search result	**Supported actions**
CRs	Single and multi-select items and tag them as soft-deleted
Soft-deleted CRs	Single and multi-select items and un-delete them
CRs	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
CRs in Draft workflow state	Single and multi-select items and submit approval request for them
CRs in a workflow state of awaiting approval	Single and multi-select items and approve them, or approve and directly publish them
CRs in a workflow state of awaiting to be published	Single and multi-select items and publish them
CRs in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected entity, obtain rejection reason, open the entity for further editing

CRs	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.3.11.4 Application Data Set (ADS)

[FUA-424] It shall be possible to filter the set of CRs on specific CRLs and CTLs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-425] It shall be possible to filter the set of CRs on operation or named collection, IRs, Originator, actionees (For Action), CR Status, Priority, Basic Encyclopaedia (BE) Number, Target ID, Category code, degree of effectiveness, etc. and hide filtered-out CRs, and dynamically update all the CR views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-426] It shall be possible to apply a geographical coverage area filter to filter out information from the set of CRs, and dynamically update all the CR views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-427] It shall be possible to filter the set of CRs based on a time window (e.g. using a time slider UI widget) and remove/ hide CRs falling outside the of the active time window (using Last Report Date and LTIOV attributes) and dynamically update all the CR views. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-428] It shall be possible to save search + filter settings as named user-specific filters for the CR Management Application to be able to recreate the set of CRs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.5 Table Views

[FUA-429] The CRM Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-430] It shall be possible to view a set of CRs in a Table View where each row represents a CR, and the CR attribute values are shown across multiple columns in the table. The operation or named collection, the Unit (in case a CR is assigned to more than one Unit then the Units shall be delimited within the same column), the IR, the CR priority, the CR Status, etc. shall all be included as column attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-431] It shall be possible to select between a set of standard and predefined layouts of the Table View (the purpose of this is to allow the user to quickly organize the

Table View for the task at hand; e.g. there might be a particular layout for the export to CSV files, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-432] It shall be possible to edit CRs in the Table View. The editing functionality shall include the possibility of dragging one or many CRs from one group to another group (e.g. to reassign CRs from one Unit to another Unit).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-433] It shall be possible to export the set of CRs as a "bag of CRs", as a CRL, and as a CTL, in an XML format.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.6 Relationship View

[FUA-434] The CRM Application shall use the Relationship View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-435] The CRM Application shall be able to display CRs, PIRs, SIRs, EEIs, collection and exploitation tasks, and products in the Relationship View. The user can expand the information in the Relationship View by selecting individual IIEs and bring into the view all IIEs (of any type) linked to the selected IIEs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-436] Items selected in Relationship View shall be displayed/ previewed in the CR Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.7 Gantt Views

[FUA-437] The CRM Application Gant View shall be implemented using, or including, the Gant View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-438] It shall be possible to visualize the selected set of CRs grouped by IRs (when the CR is linked to an IR) and where the IR hierarchy (PIR/SIR/EEI) is also shown/ depicted. CRs with no IR association shall be grouped under a "no IR" group.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-439] It shall be possible to visualize the selected set of CRs grouped by CRLs and CTLs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-440] It shall be possible when visualizing the selected CRs to display information on the CRs' associated BSOs and Targets, and assigned Units (in particular status updates from multiple Units on the same CR in case a CR is allocated to multiple Units).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-441] It shall be possible within the timeline part of the Gantt View to display CR time-based attributes (Latest Report Time and Latest Time of Information Value) as milestones/ events.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-442] It shall be possible within the timeline part of the Gantt View to display status value changes as annotated events/ milestones.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.8 GeoView

[FUA-443] The CRM Application shall integrate with and control the GeoView component as described in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-444] The CRM Application shall be able to show CRs and associated geographical areas in GeoView where status values, and effects/ tasks verb, of the CRs can be used to select how the CRs are rendered (options to include symbols vs shapes and colour coding).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-445] The CRM Application shall, for CRs in the CR set with multiple locations in it, command GeoView to depict a link between the CR with all its locations.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-446] The CRM Application shall show BSOs and Targets linked to CRs in the selected CR set in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-447] Items selected in GeoView shall be displayed/ previewed in the CR Management Application.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.11.9 Chart Views (statistical analysis)

[FUA-448] The CRM Application Chart View shall use the Chart View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-449] From the set of CRs identified through search and filtering operations it shall be possible to plot Number of CRs (in the set) by Status values, by effects/ tasks verb, by degree of effectiveness, degree of effectiveness vs ad hoc and dynamic tasking, CR status vs CR Priority, by Organization etc. as bar charts and pie charts.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-450] It shall be possible to turn developed charts into named templates to be reused again and again to reproduce statistical diagrams with the same layout for other sets of CRs.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12 COM Application

4.3.12.1 UI functionalities supporting user stories

[FUA-451] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 83]: As an Authorized User I want to update the status of tasks to control the workflow of the tasks.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-452] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 84]: As an Authorized User I want to track the status of tasks so I can understand whether they will be supported or not.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-453] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 85]: As an Authorized User I want to create and manage several CXPs to support a CM battle rhythm so that individual collection and exploitation tasks can be viewed in accordance with the defined CXPs.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-454] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 86]: As an Authorized User I want to be able to export a set of tasks and CXPs so this information can be used outside of INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-455] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 87]: As an Authorized User I want to manage finalized CXPs to provide clear tasking of ISR Systems.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

[FUA-457] The COM Application shall implement functionalities to fulfil the acceptance criteria of [US 89]: As an Authorized User I want to be able to access a help function that can provide me with information on how to use INTEL-FS2.

Verification: Demonstration (see User Story acceptance criteria)
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.2 UI integrated with new backend (no regression)

[FUA-458] The I2UA with the COM Application shall be fully integrated with the new I2BE backend. There shall be no regression from previously implemented functionalities, and the application user interface shall be adapted to fully support the [INTEL-FS2-InformationModel] as exposed through the I2BE API.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.3 Integrated search and basic actions on search results

[FUA-459] The COM Application shall include an integrated search function allowing the user to identify Collection Requirements (CR) that can subsequently be used for creating collection and exploitation tasks.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-460] The Collection & Exploitation Planning Application's integrated search function shall support searching for and identifying Operational Activities, CTLs, CXPs, NAIs, Products and BSOs etc. so that the tasks can be linked to IIEs of such types.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-461] The Collection & Exploitation Planning Application's integrated search function shall support searching for tasks (including draft tasks) and CRs to be viewed in Table View, GeoView, and Gantt View. Searching for specific tasks based on task serial number shall be supported.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-462] From the search results it shall be possible (for an authorized user) to perform the actions as defined in the table below.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

Table 4-14 COM Application integrated search and search results actions

Search result	**Supported actions**
Tasks, CXPs	Single and multi-select items and tag them as soft-deleted
Soft-deleted Tasks, CXPs	Single and multi-select items and un-delete them
Tasks, CXPs	Single and multi-select items and hard-delete (purge) them Note: Very few, if any, users shall have this privilege
Tasks, CXPs in Draft workflow state	Single and multi-select items and submit approval request for them
Tasks, CXPs in a workflow state	Single and multi-select items and approve them, or approve

of awaiting approval	and directly publish them
Tasks, CXPs in a workflow state of awaiting to be published	Single and multi-select items and publish them
Tasks, CXPs in a workflow state of having been rejected approval (i.e. still in Draft status)	Select a rejected entity, obtain rejection reason, open the entity for further editing
Tasks, CXPs	Single and multi-select items and change a metadata attribute for the entire set in one operation (e.g. setting security classification or releasability for the entire set in one operation)

4.3.12.4 Application Data Set (ADS)

[FUA-463] It shall be possible to filter the set of tasks and CRs on specific CTLs and CXPs (by name and creator).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-464] It shall be possible to filter the set of tasks and CRs on operation or named collection, IRs (in particular EEIs), tasking Unit, ISR System, ISR System operational/ capacity/ processing status, task creation time, task status values, products required, etc. and hide filtered-out tasks, and dynamically update all Views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-465] It shall be possible to apply a geographical coverage area filter to filter out information from the set of tasks and CRs, and dynamically update all Views.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-466] It shall be possible to filter the set of tasks based on a time window (e.g. using a time slider UI widget) and remove/ hide tasks falling outside the of the active time window (using task interval and collection time intervals) and dynamically update all the task views. It shall be possible to dynamically shrink, expand, and shift the time window in time (backwards and forwards in time).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-467] It shall be possible to save search + filter settings as named user-specific filters for the Collection & Exploitation Planning Application to be able to recreate the set of tasks.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.5 Table Views

[108] The tasks that are managed within the COM Application are based on CRs and access to CRs from within the application will be required.

[109] The COM Application will need to manage multiple Table Views (for CRs and for Tasks)

[FUA-468] The COM Application shall use the Table View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-469] It shall be possible to work with CRs in a Table view, to select one or many CRs in the Table View and generate tasks from them (e.g. by dragging and dropping into the Task Table View). The new tasks shall be added to the task set and those shall how up in another Table View for tasks, in GeoView, and in the Gantt View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-470] It shall be possible to view a set of tasks in a Table View where each row represents a task, and the task attribute values are shown across multiple columns in the table. The operation or named collection, the ISR System, the CR, the CXP that the task is linked to, the task timing data, etc. shall all be included as column attributes.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-471] It shall be possible to edit tasks directly in a Table View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-472] It shall be possible edit tasks in the table by dragging one or many tasks from one group to another group (this functionality could be used to reassign tasks from one ISR System to another ISR System).

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-473] It shall be possible to select between a set of standard and predefined layouts of the Table View (the purpose of this is to allow the user to quickly organize the Table View for the task at hand; e.g. there might be a particular layout for the export to CSV files, etc.)

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-474] It shall be possible to export the set of tasks in a Table View as a "bag of tasks", and/ or as a CXP, in an XML format.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.6 Gantt Views

[FUA-475] The COM Application Gant View shall be implemented using, or including, the Gant View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-476] It shall be possible to visualize the selected set of tasks grouped by CXPs with ISR Systems as second tier sub-group.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-477] It shall be possible within the timeline part of the Gantt View to display task time-based attributes (Task Interval and Collection Time Interval).
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-478] It shall be possible within the timeline part of the Gantt View to display status value changes as annotated events/ milestones.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-479] It shall be possible within the timeline part of the Gantt View to visualize the individual ISR Systems availability, capability, capacity, and operational status (e.g. indicate timeframes where the ISR System is fully tasked and time frames where it has spare capacity).
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-480] It shall be possible to edit tasks directly in the Gant View.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-481] Using the visual indication of when ISR Systems are overloaded vs having spare capacity (see [FUA-479]) it shall be possible to reallocate tasks by dragging and dropping tasks from one ISR System to another ISR System. The visual indication of availability/ capacity status for the ISR Systems shall be dynamically updated as tasks are reassigned.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.7 GeoView

[FUA-482] The COM Application shall integrate with and control the GeoView component as described in chapter 2.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-483] The COM Application shall be able to show geographical areas, CRs, and collection and exploitation tasks in GeoView.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-484] The COM Application shall be able to use different shapes and colours to visually distinguish tasks with different status values GeoView.
Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-485] The COM Application shall also be able to use different shapes and colours to visually distinguish tasks based on the required product types (SAR, EO, IR, etc.) in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-486] The COM Application shall be able to obtain graphical representation of the Air Tasking Order (ATO) from the NCOP system (see [NCOP-IDC]) and display the ATO in GeoView.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-487] It shall be possible to select one or many CRs in the GeoView and generate tasks from them. The new tasks shall be added to the task set and show up in the GeoView, Task Table View, and Gant View.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

4.3.12.8 Chart Views (statistical analysis)

[FUA-489] The COM Application Chart View shall use the Chart View Component with all its features as defined in chapter 2.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-490] From the set of tasks identified through search and filtering operations it shall be possible to plot Number of tasks (in the set) by statuses, by Unit, by ISR System, etc. as bar charts and pie charts.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

[FUA-491] It shall be possible to turn developed charts into named templates to be reused again and again to reproduce statistical diagrams with the same layout for other sets of tasks.

Verification: Demonstration
Est. Cost[€]: Contractor to provide cost estimate

5 Non-functional Requirements (NFR)

[110] NFR quality requirements is defined in accordance with ISO-25010 standard, and definitions in this chapter are based on ISO/IEC 25010:2011(E) - System and software quality models.

[111] For monitoring of quality characteristics, the definitions in the table below will be used:

Table 5-1 Definitions used for monitoring NFR quality characteristics

Error (or Fault):	A design or source code or hardware flaw or malfunction that causes a Failure of one or more Configuration Items. A mistake made by a person or a faulty Process that affects a CI is also an Error (human Error). For this System, Human Error is generally not taken into consideration in measuring the quality Performance
Fault:	see Error
Failure:	Loss of ability to Operate to Specification, or to deliver the required output. The term Failure may be used when referring to Services, Processes, Activities, or Configuration Items
Critical Failure:	it is a failure that causes an immediate cessation of the ability to perform the required function/service
Incident:	An unplanned interruption to a service or reduction in the quality of a service
Problem:	A cause of one or more Incidents. The cause is not usually known at the time the Incident happens

[112] Note: The NFRs (as qualities) are not priced separately; the cost of achieving these qualities will have to be costed as part of the I2UA applications' functional requirements [FUA-xx].

5.1 Functional Suitability

[113] ISO 25010: This characteristic represents the degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions.

[NFR-1] Location accuracy shall be better than 1 meter (i.e., sub-meter accuracy) for translation of values (UTM, Latitude/Longitudes, others).

Verification: Demonstration and Analysis

5.2 Performance Requirements

[114] ISO 25010: This characteristic represents the performance relative to the amount of resources used under stated conditions.

5.2.1 Response Times

[115] ISO 25010: Time Behaviour is the degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements.

[NFR-2] The time from restarting until all services is restored and fully operational again shall be less than 5 minutes for at least 99.5% of the Operational Time

Verification: Demonstration and Analysis

[NFR-3] Any search or query operation against a repository containing 1 trillion entities shall return results within 3 seconds for at least 99.5% of the Operational Time

Verification: Demonstration and Analysis

5.2.2 Capacity

[116] ISO 25010: Capacity. Degree to which the maximum limits of a product or system parameter meet requirements.

[117] Capacity parameters can include the number of items that can be stored, the number of concurrent users, the communication bandwidth, throughput of transactions, and size of database.

[NFR-4] The user applications and services shall be able to handle search and/ or query results consisting of a trillion of search hits, without any critical failure for at least 99.5% of its Operational time.

Verification: Analysis

[NFR-5] The applications and services shall be able to serve 2000 concurrent users/ connections, without any critical failure for at least 99.5% of its Operational time.

Verification: Demonstration and Analysis

5.3 Compatibility

[118] ISO 25010: Compatibility. Degree to which a product, system or component can exchange information with other products, systems or components, and/or perform its required functions, while sharing the same hardware or software environment.

5.3.1 Co-existence

[119] ISO 25010: Co-existence. Degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.

[NFR-6] The implemented applications and services shall be capable of operating within the NS and MS WAN environment (including servers, network, services and workstations) in the presence of the latest approved NATO Security Settings (target version to be provided by the Purchaser during the Design Stage), without any critical failure for 99.5% of its operational time.

Verification: Demonstration

5.3.2 Interoperability Requirements

[NFR-7] The I2UA shall be fully interoperable with the new INTEL-FS Spiral 2 backend (I2BE) through the I2BE's application programming interfaces (API) in 99.5% of the time without any failure. This means that the I2UA shall be able to handle safe (non-breaking) changes to the backend API without any impacts to the existing interoperability with the I2BE (for safe changes see section 5 in [OData-4.0]).

Verification: Test

5.4 Usability/ Learnability

[120] ISO 25010: Usability: Degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

[121] ISO 25010: Learnability. Degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.

[122] In order to measure Learnability, the Contractor will prepare a set of Learnability Tasks tailored for the user functionality to be learned that will be reviewed for approval by Purchaser prior to conducting the learnability verification.

[123] The Learnability Tasks will be performed by a maximum of 50 Purchaser's designated users, and the learnability verification will be monitored by Purchaser appointed evaluators.

[124] Each of the Learnability Tasks should individually typically not take more than 10 minutes to be executed and should include usage of the online help/ training modules.

[NFR-8] A minimum of 80% of all the Learnability Tasks shall be learned by at least 80% of the designated users within the time allocated for the Learnability Tasks (test).

Verification: Demonstration

5.5 Reliability

[125] ISO 25010: Reliability. Degree to which a system, product or component performs specified functions under specified conditions for a specified period of time.

[126] MTBF (mean time between failures) is defined as the mean time between two consecutive failures.

[127] MTBCF (mean time between critical failures) is defined as the mean time between two consecutive CRITICAL failures.

5.5.1 Availability

[128] ISO 25010: Availability. Degree to which a system, product or component is operational and accessible when required for use.

[129] Inherent Availability (Intrinsic) assumes ideal support (i.e., unlimited spares, no delays, etc.); only design related Failures are considered.

[130] Mission Inherent Availability (Intrinsic) assumes ideal support (i.e., unlimited spares, no delays, etc.); only design related CRITICAL Failures are considered

[NFR-9] The Inherent Availability shall be better than 99.5%

Verification: Analysis (using MTBF data)

[NFR-10] The Mission Inherent Availability shall be better than 99.97%.

Verification: Analysis (using MTBCF data)

5.5.2 Fault Tolerance and Recoverability

[131] Fault Tolerance is the property that enables a system to continue operating properly in the event of the failure of some of its components. A fault-tolerant design enables a system to continue its intended operation, possibly at a reduced level, rather than failing completely when some part of the system fails.

[132] Graceful Degradation is the ability of a computer, machine, electronic system or network to maintain limited functionality even when a portion of it has been destroyed or rendered inoperative (either by a fault or deliberately).

[133] Based on the principle of gracefully degradation the following recovery time have been defined:

Table 5-2 Recovery Time by Failure Criticality

Failure Type	Recovery Time
Failure	4 hours

Critical Failure	10 minutes

[134] ISO 25010: Fault Tolerance. Degree to which a system, product or component operates as intended despite the presence of hardware or software faults.

[135] ISO 25010: Recoverability. Degree to which, in the Event of an interruption or a Failure, a product or system can recover the data directly affected and re-establish the desired state of the system.

[NFR-11] For 99% of the possible Failures in any service, the service shall be recovered or be replaced by an alternative service, in no more than the amount of Recovery Time defined in the table above, without loss of any previously persisted data.

Verification: Test and Analysis

5.6 Security

[136] ISO 25010: Degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization.

[137] ISO 27001 (Information Security): Information security is all about protecting and preserving information. It's all about protecting and preserving the confidentiality, integrity, authenticity, availability, and reliability of information.

[138] Security, within the context of Information Technology (IT), is defined as the capability of the software product to protect information and data so that unauthorised persons or systems cannot read or modify them and such that authorised persons or systems are not denied access to them.

[139] I2UA will operate in the "System High" mode of operation (see [AC/35-D/2004-REV3] for definitions of Security Modes of Operation). That is, all individuals with access to the system are cleared to the highest classification of the information stored, processed or transmitted within the system, but not all individuals with access to the system have a common need to know for the information stored, processed or transmitted within the system.

[NFR-12] The applications and services shall implement relevant security techniques to protect against any security vulnerabilities as identified by Open Web Application Security Project (OWASP), see [OWASP], so that no such security vulnerabilities occurs for 99.5% of its Operational time.

Verification: Test

5.7 Maintainability

[140] ISO 25010: This characteristic represents the degree of effectiveness and efficiency with which a product or system can be modified to improve it, correct it or adapt it to changes in environment, and in requirements.

[141] The MTTR to be considered is the mean time needed to restore services after a failure in the operative condition, excluding administrative and logistics delay times.

[142] The MaxTTR to be considered is the maximum time needed to restore services in the operative condition, excluding administrative and logistics delay times.

Table 5-3 Maintainability by Failure Criticality

Failure Type	**MTTR**	**MaxTTR**
Critical Failure	1 hours	4 hours
Failure	2 hours	8 hours

[NFR-13] On the hypothesis of an operational time of 24/7/365 (24 hours per day, 7 days a week, 365 days per year), the MTTR and MaxTTR shall not exceed the time limits defined in the table above for each single maintenance action for 99.5% of its Operational Time.

Verification: Test and Analysis

[NFR-14] The applications and services shall be able to isolate any occurring Faults/Errors and provide error diagnostics reports that identifies the Error/Fault for 90% of its Operational Time.

Verification: Analysis and Inspection

[NFR-15] The developed source code shall exhibit a Technical Debt Ratio (TDR) lower than 5% when calculated using [SonarQube] in its default setting for TDR calculations.

Verification: Inspection

[NFR-16] Automated regression tests and Continuous Integration shall ensure that for 99% of the times the applications and services are modified, and a release candidate produced, the change does not adversely affected existing functionalities/ features.

Verification: Demonstration and Inspection

5.8 Portability, Installability, and Replaceability

[143] ISO 25010: Portability. Degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another.

[144] ISO 25010: Installability. Degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.

[145] ISO 25010: Replaceability. Degree to which a product can replace another specified software product for the same purpose in the same environment.

[NFR-17] It shall be possible to run fully automated installation and/ or uninstallation of the applications and services for 99.5% of the times.

Verification: Demonstration

[NFR-18] It shall be possible to install replace a previous release with a new release in a fully automated way without loss of any user data and configuration settings in 99.5% of the times.

Verification: Demonstration