

change to the specifications, terms, conditions or monetary value of this Contract.

**7. FIRM FIXED PRICE CONTRACT**

- 7.1. This is a Firm Fixed Price Contract. The Firm Fixed Price of this Contract is as stated on the signature page of the Contract or any amendments thereto. The Purchaser assumes no liability for costs incurred by the Contractor in excess of the stated Firm Fixed Price except as may be authorised under certain provisions of this Contract.

**8. PERFORMANCE GUARANTEE**

- 8.1. As a guarantee of performance under the Contract, the Contractor shall deposit with the Purchaser within thirty (30) calendar days from the Effective Date of Contract a bank guarantee (the "Performance Guarantee") denominated in the currency of the Contract, to the value of ten per cent (10%) of the total Contract price.
- 8.2. The Performance Guarantee, the negotiability of which shall not elapse before the expiration of the warranty period, or such other period as may be specified in the Contract, shall be made payable to the Purchaser and shall be in the form of certified cheques or a Standby Letter of Credit subject to the agreement of the Purchaser. In the case of a Standby Letter of Credit, payment shall be made to the Purchaser without question and upon first demand by the Purchaser against a certificate from the Purchaser's Contracting Authority that the Contractor has not fulfilled its obligations under the Contract. The Contractor shall have no right to enjoin or delay such payment.
- 8.3. Certified Cheques issued to fulfil the requirements of the Performance Guarantee will be cashed by the Purchaser upon receipt and held in the Purchaser's account until the term of the Performance Guarantee has expired.
- 8.4. The standby letter of credit shall be subject to Belgian Law and shall be issued by (i) a Belgian bank, (ii) the Belgian subsidiary of a foreign bank licensed to provide financial services in Belgium; or (iii) an insurance company licensed to do business in Belgium and belonging to a Belgian banking institution provided the banking institution guarantees explicitly the demand for payment, unless otherwise specified by the Purchaser.
- 8.5. The Contractor shall request in writing relief from the Performance Guarantee upon expiration of the warranty period or such other period as may be specified in the Contract and such relief may be granted by the Purchaser.
- 8.6. The Contractor shall be responsible, as a result of duly authorised adjustments in the total contract price and/or period of performance by the Purchaser, for obtaining a commensurate extension and increase in the Performance Guarantee, the value of which shall not be less than ten per cent (10%) of the total contract price (including all amendments), and for depositing such

guarantee with the Purchaser, within thirty (30) calendar days from the effective date of aforesaid duly authorised adjustment.

- 8.7. The failure of the Contractor to deposit and maintain such Performance Guarantee with the Purchaser within the specified time frame, or any extension thereto granted by the Purchaser's Contracting Authority, is a material breach of the Contract terms and conditions subject to the provisions of the Contract regarding Termination for Default.
- 8.8. The rights and remedies provided to the Purchaser under the present Clause are in addition to any other rights and remedies provided by law or under this Contract. The certificate described in Clause 8.2 above shall not be regarded as a Termination for Default and this Clause is in addition to and separate from the Clause of the Contract detailing termination for default.
- 8.9. If the Contractor elects to post the Performance Guarantee by Standby Letter of Credit, the form of the document shall be substantially as follows:

#### **PERFORMANCE GUARANTEE STANDBY LETTER OF CREDIT**

Standby Letter of Credit Number: \_\_\_\_\_

Issue Date: \_\_\_\_\_

Initial Expiry Date: \_\_\_\_\_

Final Expiry Date: \_\_\_\_\_

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

1. We hereby establish in your favour our irrevocable standby letter of credit number {number} by order and for the account of (NAME AND ADDRESS OF CONTRACTOR) in the amount of \_\_\_\_\_ of \_\_\_\_\_ We are advised this undertaking represents fulfilment by (NAME OF CONTRACTOR) of certain performance requirements under Contract No. \_\_\_\_\_ dated \_\_\_\_\_ between the NCI Agency ("NCIA and (NAME OF CONTRACTOR).
2. 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.
3. Funds under this letter of credit are available to you without question or delay against presentation of a certificate signed by the NCI Agency Contracting Officer which states:

“(NAME OF CONTRACTOR) has not fulfilled its obligations under Contract No. \_\_\_\_\_ dated \_\_\_\_\_ between NCI Agency and (NAME OF CONTRACTOR) (herein called the

“Contract”), and the NCI Agency, as beneficiary, hereby draws on the standby letter of credit number \_\_\_\_\_ in the amount denominated in the currency of the Contract, 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.

4. 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.
5. It is a condition of this letter of credit that the expiry date will be automatically extended without amendment for a period of one (1) year from the current or any successive expiry date unless at least 90 (ninety) calendar days prior to the then current expiry date we notify you by registered mail and notify (NAME OF CONTRACTOR) that we elect not to extend this letter of credit for such additional period. However, under no circumstances will the expiry date extend beyond \_\_\_\_\_ (“Final Expiry Date”) without amendment.
6. We may terminate this letter of credit at any time upon 90 (ninety) calendar days notice furnished to both (NAME OF CONTRACTOR) and the NCI Agency by registered mail.
7. In the event we (the issuing bank) notify you that we elect not to extend the expiry date in accordance with paragraph 6 above, or, at any time, to terminate the letter of credit, funds under this credit will be available to you without question or delay against presentation of a certificate signed by the NCI Agency Contracting Officer which states:

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

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.

8. The Beneficiary may not present the certificate described in paragraph 7 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.
9. Multiple partial drawings are allowed to the maximum value of the standby letter of credit.
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. This Letter of Credit is subject to The International Standby Practices-ISP98 (1998 Publication) International Chamber of Commerce Publication No.590.

## **9. PARTICIPATING COUNTRIES**

- 9.1. Unless prior written authorisation of the Purchaser has been obtained, none of the Work, shall be performed other than by firms from and within NATO Participating Countries. Unless otherwise specified in the Contract Special Provisions, the Participating Countries are the twenty-eight (28) Member Nations of the North Atlantic Treaty Organisation.
- 9.2. Unless prior written authorisation of the Purchaser has been obtained, 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 NATO Participating Country.
- 9.3. The Contractor shall not place any Sub-contracts outside the NATO Participating Countries without the prior written authorisation of the Purchaser.
- 9.4. Unless prior written authorisation of the Purchaser has been obtained, the intellectual property rights for all software and documentation incorporated by the Contractor and/or its Sub-contractors into the Work shall vest with persons or legal entities from and within NATO participating nations and no royalties or licence fees for such software and documentation shall be paid by the Contractor to any source that does not reside within a NATO participating nation.
- 9.5. Any modification in the nationality, ownership and/or change of control of the Contractor and/or its Sub-contractor(s) shall be immediately notified in writing to the Purchaser with all necessary details to allow the Purchaser to determine whether or not the Contractor and/or its Sub-contractors continue to comply with the Clauses above. Non-compliance with the Clauses above, by the Contractor and/or its Subcontractor may constitute ground for termination of

this Contract under Clause 39 (Termination for Default).

## **10. SUB-CONTRACTS**

- 10.1. The Contractor shall place and be responsible for the administration and performance of all Sub-contracts including terms and conditions which he deems necessary to meet the requirements of this Contract in full.
- 10.2. Prior to the Sub-contractors being given access to any classified information, the Contractor shall ensure that any Sub-contractor that has a need to access classified information for the performance of any part of this Contract has been granted the appropriate facility and personnel security clearances by the Sub-contractor's national authorities and that such clearances are still in effect at the time the information is disclosed and remains in effect throughout the performance of the work to be carried out under the Sub-contract concerned.
- 10.3. The Contractor shall seek the approval in writing of the Purchaser prior to the placing of any Sub-contract if:
  - 10.3.1. the Sub-contract was not part of the Contractor's original proposal; and
  - 10.3.2. the value of the Sub-contract is known or estimated to exceed 15 per cent of the total Contract value; or
  - 10.3.3. the Sub-contract is one of a number of Sub-contracts with a single Sub-contractor for the same or related Work under this Contract that in the aggregate are known or expected to exceed 15 per cent of the total Contract value.
- 10.4. The Contractor shall inform the Purchaser of any change in Sub-contractors for Sub-contracts of a value known or estimated to exceed 15 per cent of the total Contract value.
- 10.5. The Contractor shall submit a copy of any such proposed Sub-contract when seeking approval to the Contracting Authority but such approval by the Contracting Authority shall in no way relieve the Contractor of his responsibilities to fully achieve the contractual and technical requirements of this Contract.
- 10.6. The Contractor shall, as far as practicable, select Sub-contractors on a competitive basis consistent with the objectives and requirements of the Contract.

## **11. SECURITY**

- 11.1. The Contractor shall comply with all security measures as are prescribed by the Purchaser and the national security authority or designated security agency of each of the NATO countries in which the Contract is being performed. The Contractor shall be responsible for the safeguarding of

classified information, documentation, material and equipment entrusted to him or generated by him in connection with the performance of the Contract.

11.2. In particular the Contractor undertakes to:

- 11.2.1. appoint an official responsible for supervising and directing security measures in relation to the Contract and communicating details of such measures to the Purchaser on request;
- 11.2.2. maintain, preferably through the official responsible for security measures, a continuing relationship with the national security authority or designated security agency charged with ensuring that all NATO classified information involved in the Contract is properly safeguarded;
- 11.2.3. abstain from copying by any means, without the authorisation of the Purchaser, the national security authority or designated security agency, any classified documents, plans, photographs or other classified material entrusted to him;
- 11.2.4. furnish, on request, information to the national security authority or designated security agency pertaining to all persons who will be required to have access to NATO classified information;
- 11.2.5. maintain at the work site a current record of his employees at the site who have been cleared for access to NATO classified information. The record should show the date of issue, the date of expiration and the level of clearance;
- 11.2.6. deny access to NATO classified information to any person other than those persons authorised to have such access by the national security authority or designated security agency;
- 11.2.7. limit the dissemination of NATO classified information to the smallest number of persons (“need to know basis”) as is consistent with the proper execution of the Contract;
- 11.2.8. comply with any request from the national security authority or designated security agency that persons entrusted with NATO classified information sign a statement undertaking to safeguard that information and signifying their understanding both of their obligations under national legislation affecting the safeguarding of classified information, and of their comparable obligations under the laws of the other NATO nations in which they may have access to classified information;
- 11.2.9. report to the national security authority or designated security agency any breaches, suspected breaches of security, suspected sabotage, or other matters of security significance which would include any changes that may occur in the ownership, control or management of the facility or any changes that affect the security arrangements and security status of the facility and to make such other reports as may

be required by the national security authority or designated security agency, e.g. reports on the holdings of NATO classified material;

11.2.10. apply to the Purchaser for approval before Sub-contracting any part of the work, if the Sub-contract would involve that the Sub-contractor would have access to NATO classified information, and to place the Sub-contractor under appropriate security obligations no less stringent than those applied to his own contract;

11.2.11. undertake not to utilise, other than for the specific purpose of the Contract, without the prior written permission of the Purchaser or his authorised representative, any NATO classified information furnished to him, including all reproductions thereof in connection with the Contract, and to return all NATO classified information referred to above as well as that developed in connection with the Contract, unless such information has been destroyed, or its retention has been duly authorised with the approval of the Purchaser. Such NATO classified information will be returned at such time as the Purchaser or his authorised representative may direct;

11.2.12. classify any produced document with the highest classification of the NATO classified information disclosed in that document.

## **12. RELEASE OF INFORMATION**

12.1. Except as otherwise specified elsewhere in the Contract and to the extent that it is demonstratively unavoidable and without prejudice to the Clause 11 (Security), the Contractor and/or his employees shall not, without prior authorisation from the Purchaser, release to third parties any information pertaining to this Contract, its subject matter, performance there under or any other aspect thereof.

12.2. The Contractor shall seek the prior written approval of the Purchaser before publishing any press release or disclosing any other information, orally or in writing, in relation to the Contract. The approval of the Purchaser shall be required for both the opportunity and the content of the information.

12.3. This provision shall remain in effect after the termination of the Contract and shall cease to apply to any particular piece of information once that information becomes public knowledge other than through an act, default or omission of the Contractor or its Sub-contractors.

## **13. PURCHASER FURNISHED PROPERTY**

13.1. The Purchaser shall deliver to the Contractor, for use only in connection with this Contract, the Purchaser Furnished Property at the times and locations stated in the Contract. In the event that Purchaser Furnished Property is not delivered by such time or times stated in the Schedule, or if not so stated, in sufficient time to enable the Contractor to meet such delivery or performance dates the Purchaser shall, upon timely written request made by the

Contractor, and if the facts warrant such action, equitably adjust any affected provision of this Contract pursuant to Clause 16 (Changes).

- 13.2. In the event that Purchaser Furnished Property is received by the Contractor in a condition not suitable for its intended use, the Contractor shall immediately notify the Purchaser. The Purchaser shall within a reasonable time of receipt of such notice replace, re-issue, authorise repair or otherwise issue instructions for the disposal of Purchaser Furnished Property agreed to be unsuitable. The Purchaser shall, upon timely written request of the Contractor, equitably adjust any affected provision of this Contract pursuant to Clause 16 (Changes).
- 13.3. Title to Purchaser Furnished Property will remain in the Purchaser. The Contractor shall maintain adequate property control records of Purchaser Furnished Property in accordance with sound industrial practice and security regulations.
- 13.4. Unless otherwise provided in this Contract, the Contractor, upon delivery to him of any Purchaser Furnished Property, assumes the risk of, and shall be responsible for, any loss thereof or damage thereof except for reasonable wear and tear, and except to the extent that Purchaser Furnished Property is consumed in the performance of this Contract.
- 13.5. Upon completion of this Contract, or at such earlier dates as may be specified by the Purchaser, the Contractor shall submit, in a form acceptable to the Purchaser, inventory schedules covering all items of Purchaser Furnished Property.
- 13.6. The inventory shall note whether:
  - 13.6.1. The property was consumed or incorporated in fabrication of final deliverable(s);
  - 13.6.2. The property was otherwise destroyed;
  - 13.6.3. The property remains in possession of the Contractor;
  - 13.6.4. The property was previously returned
- 13.7. The Contractor shall prepare for shipment, deliver DDP at a destination agreed with the Purchaser, or otherwise dispose of Purchaser Furnished Property as may be directed or authorised by the Purchaser. The net proceeds of any such disposal shall be credited to the Contract price or paid to the Purchaser in such other manner as the Purchaser may direct.
- 13.8. The Contractor shall not modify any Purchaser Furnished Property unless specifically authorised by the Purchaser or directed by the terms of the Contract.
- 13.9. The Contractor shall indemnify and hold the Purchaser harmless against claims for injury to persons or damages to property of the Contractor or others



arising from the Contractor's possession or use of the Purchaser Furnished Property. The Contractor shall indemnify the Purchaser for damages caused by the Contractor to the Purchaser, its property and staff and arising out of the Contractor's use of the Purchaser Furnished Property.

**14. CONTRACTOR'S PERSONNEL WORKING AT PURCHASER'S FACILITIES**

- 14.1. The term "Purchaser Facilities" as used in this Clause shall be deemed to include sites, property, utilities, ships or vessels and the term "Facility Representative" shall be deemed to refer to the authority designated by the Purchaser responsible for the site, property, utility, ship or vessel.
- 14.2. The Facility Representative shall provide such available administrative and technical facilities for Contractor's personnel working at Purchaser's Facilities for the purpose of the Contract as in the opinion of the Facility Representative may be necessary for the effective and economical discharge of Work. The Facility Representative shall also determine whether these facilities will be provided free of charge to the Contractor or determine what charges are payable. The Contractor shall have no claim against the Purchaser for any such additional cost or delay or any additional cost or delay occasioned by the closure for holidays of said facilities, or other reasons, where this is generally published or made known to the Contractor by the Purchaser or his authorised representatives.
- 14.3. The Contractor shall, except as otherwise provided for in the Contract, make good or, at the option of the Purchaser, pay compensation for all damage occurring to any Purchaser's Facilities occasioned by the Contractor, his servants, agents or Sub-contractors, arising from his or their presence and activities in, and use of, the Purchaser's Facilities; provided that this Condition shall not apply to the extent that the Contractor is able to show that any such damage was not caused or contributed to, by his neglect, or default or the neglect or default of his servants, agents or Sub-contractors, or by any circumstances within his or their control.
- 14.4. All property of the Contractor while at a Purchaser Facility shall be at the risk of the Contractor, and the Purchaser shall accept no liability for any loss or damage, except to the extent that any loss or damage is the result of a wilful act or gross negligence on the part of the Purchaser's employees or agents.

**15. HEALTH, SAFETY AND ACCIDENT PREVENTION**

- 15.1. If the Purchaser notifies the Contractor in writing of any non-compliance in the performance of this Contract with safety and health rules and requirements prescribed on the date of this Contract by applicable national or local laws, ordinances and codes, and the Contractor fails to take immediate corrective action, the Purchaser may order the Contractor to stop all or part of the Work until satisfactory corrective action has been taken. Such an order shall not

entitle the Contractor to an adjustment of the Contract price or other reimbursement for resulting increased costs, or to an adjustment of the delivery or performance schedule.

**16. CHANGES**

- 16.1. The Purchaser may at any time, by written order of the Contracting Authority designated or indicated to be a change order (“Change Order”) make changes within the general scope of this Contract, including, without limitation, in any one or more of the following:
- 16.1.1. Specifications (including drawings and designs);
  - 16.1.2. Method and manner of performance of the work, including engineering standards, quality assurance and configuration management procedures;
  - 16.1.3. Marking and method of shipment and packing;
  - 16.1.4. Place of delivery;
  - 16.1.5. Amount, availability and condition of Purchaser Furnished Property.
- 16.2. The Purchaser shall submit a proposal for Contract amendment describing the change to the Contract.
- 16.3. If any such Change Order causes an increase in the Contractor's cost of, or the time required for, the performance of any part of the Work under this Contract, whether or not changed by any such order, the Contractor shall submit a written proposal for adjustment to the Purchaser describing the general nature and amount of the proposal for adjustment. The Contractor shall submit this proposal for adjustment within thirty (30) days after receipt of a written Change Order under 16.1 above unless this period is extended by the Purchaser.
- 16.4. If any such Change Order causes a decrease in the Contractor's cost of, or the time required for, the performance of any part of the Work under this Contract, whether or not changed by any such order, the Purchaser shall submit a proposal for adjustment within thirty (30) days from the issuance of the Change Order by submitting to the Contractor a written statement describing the general nature and amount of the proposal for adjustment.
- 16.5. Where the cost of property made obsolete or in excess as a result of a change is included in the Contractor's claim for adjustment, the Purchaser shall have the right to prescribe the manner of disposition of such property.
- 16.6. The Purchaser reserves the right to reject the introduction of the change, after the evaluation of the change proposal, even if the Purchaser initiated such change.

- 16.7. Failure to agree to any requested adjustment shall be a dispute within the meaning of the Clause 41 (Disputes). However, nothing in this Clause shall excuse the Contractor from proceeding with the Contract as changed.
- 16.8. No proposal for adjustment by the Contractor for an equitable adjustment shall be allowed if asserted after final payment and acceptance under this Contract.
- 16.9. Any other written or oral order (which, as used in this paragraph includes direction, instruction, interpretation, or determination) from the Purchaser that causes a change shall be treated as a Change Order under this Clause, provided, that the Contractor gives the Purchaser a written notice within thirty (30) Days after receipt of such order stating (i) the date, circumstances, and source of the order; (ii) that the Contractor regards the order as a Change Order; and (iii) a detailed cost and time analysis of the impact of the change, and that the Order is accepted in writing by the Purchaser as a Change Order. The timely written notice requirement, as detailed above, remains in force in all cases, even where, for example, the Purchaser has positive knowledge of the relevant facts.
- 16.10. All tasks and activities carried out by the Contractor in relation to the processing of the Change Order or in relation to this Clause shall form part of the Contractor's routine work and cannot be charged as additional work.

## **17. STOP WORK ORDER**

- 17.1. The Purchaser may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the Work called for by this Contract for a period of ninety (90) days after the order is delivered to the Contractor, and for any further period to which the Parties may agree.
- 17.2. Any such stop work order shall be specifically identified as a stop work order issued pursuant to this Clause (the "Stop Work Order"). The Stop Work Order may include a description of the Work to be suspended, instructions concerning the Contractor's issuance of further orders for material or services, guidance to the Contractor on actions to be taken on any Sub-contracts and any suggestion to the Contractor for minimizing costs.
- 17.3. Upon receipt of such a Stop Work Order, the Contractor shall forthwith comply with its terms and take all reasonable steps to minimise costs incurred allocable to the Work covered by the Stop Work Order during the period of work stoppage. Within a period of ninety (90) days after a Stop Work Order is delivered to the Contractor, or within any extension of that period to which the Parties shall have agreed, the Purchaser shall either:
- 17.3.1. cancel the Stop Work Order; or
- 17.3.2. terminate the Work covered by such Stop Work Order as provided in Clause 40 (Termination for Convenience of the Purchaser).
- 17.4. If a Stop Work Order issued under this Clause is cancelled or the period of

the Stop Work Order or any extension thereof expires, the Contractor shall resume work.

- 17.5. An equitable adjustment shall be made in the delivery schedule or Contract price, or both, and the Contract shall be modified in writing accordingly, if:
- 17.5.1. the Stop Work Order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this Contract, and
  - 17.5.2. the Contractor asserts a Claim for such adjustment within thirty (30) days after the end of the period of work stoppage; provided that, if the Purchaser decides the facts justify such action, he may receive and act upon any such claim asserted at a later date but prior to final payment under this Contract.
- 17.6. If a Stop Work Order is not cancelled and the Work covered by such Stop Work Order is terminated for the convenience of the Purchaser the reasonable costs resulting from the Stop Work Order shall be allowed in arriving at the termination settlement.

## **18. CLAIMS**

- 18.1. The Contractor shall specifically identify the Contract Clause(s) under which the Claim(s) is/are based.
- 18.2. Claims shall be specifically identified as such and submitted:
- 18.2.1. within the time specified in the Clause under which the Contractor alleges to have a Claim. If no time is specified in the Clause under which the Contractor intends to base his Claim, the time limit shall be sixty (60) days from the date the Contractor has knowledge or should have had knowledge of the facts on which he bases his Claim; and
  - 18.2.2. before final payment, pursuant to and with the exceptions specified in Clause 33 of these General Provisions entitled "Release from Claims".
  - 18.2.3. Section 18.2.2 above shall only apply to those Claims for which the Contractor could not have had earlier knowledge and were not foreseeable.
- 18.3. The Contractor shall be foreclosed from his Claim unless he presents complete documentary evidence, justification and costs for each of his Claims within ninety (90) calendar days from the assertion date of such Claims. Claims shall be supported by specifically identified evidence (including applicable historical and planned cost and production data from the Contractor's books and records). Opinions, conclusions or judgmental assertions not supported by such evidence will be rejected by the Purchaser.
- 18.4. An individual breakdown of cost is required for each element of Contractor's Claims at the time of claim submission or for any material revision of the Claim.

18.5. The Contractor shall present, at the time of submission of a Claim, an attestation as follows:

I .....the responsible senior company official authorised to commit the ..... with respect to its claims dated ..... being duly sworn, do hereby depose and say that: (i) the facts described in the claim are current, complete and accurate; and (ii) the conclusions in the claim accurately reflect the material damages or contract adjustments for which the Purchaser is allegedly liable.

.....  
.....

SIGNATURE

Date

18.6. Failure to comply with any of the above requirements shall result in automatic foreclosure of the Claim. This foreclosure takes effect in all cases and also where, for example, the Claim is based on additional orders, where the facts are known to the Purchaser, where the Claim is based on defective specifications of the Purchaser or an alleged negligence in the pre-contractual stage.

18.7. Claims submitted by the Contractor will be reviewed by the Contracting Authority. The Contracting Authority will respond within sixty (60) days with a preliminary decision, based on an assessment and evaluation of the facts presented by the Parties, as to whether the Contracting Authority considers the Claim to have merit for consideration. If the preliminary decision of the Contracting Authority is that the Claim, as submitted is without merit, the Contractor shall have fourteen (14) days to present a rebuttal to the Contracting Authority and request reconsideration of the Contracting Authority's decision. Within thirty (30) days receipt of the Contractor's request for reconsideration, the Contracting Authority will issue a decision. The time requirements stated herein may be extended by the Contracting Authority in order to accommodate additional preparation efforts and fact finding discussions but the Contracting Authority may not unreasonable extend such a period. A decision that the submitted claim is without merit will be identified as such, will be issued in writing by the Contracting Authority and will be conclusive. A decision may only be challenged by the Contractor through the Disputes provisions described herein.

18.8. A decision by the Purchaser that the claim has merit will result in a Contracting Authority request to enter into negotiations with the Contractor to arrive at a mutually agreed fair and equitable settlement. The Contracting Authority's decision will contain a target date for the commencement and conclusion of

such operations. If the Parties are unable to arrive at an agreement on a fair and reasonable settlement by the target date for conclusion, or any extension thereto made by the Contracting Authority, the latter may declare that negotiations are at an impasse and issue a preliminary decision as to the fair and reasonable settlement and the reasons supporting this decision. The Contractor shall have a period of thirty (30) days to present a rebuttal to the Contracting Authority and request reconsideration of the Contracting Authority's decision. Within sixty (60) days of receipt of the Contractor's request for reconsideration, the Contracting Authority will issue its decision on the request for reconsideration. This timeframe will be respected unless an authorisation is needed from a NATO or other authority, the schedule for which is beyond the Contracting Authority's control. A decision of the Contracting Authority on the reconsideration of the matter will be identified as such, will be issued in writing by the Contracting Authority and will be conclusive. A decision on the reconsideration may only be challenged by the Contractor through the Disputes provisions described herein.

- 18.9. No Claim arising under this Contract may be assigned by the Contractor without prior approval of the Purchaser.
- 18.10. The Contractor shall proceed diligently with performance of this Contract, pending final resolution of any request for relief, claim appeal, or action arising under the Contract, and comply with any decision of the Contracting Authority.

## **19. PRICING OF CHANGES, AMENDMENTS AND CLAIMS**

- 19.1. Contractor's pricing proposals for Changes, amendments and Claims shall be priced in accordance with the Purchaser's Pricing Principles (Annex 1 hereto and the sample spreadsheet and its "Instructions to Complete" at Appendix 1) or the national government pricing rules and regulations for the Contractor's own country, where in force. The Contractor shall provide cost information accompanied by appropriate substantiation as required by the Purchaser in accordance with Purchaser's Pricing Principles, or such other format as may be agreed between the Contractor and the Purchaser.
- 19.2. With respect to Clause 19.1 above, when the price or price adjustment is based on adequate price competition, established catalogue or market price of commercial items sold in substantial quantities to the general public, or prices set by law or regulation, the Contractor shall be responsible for substantiation of such cases to the satisfaction of the Purchaser.
- 19.3. For the purposes of verifying that the cost or pricing data submitted in conjunction with Clause 19.1 above are accurate, complete and current, the Purchaser or any Purchaser authorised representative shall have the right of access to the Contractor's facilities to examine, until the expiration of three (3) years from the date of final payment of all sums due under the Contract:
- 19.3.1. those books, records, documents and other supporting data which will permit adequate evaluation and verification of the cost or pricing data submitted; and/or
- 19.3.2. the computations and projections which were available to the

Contractor as of the date of the Contractor price proposal.

19.4. The Contractor, subject to the provisions of this Clause, shall require Sub-contractors to provide to the Purchaser, either directly or indirectly:

19.4.1. cost or pricing data;

19.4.2. access to Sub-contractor's facilities and records for the purposes of verification of such cost or pricing data; and

19.4.3. a Certificate of Current Cost or Pricing Data, when required.

19.5. If any price, including profit, negotiated in connection with this Contract was proposed, taking any of the following into account: :

19.5.1. the Contractor furnished cost or pricing data which was not complete, accurate and current as certified in the Contractor's Certificate of Current Cost or Pricing Data provided in accordance with Clause 19.6 below;

19.5.2. a Sub-contractor, pursuant to Clause 19.4 above or any Sub-contract clause therein required, furnished cost or pricing data which was not complete, accurate and current as certified in the Sub-contractor's Certificate of Current Cost or Pricing Data;

19.5.3. a Sub-contractor or prospective Sub-contractor furnished cost or pricing data which was required to be complete, accurate and current and to be submitted to support a Sub-contract cost estimate furnished by the Contractor but which was not complete, accurate and current as of the date certified in the Contractor's Certificate of Current Cost or Pricing Data; or

19.5.4. the Contractor or a Sub-contractor or prospective Sub-contractor furnished any data, not within 19.5.1 through 19.5.3 above, which, as submitted, was not complete, accurate and current;

then the price and/or cost shall be adjusted accordingly and the Contract shall be modified in writing as may be necessary to reflect such.

19.6. At the time of negotiating any price, including profit, which is based upon the submission of cost or pricing data by the Contractor, the Contractor shall be required to submit a certificate of current cost or pricing data ("Certificate").

19.6.1. Such Certificates will certify that, to the best of the Contractor's knowledge and belief, cost or pricing data submitted to the Purchaser in support of any proposal for a price, price adjustment or claim, are accurate, complete and current, as per the completion of the negotiations or, in the case of a claim, as per the submission date of the claim.

19.6.2. All such Certificates shall be in the format shown below and shall be dated and signed by a responsible officer of the company:

CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that cost or pricing data as submitted, either actually or by specific identification in writing to the Purchaser or his representative in support of.....(*Claim, Amendment, ECP#, etc.*) are accurate, complete and current as of .....(*Date*).

By submitting the price proposal, the Contractor/sub-Contractor or prospective sub-Contractor grant the Purchaser or his authorized representative(s) the right to examine those records, data and supporting information, used as a basis for the pricing submitted.

\_\_\_\_\_  
*Name of Company*

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Printed Name of Signatory*

\_\_\_\_\_  
*Title of Signatory*

\_\_\_\_\_  
*Date of Signature*

19.6.3. The Contractor shall insert the substance of this Clause 19.7 in each Sub-contract.

19.7. For all additional or follow-up agreements which are made for Work which are furnished to the Purchaser without competition, the Contractor shall offer prices on a "Preferred Customer" basis, that is offer prices which are as favourable as those extended to any Government, Agency, Company, Organisation or individual purchasing or handling like quantities of equipment and/or Parts covered by the Contract under similar conditions. In the event that prior to completing delivery under this Contract the Contractor offers any of such items in substantially similar quantities to any customer at prices



lower than those set forth herein, the Contractor shall so notify the Purchaser and the prices of such items shall be correspondingly reduced by a supplement to this Contract. Price in this sense means "Base Price" prior to applying any bonus, export tax reduction, turn-over tax exemptions and other reductions based on National Policies.

## **20. NOTICE OF SHIPMENT AND DELIVERY**

- 20.1. Except as may be specified in the Special Contract Provisions, delivery of all items under this Contract shall be made by the Contractor on the basis of "Delivery Duty Paid" (DDP) as defined by the INCOTERMS 2000 (International Chamber of Commerce Publication No. 560). It shall be noted, however, that because the Purchaser is exempted from direct taxes and duty as set forth in Clause 26 (Taxes and Duties), there is no duty to be paid by the Contractor.
- 20.2. "Delivery" of required Work by the Contractor does not constitute "Acceptance" by the Purchaser for purposes of meeting the requirements of the Contract Schedule where Purchaser acceptance is the stated payment or schedule milestone.
- 20.3. Thirty (30) Days, or such other period as specified in the Contract, prior to the delivery of any shipment of Work, the Contractor shall give prepaid notice of shipment to the Purchaser. The Notice of Shipment shall contain, as appropriate, the request for customs form 302, or equivalent document, which shall enable any carrier to conduct duty free import/export clearance through customs for the Purchaser on behalf of NATO.
- 20.4. The customs form 302 is an official customs clearance declaration issued in advance of shipment by the Purchaser to provide certified information as to the duty free import, export, or transit of NATO consignments between NATO countries.
- 20.5. The Notice of Shipment and request for Form 302 or equivalent document shall contain the following information:
  - 20.5.1. Purchaser's Contract number;
  - 20.5.2. Contract item number, designation and quantities;
  - 20.5.3. destination;
  - 20.5.4. number and description of the packages (gross and net weight);
  - 20.5.5. description of the goods and their value (for custom purpose only, not commercial value)
  - 20.5.6. consignor's name and address;
  - 20.5.7. consignee's name and address;
  - 20.5.8. method of shipment (i.e. road, rail, sea, air, etc.);
  - 20.5.9. name and address of freight forwarder.
- 20.6. Forwarding Agents, Carriers or other responsible organisations shall be

informed by the Contractor of the availability of Form 302 or equivalent document and how the form shall be utilised to avoid the payment of custom duties. Form 302 or equivalent document shall be incorporated in all shipping documents provided to the carrier.

- 20.7. Upon receipt of the Notice of Shipment from the Contractor, the Purchaser may require the Contractor to send copies of the Notice of Shipment to the receiving parties and the Contractor shall comply with this requirement.

## **21. INSPECTION AND ACCEPTANCE OF WORK**

- 21.1. For the purposes of this Clause, Work does not include documentation which is addressed in Clause 22 (Inspection and Acceptance of Documentation) hereafter.
- 21.2. Unless otherwise specifically provided for in the Contract, all Work and all Parts and equipment incorporated in the Work are to be new and of the most suitable grade of their respective kinds for the purpose, notwithstanding the requirements for testing, inspection and performance as required under this Contract. All workmanship shall be as specified under the Contract or, if no workmanship standards are specified, best commercial or “state of the art” complying with relevant (National and International) standards.
- 21.3. All Work may be subject to inspection and test by the Purchaser or his authorised representative(s) to the extent practicable at all times and places prior to Acceptance, including the period of manufacture, or after delivery or as otherwise specified in the Contract. For the purposes of inspection and testing the Purchaser may delegate as his representative the authorised National Quality Assurance Representative (NQAR) in accordance with STANAG 4107.
- 21.4. No representative or NQAR appointed by the Purchaser for the purpose of determining the Contractor's compliance with the technical requirements of the Contract shall have the authority to change any of the specifications. Such changes may only be made by the Contracting Authority in writing in accordance with Clause 16 (Changes).
- 21.5. The presence or absence of an NQAR or other Purchaser representative shall not relieve the Contractor from conforming to the requirements of this Contract.
- 21.6. Acceptance or rejection of the Work shall be made as promptly as practicable after delivery, except as otherwise provided in the Contract. Failure to timely accept or reject the Work shall neither relieve the Contractor from responsibility for such Work nor impose liability on the Purchaser.
- 21.7. In the event that any Work, or lots thereof, or services are defective in design, material, workmanship or manufacturing quality, or as a result of undue wear and tear or otherwise not in conformity with the requirements of this Contract, including any characteristic or condition which is or becomes at variance to the performance specifications, to the intended function of the Work or the function to which it could reasonably be expected that the Work would perform, the Purchaser shall have the right either to reject them (with or

without instructions as to their disposition) or to require their correction or replacement. Work which has been rejected or required to be corrected or replaced shall, at the expense of the Contractor, be removed, or, if permitted or required by the Contracting Authority, corrected in place by the Contractor promptly after notice, and shall not thereafter be tendered for acceptance by the Contractor unless the former rejection or requirement of correction or replacement is withdrawn. If the Contractor fails promptly to remove, replace or correct such Work the Purchaser may either:

- 21.7.1. by contract or otherwise return, replace or correct such Work or services and charge to the Contractor the cost incurred by the Purchaser; and/or
  - 21.7.2. terminate this Contract for default as provided in Clause 39 (Termination for Default).
- 21.8. When NQAR is not applicable based on the scale of the project, the Purchaser reserves the right to perform inspections through his own staff in accordance with the latest ISO standard at the time of inspection.
  - 21.9. Unless the Contractor corrects or replaces such Work within the delivery schedule, the Purchaser may require the delivery of such Work at a reduction in price which is equitable under the circumstances. Failure to agree to such reduction of price shall be a dispute within the meaning of Clause 41 (Disputes).
  - 21.10. If any inspection or test is made by the Purchaser's representatives on the premises of the Contractor or Sub-contractor, the Contractor, without additional charge, shall provide all reasonable facilities and assistance for the safety and convenience of the Purchaser's representatives in the performance of their duties. The NQAR or other Purchaser representatives shall have the right of access to any area of the Contractor's or his Sub-contractor's premises where any part of the contractual work is being performed.
  - 21.11. If Purchaser inspection or test is made at a point other than the premises of the Contractor or Sub-contractor, it shall be at the expense of the Purchaser except as otherwise provided in this Contract; provided, that in case of rejection the Purchaser shall not be liable for any reduction in value of samples used in connection with such inspection or test.
  - 21.12. All inspections and tests by the Purchaser shall be performed in such a manner as not to unduly delay the Work.
  - 21.13. The Purchaser reserves the right to charge to the Contractor any additional cost of Purchaser inspection and test when Work is not ready at the time such inspection and test is requested by the Contractor or when re-inspection or retest is necessitated by prior rejection.
  - 21.14. Acceptance or rejection of the Work shall be made as promptly as practicable after delivery, except as otherwise provided in this Contract, but failure to inspect and accept or reject Work shall neither relieve the Contractor from responsibility for such Work as are not in accordance with the Contract requirements nor impose liability on the Purchaser thereof.

- 21.15. The inspection and test by the Purchaser of any Work or lots thereof, or services, does not relieve the Contractor from any responsibility regarding defects or other failures to meet the Contract requirements which may be discovered prior to acceptance.
- 21.16. Acceptance of Work shall take place when the Contracting Authority confirms acceptance in writing of the Work in accordance with the procedure specified in the Contract, or if none is so specified then the Contracting Authority shall be deemed to have accepted the Work without prejudice to any other remedies, when and as soon as any of the following events have occurred:
- 21.16.1. the Purchaser has taken the Work into use, except as specifically provided by Clause 23 (Use and Possession Prior to Acceptance);
- 21.16.2. the Purchaser has not exercised its right of rejection of the Work within any period specified for that purpose in the Contract;
- 21.16.3. there being no period for exercising the right of rejection specified in the Contract, a reasonable time, all the circumstances having been taken into account, has elapsed since inspection of the Work was effected in accordance with the Contract.
- 21.17. Except as otherwise provided in this Contract, acceptance shall be conclusive except as regards latent defects, fraud, or such gross mistakes as amount to fraud.
- 21.18. Unless otherwise specified in this Contract, the Contractor shall have or establish, implement and maintain an effective and economical quality control system necessary to satisfy the Contract requirement. The system shall provide for the early and prompt detection of deficiencies, trends and conditions which could result in unsatisfactory quality and for timely and effective corrective action. Objective evidence that the system is effective shall be readily available to the Purchaser and its authorised representatives. Records of all inspection and testing work by the Contractor shall be kept complete and available to the Purchaser's representatives during the performance of this Contract and for such longer periods as may be specified elsewhere in this Contract.

## **22. INSPECTION AND ACCEPTANCE OF DOCUMENTATION**

- 22.1. The Contractor shall provide to the Purchaser a draft version of the required documentation as provided by the Contract Schedule and the Statement of Work. Review of draft documentation under this Contract will be made by the Purchaser upon the delivery of these items by the Contractor. The review will be conducted by the Purchaser through duly authorised representatives.
- 22.2. Upon delivery of the draft documentation, the Purchaser will have a period of review as provided by the Statement of Work. At the end of the review period or before if deemed practical by the Purchaser, the Purchaser's comments will be presented to the Contractor in writing. The substance of such comments will pertain to items of error, non-conformity, omission and guidance in relation

to the requirements of the Statement of Work.

- 22.3. Purchaser Review of the delivered items will emphasise the conformity with the requirements of the Statement of Work, thoroughness of analysis, logical bases of conclusions and models and coherence and completeness of presentation. The review process will also examine editorial and grammatical correctness and the suitability and accuracy of graphics supporting the text.
- 22.4. The Contractor shall, after receipt of Purchaser comments, incorporate changes, revisions and corrections required by the Purchaser and present the revised documentation in final form to the Purchaser for inspection in accordance with the delivery date specified in the Schedule.
- 22.5. During the review process the Contractor is not required to halt efforts on further tasks as identified in the Statement of Work. The Purchaser, however, shall not be held liable for any work carried out by the Contractor which is based on draft documentation yet to be reviewed.
- 22.6. Upon receipt of the items in final form, the Purchaser will inspect the items for a period not exceeding two weeks (or as otherwise stated in the Statement of Work). At the end of the inspection, the Purchaser will notify the Contractor that:
- 22.6.1. the items have been accepted;
  - 22.6.2. the acceptance of the items is deferred pending further revision; or
  - 22.6.3. the items are rejected and significantly fail to meet Contract requirements.
- 22.7. In the case of Clause 22.6.2 above, the Contractor shall only be responsible for those revisions and corrections requested by the Purchaser and the Purchaser may not request additional revisions during inspection after required revisions have been made. However, if the Purchaser determines that a directed revision has not been made or if such directed revision was cause for revision of other portions of content which were not made by the Contractor, the Purchaser may withhold acceptance until such revisions are made by the Contractor.
- 22.8. The Contractor shall provide to the Purchaser on request supporting technical data, computer software, databases and background analyses in order to validate findings contained in the delivered items.
- 22.9. Purchaser acceptance shall be made in writing by the Contracting Authority.

### **23. USE AND POSSESSION PRIOR TO ACCEPTANCE**

- 23.1. Except as otherwise provided in the Special Contract Provisions, the Purchaser shall have the right to take possession of, or use, any completed or partially completed Work under the Contract at any time, when notified by

the Contracting Authority, however such possession or use shall not constitute Acceptance by the Purchaser, as defined in the Contract.

- 23.2. While the Purchaser has such use or is in such possession, the Contractor shall be relieved of the responsibility for loss or damage to the Work concerned other than that resulting from the Contractor's fault, negligence or defect to the Work.
- 23.3. If such prior possession or use by the Purchaser delays the progress of the Work or causes additional expense to the Contractor, an equitable adjustment in the Contract price or the time of delivery will be made, in accordance with the Clause 16 (Changes), and the Contract shall be modified in writing accordingly.

#### **24. OWNERSHIP AND TITLE**

- 24.1. Except as may be otherwise stated in the Contract Special Provisions and Clause 23 (Use and Possession prior to Acceptance), ownership and title to all Work will pass to the Purchaser only upon Acceptance by the Contracting Authority in writing. Where the Contract provides for Provisional Acceptance and Final Acceptance, ownership and title will pass to the Purchaser upon written notification of Final Acceptance.

#### **25. INVOICES AND PAYMENT**

- 25.1. Unless otherwise specified in the Contract Special Provisions, invoices shall only be submitted after delivery and Acceptance of the Work and for the total prices and currency(ies) as set out under the Schedule of Work.
- 25.2. Invoices in respect of any Work or services shall be prepared and submitted to the Purchaser and shall contain all of the elements listed below:
- 25.2.1. Contract number;
  - 25.2.2. Purchaser's Purchase Order number ;
  - 25.2.3. accounting codes (as specified in this Contract);
  - 25.2.4. item number (as defined in the Contract);
  - 25.2.5. Contract description of Work or services, sizes, quantities, unit prices, and extended totals (exclusive of taxes and duties for which relief is available);
  - 25.2.6. Details of Bills of Lading or Freight Warrant numbers and weight of shipment shall be identified on each invoice as appropriate.
- 25.3. In addition, documentary evidence of Acceptance including copies of certificates of conformity shall be submitted together with each invoice. Invoices shall not be submitted to the Purchaser without Acceptance having been previously made by the Purchaser.

- 25.4. Each copy of the invoice shall contain the following certificate which shall be signed by a duly authorised company official on the designated original invoice:

*"I certify that the above invoice is true and correct, that the delivery of the above described items has been duly carried out and the payment thereof has not been received.*

*Order placed for official use. Exemption from VAT Article 42, §3&3\*of VAT Code for Belgium or Article 151, §1b of the Council Directive 2006/112/EC dd. 28 November 2006 on intra-community purchases and/or services."*

- 25.5. All invoices shall be submitted to:

[accountspayable@ncia.nato.int.](mailto:accountspayable@ncia.nato.int)

In the event the Contractor needs to submit the invoice to a physical address, it shall be submitted to:

NCI Agency – Accounts Payable  
Boulevard Léopold III  
B-1110 Brussels  
Belgium

- 25.6. Invoices will be settled by the Purchaser within sixty (60) days of receipt of a properly prepared and submitted invoice.
- 25.7. The Purchaser shall not bear any cost relating to financial guarantees which the Contractor is required to provide under this contract. The Purchaser is released from any interest resulting from any reason whatsoever.

## **26. TAXES AND DUTIES**

- 26.1. The Purchaser, by virtue of his status under the terms of Article IX and X of the Ottawa Agreement, is exempt from all direct taxes (incl. VAT) and all customs duties on merchandise imported or exported. The Contractor, therefore, certifies that the prices stipulated in this Contract do not include amounts to cover such direct taxes or customs duties.
- 26.2. The Contractor shall be responsible for ensuring that his respective Sub-contractors are aware that the Purchaser is exempt from taxes and customs duties. The Contractor (and his respective Sub-contractors) shall be responsible for complying with all applicable national and local legal and administrative procedures to ensure that authorities do not attempt to assess taxes and customs duties on goods and property imported or exported through NATO member nation frontiers under this Contract nor assess direct taxation (VAT) on goods sold to the NCI under this Contract.
- 26.3. The Purchaser shall give reasonable assistance in providing

evidence/documents which might be required by the Contractor to ensure that NCIA receives tax exemption by virtue of its status under the Ottawa Agreement.

- 26.4. If, after complying with all national and local legal and administrative procedures, the authorities persist in attempting to impose taxes or duties on goods provided under this Contract, the Contractor shall inform the Contracting Authority providing the particulars of the situation, the procedures which have been followed and the point of contact at the national authority which is attempting to impose taxation or duty. The Contracting Authority will examine the situation and attempt to clarify the legal and administrative basis of the difficulty. If the Contracting Authority so directs, the Contractor shall pay the required taxes and duties and file for reimbursement or rebate from the national authorities in accordance with national legislative and administrative procedures.
- 26.5. In the event that the petition for reimbursement or rebate is denied by the national authorities concerned and providing that the Contractor and/or his Sub-contractor have complied with the national legislative and administrative procedures, the Purchaser shall reimburse the full amount of the payment(s) upon receipt of the Contractor's invoice indicating such tax or duty as a separate item of cost and fully identified by reference to any governmental law, regulation and/or instruction pursuant to which such tax or duty is enforced. The Contractor shall offer assistance and execute any such document that may be useful or required to ensure that Purchaser obtains the reimbursement of any tax or duty retained by a national authority.
- 26.6. In the event of the Contractor and/or Sub-contractor not complying with national legislative or administrative procedures, taxes and duties paid by the Contractor and/or Sub-contractors shall not be reimbursed by the Purchaser.
- 26.7. Following payment by the Purchaser of the taxes and/or duties pursuant to Clause 26.4 above, should the Contractor subsequently receive a rebate of any amount paid by the Purchaser, the Contractor shall immediately notify the Purchaser and the amount of such rebate shall be credited or reimbursed to the Purchaser, as directed. The Contractor shall be responsible for taking any and all action that could reasonably be required in order to obtain such rebate.
- 26.8. The Contractor shall be liable for all other taxes, assessments, fees, licences, administrative charges or other Government assessments or charges which are applicable to the performance of this Contract. It is the Contractor's responsibility to inform himself of his liability in each country where such liability may arise.

**27. WARRANTY OF WORK (exclusive of Software)**

- 27.1. For the purpose of this Clause:

27.1.1. "Acceptance" shall mean the act of an authorised representative of the Purchaser by which the Purchaser assumes title and ownership of delivered Work rendered as partial or complete performance of the



Contract. "Acceptance" in this regard, unless specifically provided otherwise in the Contract Special Provisions, means final Acceptance where the Contract provides for Provisional or Partial Acceptance;

- 27.1.2. "Correction" shall mean the elimination of a defect;
- 27.1.3. "Work" shall not include software.
- 27.2. The Contractor shall not be responsible under this Clause for the Correction of Defects in Purchaser Furnished Property, except for Defects in Contractor performed installation, unless the Contractor performs, or is obligated to perform, any modifications or other work on Purchaser Furnished Property. In that event, the Contractor shall be responsible for Correction of Defects that result from the modifications or other Work.
- 27.3. Unless another period of time is indicated in the Contract Special Provisions, the duration of the warranty provided by the Contractor and its Subcontractors shall be twelve (12) months from the date of Acceptance under this Contract as notified in writing by the Contracting Authority.
- 27.4. Any Work or parts thereof corrected or furnished in replacement and any services re-performed shall also be subject to the conditions of this Clause 27 to the same extent as Work initially accepted. The warranty, with respect to these Work, or parts thereof shall be equal in duration to that set forth in Clause 27.3, and shall run from the date of delivery of the corrected or replaced Work.
- 27.5. If the Contractor becomes aware at any time before Acceptance by the Purchaser (whether before or after tender to the Purchaser) or at a later time, that a Defect exists in any Work, the Contractor shall either promptly correct the Defect or promptly notify the Purchaser, in writing, of the Defect, using the same procedures prescribed in Clause 27.8.
- 27.6. The Purchaser will notify in writing the Contractor of the existence of a Failed Component and return to the Contractor the Failed Component within thirty (30) Days of the discovery of such failure. The transport of the Failed Component shall be at the expense of the Purchaser. The notification of the failure will include as much information as practicable about the circumstances and operating environment at the time of the failure. Upon receipt of such notification by the Purchaser (which may precede receipt of the Failed Component), the Contractor shall ship to the location of the Failed Component an identical component for installation by Purchaser personnel. The Contractor shall ship such replacement component(s) Delivery Duty Paid. Such transportation and replenishment charges are included in the cost of line item of the Contract identified as the warranty.
- 27.7. In such rare cases where the Failed Component is either too large to be easily transported or the Failed Component cannot be readily identified and isolated within the larger entity, the Contractor shall be notified by the Purchaser of the failure immediately by telephone, fax or e-mail. The Contractor shall provide technical support to the Purchaser personnel in identifying the Failed Component so as to afford the Purchaser the opportunity to return the Failed Component. In such a case where the Failed Component cannot be identified

or is not cost effective or practical to ship to the Contractor's facility, the Contractor may elect to send field service personnel to the site of the failure and repair such equipment on location. In this event, such field service personnel shall be dispatched to the site of the failure within forty-eight (48) hours of initial notification. The expense of the technical support and field service shall be borne by the Contractor.

- 27.8. The Contractor shall conduct analysis of all Failed Components which are returned to him by the Purchaser or repaired in the field by Contractor field service personnel to determine the cause of the failure. The Contractor shall issue a report to the Purchaser within thirty (30) days of receipt of a returned item or field repair which contains the results of the analysis. The report shall contain the conclusion of the Contractor as to whether the cause of the failure was due to a Manufacturing Defect or a Design Defect and declare what course of remedial action the Contractor shall implement to prevent further failures of a similar nature. Repetitive failures of the same component may be grounds for a de facto determination by the Purchaser that a Design Defect exists.
- 27.9. If the Purchaser determines that a Design Defect exists in any of the Work accepted by the Purchaser under this Contract, the Purchaser shall promptly notify the Contractor of the Defect, in writing, within ninety (90) days after discovery of the Defect. Upon timely notification of the existence of a Defect, or if the Contractor independently discovers a Design Defect or Manufacturing Defect in accepted Work, the Contractor shall submit to the Purchaser, in writing within thirty (30) days, a recommendation for corrective actions, together with supporting information in sufficient detail for the Purchaser to determine what corrective action, if any, shall be undertaken.
- 27.10. The Contractor shall also prepare and furnish to the Purchaser data and reports applicable to any Correction required under this Clause (including revision and updating of all other affected data and already accepted documentation called for under this Contract) at no increase in the Contract price.
- 27.11. In the event of timely notice of a decision not to correct or only to partially correct, the Contractor shall submit a technical and cost proposal within forty-five (45) days to amend the Contract to permit Acceptance of the affected Work in accordance with the revised requirement, and an equitable reduction in the Contract price shall promptly be negotiated by the Parties and be reflected in a supplemental agreement to this Contract.
- 27.12. Within thirty (30) days after receipt of the Contractor's recommendations for corrective action and adequate supporting information in accordance with Clause 27.9, the Purchaser using sole discretion, shall give the Contractor written notice not to correct any Defect, or to correct or partially correct any Defect within a reasonable time.
- 27.13. The Contractor shall promptly comply with any timely written direction from the Purchaser to correct or partially correct a manufacturing or Design Defect, at no increase in the Contract price.
- 27.14. The Purchaser shall give the Contractor a written notice specifying any failure

or refusal of the Contractor to:

- 27.14.1. conduct analyses of Failed components and implement a course of remedial action as required by Clauses 27.7 and 27.8;
  - 27.14.2. provide replacement components, technical support or on-location field repair service in accordance with Clauses 27.6 and 27.7; or
  - 27.14.3. prepare and furnish data and reports as required by Clause 27.10.
- 27.15. The notice referred to in Clause 27.14 shall specify a period of time following receipt of the notice by the Contractor in which the Contractor must remedy the failure or refusal specified in the notice.
- 27.16. If the Contractor does not comply with the Purchaser's written notice in Clause 27.14, the Purchaser may by Contract or otherwise:
- 27.16.1. Obtain detailed recommendations for corrective action from its own resources or third parties and either:
    - 27.16.1.1. correct the Work;
    - 27.16.1.2. replace the Work, and if the Contractor fails to furnish timely disposition instructions, the Purchaser may dispose of the non-confirming Work for the Purchaser's account in a reasonable manner, in which case the Purchaser is entitled to reimbursement from the Contractor, or from the proceeds, for the reasonable expenses of care and disposition, as well as for excess costs incurred or to be incurred;
    - 27.16.1.3. obtain applicable data and reports; and/or
    - 27.16.1.4. charge the Contractor for the costs incurred by the Purchaser.
- 27.17. In no event shall the Purchaser be responsible for any extension or delays in the scheduled deliveries or periods of performance under this Contract as a result of the Contractor's obligations to correct Defects, nor shall there be any adjustment of the delivery schedule or period of performance as a result of the Correction of Defects unless provided by a supplemental agreement with adequate consideration.
- 27.18. The rights and remedies of the Purchaser provided in this Clause shall not be affected in any way by any terms or conditions of this Contract concerning the conclusiveness of inspection and Acceptance and are in addition to, and do not limit, any rights afforded to the Purchaser by any other Clause of this Contract or applicable law.

**28. RIGHT OF ACCESS, EXAMINATION OF RECORDS**

- 28.1. The Contractor shall give to the Purchaser and/or his representative(s) full and free access to his premises as and when required for the purpose of this Contract and shall ensure the same right of access to the premises of his Sub-contractors, by the inclusion in any such Sub-contracts of a provision substantially as set forth in this Clause.
- 28.2. The Purchaser and/or his representative(s) shall continue to have such right of access and examination of records as set forth in Clause 28.1 above until final payment under the Contract or the end of the warranty provisions under the Contract, whichever occurs later.
- 28.3. The expiration of the Purchaser's rights as set forth in Clause 28.2 is further subject to the provisions of Clause 19 (Pricing of Changes, Amendments and Claims), where a three (3) year right is established following the agreement of contractual amendments or the settlement of claims based upon the submission of cost and pricing data.
- 28.4. The period of access and examination described in Clause 28.1 above for records not related to cost aspects of a dispute or claim but which relate to issues of fact arising under either proceedings under Clause 41 (Disputes) or Clause 42 (Arbitration), or the settlement of claims made by either Party pursuant to the performance of this Contract, shall continue until such appeals, litigation or claims have been disposed of.

## **29. PATENT AND COPYRIGHT INDEMNITY**

- 29.1. The Contractor shall assume all liability against any and all third party claims that the services, Work and/or parts thereof, in whole or in part, infringe(s) an IPR in force in any countries, arising out of the manufacture, import, export, performance of the services or delivery of Work and/or out of the use or disposal by, or for the account of, the Purchaser of such Services and/or Work. The Contractor shall reimburse and/or indemnify the Purchaser, its officers, agents, employees and/or consultants: (i) for all costs, fees, damages, awards, settlement amounts and any other expenses awarded to the third party right holder against Purchaser and/or the final beneficiaries of the Work in relation to said third party claim; and (ii) for the costs and expenses incurred by the Purchaser in relation to said third party claims, including attorney fees. The Contractor shall be responsible for obtaining any licences necessary for the performance of this Contract and for making all other arrangements required to indemnify the Purchaser from any liability for IPR infringement in said countries.
- 29.2. Each Party shall immediately notify the other of any intellectual property infringement claims of which he has knowledge and which pertain to the Work under this Contract.
- 29.3. This indemnity shall not apply under the following circumstances:
  - 29.3.1. Patents or copyright which may be withheld from issue by order of the applicable government whether due to security regulations or

otherwise;

- 29.3.2. An infringement resulting from specific written instructions from the Purchaser under this Contract;
- 29.3.3. An infringement resulting from changes made to the Work by the Purchaser without the Contractor prior written consent, or;
- 29.3.4. An infringement resulting from changes or additions to the Work subsequent to final delivery and Acceptance under this Contract

### **30. INTELLECTUAL PROPERTY**

#### **30.1. Purchaser Background IPR**

- 30.1.1. The Contractor is licensed to use, non-exclusively and royalty-free any Purchaser Background IPR that is or will be made available for the sole purpose of carrying out the Work.
- 30.1.2. The Contractor shall not use any Purchaser Background IPR other than for the purpose of carrying out the Work without the prior written agreement of the Purchaser. Any such agreement shall include the terms relating to such use.
- 30.1.3. The Purchaser gives no warranty as to the validity of any Purchaser Background IPR. The Contractor shall not do anything or act in any way which is inconsistent with or prejudicial to the ownership by the Purchaser of any Purchaser Background IPR.

#### **30.2. Contractor Background IPR**

- 30.2.1. Any use of Contractor Background IPR for the purpose of carrying out the Work pursuant to the Contract shall be free of any charge to Purchaser. The Contractor hereby grants to NATO a non-exclusive, royalty-free and irrevocable licence to use and authorise others to use any Contractor Background IPR for the purpose of exploiting or otherwise using the Foreground IPR.
- 30.2.2. Any use of Contractor Background IPR is not limited to the number of users or the number of licenses required by the Contract for the use of system. The Purchaser reserves the right to use the Contractor Background IPR for any number of users and number of licenses as required, at no additional cost to the Purchaser.

#### **30.3. Foreground IPR**

- 30.3.1. All Foreground IPR is the property of the Purchaser on behalf of NATO. Consequently, no statement shall be made restricting the rights of the Purchaser in the Foreground IPR.
- 30.3.2. The Contractor shall ensure that suitable arrangements are in place

between its employees, agents, consultants and itself regarding Foreground IPR generated by said employees, agents, Subcontractors and consultants to allow the Contractor to fulfil its obligations under Clause 30.3.1 above.

- 30.3.3. The Contractor shall be entitled to use Foreground IPR on a non-exclusive, royalty free basis solely for the purpose of carrying out the Work.
- 30.3.4. The Contractor shall not use any Foreground IPR other than for the purpose of carrying out the Work without the Purchaser's prior written agreement. Any such agreement shall include terms relating to such use.
- 30.3.5. The Contractor shall provide the Purchaser, at the latest upon delivery of the Work and thereafter for the duration of the warranty and any purchased CLS agreement period, with full documented records of information in relation to the Work, including but not limited to, all drawings, specifications and other data that is necessary or useful to further develop, maintain and operate the Work.
- 30.3.6. The Contractor shall:
- 30.3.6.1. do all things necessary and sign all necessary or useful documents to enable the Purchaser to obtain the registration of the Foreground IPR as the Purchaser may require and select; and
  - 30.3.6.2. to execute any formal assignment or other documents as may be necessary or useful to vest title to any Foreground IPR in the Purchaser.
- 30.3.7. The Contractor undertakes:
- 30.3.7.1. to notify the Purchaser promptly of any invention or improvement to an invention or any design conceived or made by the Contractor; and
  - 30.3.7.2. to provide the Purchaser with such information as the Purchaser may reasonably request in order to: (i) determine the patentability of such invention or improvement; (ii) assess the need for registering such invention or improvement; and (iii) evaluate the potential value to the Purchaser of such a patent or registration if issued.
- 30.3.8. If the Purchaser determines that it wishes to apply for one or more patents for the disclosed invention or improvement or for a registration for the disclosed design, it will prosecute such application(s) at its own

expense. The Contractor undertakes to provide the Purchaser, at the Purchaser's expense, with such information and assistance as the Purchaser shall reasonably require prosecuting such application(s).

#### 30.4. Third Party IPR

- 30.4.1. Any use of Third Party IPR for the purpose of carrying out the Work pursuant to the Contract shall be free of any charge to the Purchaser. The Contractor hereby grants to NATO a non-exclusive, royalty-free and irrevocable licence to use and authorise others to use any Third Party IPR for the purpose of exploiting or otherwise using the Foreground IPR.
- 30.4.2. With the exception of COTS items, any use of Third Party IPR is not limited to the number of users or the number of licences required by the Contract for the use of system. With the exception of COTS items, the Purchaser reserves the right to use the Third Party IPR for any number of users and number of licences as required, at no additional cost to the Purchaser.
- 30.4.3. For COTS items, the Contractor shall be responsible for obtaining licences from the Third Party in line with requirements of the Statement of Work (including number and locations of licences).
- 30.4.4. Where Third Party IPR is the subject of a licence or other agreement between the third party and the Purchaser or the Contractor, the Contractor shall not use any Third Party IPR for the purposes of carrying out work pursuant to the Contract without the prior written approval of the Purchaser. Contractor shall inform Purchaser in advance of any restrictions on the Purchaser's use.
- 30.4.5. If, after the award of the Contract, the Contractor becomes aware of the existence of any Third Party IPR which the Contractor is using or believes is needed for the performance of the Contract, the Contractor shall immediately give the Purchaser a written report identifying such IPR and if they are compliant with the other provisions in the Contract. Any Third Party IPR under this clause is subject to the prior written approval by the Purchaser.
- 30.4.6. The Purchaser may consider open source solutions alongside proprietary ones in developments provided that such solutions are fully compliant with the requirements of this Contract. The Contractor shall disclose in advance the open source license associated with the complemented open source solution. The Purchaser reserves the right to refuse the incorporation of open source solutions that are deemed inadequate for incorporation in a NATO application (e.g. post-back obligations).

#### 30.5. Subcontractor IPR

30.5.1. When placing a Sub-contract which is concerned with or involves the creation of IPR, the Contractor shall ensure that the Sub-contractor enters into the same agreement for the use of the IPR as stipulated in this Contract in such a way that the Purchaser will be entitled to use the IPR as agreed between the Purchaser and the Contractor. The Contractor shall include in the Sub-contract the content of the provisions of this Clause.

## **31. SOFTWARE WARRANTY**

### **31.1. Statement of the Warranties**

31.1.1. The Contractor warrants that each Software delivered under this Contract will conform to all requirements specified in the Contract. This will also include Software design specifications, including software configuration.

31.1.2. Regardless of the Purchaser initiation of or participation in developing Software design or specifications, each Software delivered under this Contract will conform to the essential Performance requirements set forth in this Contract, as those essential Performance requirements measured, tested, and verified by tests and procedures set forth in this Contract.

### **31.2. Notification Requirement**

31.2.1. The Contractor agrees to notify the Purchaser in writing immediately after he first discovers that a defect(s) may exist in Software delivered under this Contract, unless the Purchaser has first notified the Contractor, in writing, of the same defect(s).

31.2.2. The Purchaser shall notify the Contractor upon discovery that a defect(s) may exist in any Software accepted by the Purchaser under this Contract, unless the Contractor has first notified the Purchaser, in writing of the same defect(s).

### **31.3. Duration of the Warranty**

31.3.1. For each Software delivered under this Contract, the Contractor Warranties stated in paragraph 31.1 above shall extend to all defects discovered within 12 months from the date of acceptance of the Software by the Purchaser.

### **31.4. Purchaser Remedies for Breach**

31.4.1. The rights and remedies of the Purchaser under this Software Warranty:

31.4.1.1. Are in addition to any rights and remedies of the Purchaser under



any other provision of this Contract, including, but not limited to, the Purchaser's rights in relation to latent defects, fraud, or gross mistakes that amount to fraud; and

- 31.4.1.2. Shall apply notwithstanding inspection, acceptance, or any other clauses or terms of this Contract;
- 31.4.2. In the event of any defect as defined herein with respect to a Software delivered under this Contract, the Purchaser, in its sole discretion may:
  - 31.4.2.1. Require the Contractor to take such action as may be necessary to eliminate the defect, at no additional cost to the Purchaser for materials, labour, transportation, or otherwise;
  - 31.4.2.2. Require the Contractor to supply, at no additional cost to the Purchaser, all materials and instructions necessary for the Purchaser to eliminate the defect and to pay costs reasonably incurred by the Purchaser in taking such action as may be necessary to eliminate the defect, or;
  - 31.4.2.3. Equitably reduce the contract price
- 31.4.3. The Purchaser may elect the remedies provided in paragraph 31.4.2.1 or 31.4.2.2 above notwithstanding any dispute respecting the existence of or responsibility for any alleged defect as defined herein with respect to any Software delivered under this contract, provided that the Contractor will not be required to pay costs incurred by the Purchaser under paragraph 31.4.2.2 until final determination of the defect. In the event that the alleged defect is subsequently determined not to be a defect subject to this warranty but the Contractor has incurred costs under paragraph 31.4.2.1 and 31.4.2.2 as required by the Contract by virtue of this paragraph 31.4.3, the contract price under this contract shall be equitably adjusted.
- 31.4.4. Election by the Purchaser of the remedy provided under paragraph 31.4.2.1 and 31.4.2.2 above shall not preclude subsequent election of a different remedy under paragraph 31.4.2 if the defect is not successfully eliminated under the prior election with one month of the notification under paragraph 31.2 above.
- 31.5. Limitations and Exclusions from Warranty Coverage
  - 31.5.1. This Software Warranty shall not apply to alleged defects that the Contractor demonstrates to be in or otherwise attributable to the Purchaser furnished property as determined, tested, and verified by the tests and procedures set forth in this Contract. Notwithstanding this paragraph, a defect is not attributable to Purchaser furnished property if it is the result of installation or modification of Purchaser furnished property by the Contractor or of the integration of Purchaser furnished property into any Software delivered under this Contract.

31.5.2. Any Purchaser Furnished Property needs to be checked and approved by the Contractor. Approval is implied once the Contractor starts using the Purchaser Furnished Property.

### 31.6. Markings

31.6.1. All Deliverables under this Contract will identify the owner of the Deliverable and if applicable will prominently include, notice of the existence of this warranty, its substance, its duration, and instructions to notify the Purchaser promptly if the Software is found to be defective. The markings should also be included in the operating and/or maintenance manuals or instructions accompanying such Software.

31.6.2. All Deliverables regardless of the media they are delivered onto and which are subject to export control restrictions shall be clearly marked indicating the type and nature of restriction as well as the national law imposing such restrictions. Nothing in this provision is intended to invalidate, void or otherwise limit the rights of the Purchaser under this Contract.

## 32. NATO CODIFICATION

32.1. For the purposes of this Clause "Technical Data" means the drawings, specifications and technical documentation of those items designated by the Purchaser to support the equipment covered by the Contract, and required to fully identify the items and, if applicable, draft item identifications to the extent and in the form to be agreed between the Codification Authority and the Contractor.

32.2. In order to ensure the orderly identification of equipment, the Contractor shall furnish at the request of the Codification Authority the Technical Data required for the identification of the items of supply to the NATO codification system in the time scale stated in this Contract.

32.3. A recommended spare parts list or a similar data carrier prepared in accordance with instructions provided by the Purchaser as the basis for codification shall be supplied by the Contractor by the date established in this Contract.

32.4. The Contractor shall supply or require his Sub-contractor(s)/supplier(s) to supply on request for the period of time specified in the Contract the relevant Technical Data for all items and sub-contracted items to the Codification Authority and the Purchaser. The Contractor shall require that each Sub-contractor/supplier shall include identical conditions in any subsequent order which he may place.

32.5. The drawings, specifications, related documentation and, if applicable, draft item identifications, prepared when possible by the true manufacturer of the item, shall be supplied by the Contractor or his Sub-contractor(s)/supplier(s)

direct to the Codification Authority and, if required, to the Purchaser as and when they become available or, at the latest within the time limits specified in the Contract. The Contractor shall inform the Codification Authority and Purchaser within twenty-one (21) Days of receipt of the request if the required Technical Data are not immediately available, and shall impose a similar obligation upon his Sub-contractor(s)/supplier(s)

- 32.6. Except as hereinafter provided, the Contractor shall require the Sub-contractor(s)/supplier(s) to furnish on request the information direct to the Codification Authority in the Sub-contractor(s)/supplier(s)' country, but the Contractor shall remain responsible for ensuring that the information is so furnished. In the event of a Sub-contract order being placed with a manufacturer in a non-NATO country, the Contractor shall be responsible for obtaining Technical Data from the Sub-contractor/supplier and furnishing it to the Purchaser.
- 32.7. Technical Data relating to any Sub-contractor's/supplier's items shall include but not be limited to the name and address of the true manufacturer(s), his/their true reference number(s), drawing or item Part number(s) and applicable data in addition to any Part or reference number(s) allocated by the Contractor, plus draft item identification(s) if required by the Codification Authority.
- 32.8. The Contractor shall provide the Technical Data required for codification of those items ordered with this Contract and also for the pertaining support items ordered with future contracts, including updating information regarding all agreed modifications, design or drawing changes made to the equipment or detailed Parts.
- 32.9. If the Contractor has previously supplied Technical Data (for the purpose stated in Clause 31.2), the Contractor is to state this fact and indicate to whom they were supplied and the Contractor shall not under normal circumstances be required to make a further supply of the Technical Data already provided. The Technical Data furnished by the Contractor and Sub-contractor(s)/supplier(s) are to be presented in accordance with the requirements for the preparation of item identification(s) as outlined in the Guide for Industry provided by the Codification Authority.
- 32.10. The Contractor should contact the Codification Authority for any information concerning the NATO codification system. This information is to be found at:  
“[http://www.nato.int/structur/ac/135/ncs\\_guide/e\\_guide.htm](http://www.nato.int/structur/ac/135/ncs_guide/e_guide.htm)”

### **33. RELEASE FROM CLAIMS**

- 33.1. Prior to final payment under this Contract, the Contractor and each assignee under this Contract shall execute and deliver a release discharging the Purchaser, its officers, agents and employees from all liabilities, obligations and claims arising out of or under this Contract subject only to the following exceptions:

- 33.1.1. specified claims in stated amounts or in estimated amounts where the amounts are not susceptible to exact statement by the Contractor;
- 33.1.2. claims for reimbursement of costs (other than expenses of the Contractor by reason of his indemnification of the Purchaser against patent liability) including reasonable expenses incidental thereto, incurred by the Contractor under the provisions of this Contract relating to patents.
- 33.1.3. a patent infringement resulting from specific written instructions from the Purchaser under this Contract.
- 33.1.4. a patent infringement resulting from changes or additions to the goods and services subsequent to final delivery and acceptance under this Contract.

#### **34. ASSIGNMENT OF CONTRACT**

- 34.1. The Purchaser reserves the right to assign this Contract, in whole or in part, to another NATO body, agency or representative within NATO or NATO Nations. In such a case, the Purchaser shall notify the Contractor accordingly in writing.
- 34.2. NATO shall remain responsible for its obligations under the Contract and for the actions of the body, agency or representative to which this Contract may be assigned.

#### **35. TRANSFER AND SUB-LETTING**

- 35.1. The Contractor shall not give, bargain, sell, assign, sub-let or otherwise dispose of the Contract or any part thereof or the benefit or advantage of the Contract or any part thereof without the prior written consent of the Purchaser.

#### **36. PURCHASER DELAY OF WORK**

- 36.1. If the performance of all or any part of the Work is delayed or interrupted by an act of the Purchaser in the administration of this Contract, which act is not expressly or implicitly authorised by this Contract, or by the Purchaser's failure to act within the time specified in this Contract (or within a reasonable time if no time is specified), an adjustment shall be made for any increase in the cost of performance of this Contract caused by such delay or interruption and the Contract modified in writing accordingly.
- 36.2. Adjustment shall be made also in the delivery or performance dates and any other contractual provision affected by such delay or interruption. However, no adjustment shall be made under this Clause for any delay or interruption:
  - 36.2.1. to the extent that performance would have been delayed or interrupted by any other cause, including the fault or negligence of the Contractor;  
or

36.2.2. for which an adjustment is provided or excluded under any other provision of this Contract.

36.3. No claim under this Clause shall be allowed:

36.3.1. if the Contractor has failed to notify the Purchaser in writing of the act or failure to act, indicating that this act or failure to act will result in a delay or increased costs;

36.3.2. for any costs incurred more than twenty (20) Days before the Contractor shall have notified the Purchaser in writing of the act or failure to act involved; and

36.3.3. unless the monetary claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such delay or interruption, but not later than the date of final payment under the Contract.

### **37. CONTRACTOR NOTICE OF DELAY**

37.1. In the event that the Contractor encounters difficulty in complying with the Contract schedule date(s) for whatever reason, including actual or potential labour disputes, the Contractor shall immediately notify the Contracting Authority in writing, giving pertinent details. This data shall be deemed to be informational in character and shall not be construed as a waiver by the Purchaser of any schedule or date, or of any rights or remedies provided by law or under this Contract.

37.2. Notwithstanding the above the Contractor shall be deemed to be in delay without notice from the Purchaser and only by simple expiry of the due date.

### **38. LIQUIDATED DAMAGES**

38.1. If the Contractor:

38.1.1. fails to meet the delivery schedule of the Work or any performance milestones specified in the Schedule of Work to this Contract, or any extension thereof, or

38.1.2. fails to obtain acceptance of the delivered Work as specified in the Contract, or, if no time for acceptance is specified in the contract within a reasonable time after work is delivered,

the actual damage to the Purchaser for the delay will be difficult or impossible to determine. Therefore, in lieu of actual damages the Contractor shall pay to the Purchaser, for each day of delinquency in achieving the deadline or milestone, fixed and agreed liquidated damages of 1.0% (one per cent) per day of the associated payment set forth in the Schedule of Payments provided in the Special Contract Provisions. If no Schedule of Payments is specifically set forth in the Special Contract Provisions, the liquidated damages will be assessed against the price of the applicable contract line item (CLIN) of the Schedule of Supplies, Services and Prices.

- 38.2. In addition to the liquidated damages referred to above, the Purchaser shall have the possibility of terminating this Contract in whole or in part, as provided in Clause 39 (Termination for Default). In the event of such termination, the Contractor shall be liable to pay the excess costs provided in Clause 38.5.
- 38.3. The Contractor shall not be charged with liquidated damages when the delay arises out of causes beyond the control and without the fault or negligence of the Contractor as defined in Clause 39.6 (Termination for Default). In such event, subject to the provisions of Clause 41 (Disputes), the Purchaser shall ascertain the facts and extent of the delay and shall extend the time for performance of the Contract when in his judgement the findings of the fact justify an extension.
- 38.4. Liquidated damages shall be payable to the Purchaser from the first day of delinquency and shall accrue at the rate specified in Clause 38.1 to 20% of the value of each line item individually and an aggregate sum of all delinquent items not to exceed 15% of the value of the total Contract. These liquidated damages shall accrue automatically and without any further notice being required.
- 38.5. The rights and remedies of the Purchaser under this clause are in addition to any other rights and remedies provided by law or under this Contract.

### **39. TERMINATION FOR DEFAULT**

- 39.1. The Purchaser may, subject to Clause 39.6 below, by written notice of default to the Contractor, terminate the whole or any part of this Contract if the Contractor, inclusive but not limited to:
- 39.1.1. fails to make delivery of all or part of the Work within the time specified in the contract or any agreed extension thereof;
  - 39.1.2. fails to make progress as to endanger performance of this Contract in accordance with its terms;
  - 39.1.3. fails to meet the technical requirements or the Specifications of the Contract;
  - 39.1.4. fails to comply with Clause 11 (Security);
  - 39.1.5. transfer this Contract without the Purchaser's prior written consent;
  - 39.1.6. breaches any provision of this Contract; or
- 39.2. In the case of any of the circumstances set forth in Clause 39.1 above, the Purchaser shall issue a letter to the Contractor stating that an actual or potential default exists and requiring a response from the Contractor within ten (10) Days that identifies:

- 39.2.1. in the case of late delivery of Work, when the Contractor shall deliver the Work and what circumstances exist which may be considered excusable delays under Clause 39.6.
- 39.2.2. in the case of the other circumstances identified in Clause 39.1 above, what steps the Contractor is taking to cure such failure(s) within a period of ten Days (or such longer period as the Purchaser may authorise in writing) after receipt of notice in writing from the Purchaser specifying such failure and identifying any circumstances which exist which may be considered excusable under Clause 39.6.
- 39.3. The Purchaser shall evaluate the response provided by the Contractor or, in the absence of a reply within the time period mentioned in Clause 39.2, all relevant elements of the case, and make a written determination within a reasonable period of time that:
- 39.3.1. sufficient grounds exist to terminate the Contract in whole or in part in accordance with this Clause and that the Contract is so terminated;
- 39.3.2. there are mitigating circumstances and the Contract should be amended accordingly; or
- 39.3.3. the Purchaser will enter a period of forbearance in which the Contractor must show progress, make deliveries, or comply with the Contract provisions as specified by the Purchaser. The Purchaser may apply other remedial actions as provided by this Contract during such period of forbearance. This period of forbearance shall in no event constitute a waiver of Purchaser's rights to terminate the Contract for default.
- 39.4. At the end of the period of forbearance, which may be extended at the Purchaser's discretion, the Purchaser may terminate this Contract in whole or in part as provided in Clause 39.1 if the Contractor has not made adequate progress, deliveries or compliance with the Contract provisions which were the terms of the period of forbearance.
- 39.5. In the event the Purchaser terminates this Contract in whole or in part, as provided in Clause 39.1, the Purchaser may procure, upon such terms and in such manner as the Purchaser may deem appropriate, Work similar to those so terminated, and the Contractor shall be liable to the Purchaser for any excess costs for such similar Work; however, the Contractor shall continue the performance of this Contract to the extent not terminated under the provisions of this clause.
- 39.6. Except with respect to the default of Sub-contractors, the Contractor shall not be held liable for a termination of the Contract for default if the failure to perform the Contract arises out of causes beyond the control and without the fault or negligence of the Contractor.
- 39.6.1. Such causes may include, but are not restricted to, acts of God, acts of the public enemy, acts of the Purchaser in its contractual capacity, acts of sovereign governments which the Contractor could not

reasonably have anticipated, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor.

- 39.6.2. If the failure to perform is caused by the default of a Sub-contractor, and if such default arises out of causes beyond the control of both the Contractor and Sub-contractor, without the fault or negligence of either of them, the Contractor shall not be held liable for a termination for default for failure to perform unless the Work to be furnished by the Sub-contractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required delivery schedule.
- 39.7. If this Contract is terminated as provided in Clause 39.1, the Purchaser, in addition to any other rights provided in this Clause and the Contract, may require the Contractor to transfer title and deliver to the Purchaser, in the manner and to the extent directed by the Purchaser:
- 39.7.1. any completed Work with associated rights ;
- 39.7.2. such partially completed Work, materials, Parts, tools, dies, jigs, fixtures, plans, drawings, information, and Contract rights (hereinafter called "Manufacturing materials") with associated rights as the Contractor has specifically produced or specifically acquired for the performance of such part of this Contract as has been terminated;
- 39.8. In addition to Clause 39.7, the Contractor shall, upon direction of the Purchaser, protect and preserve property in the possession of the Contractor in which the Purchaser has an interest.
- 39.9. Payment for completed Work delivered to and accepted by the Purchaser shall be at the Contract price.
- 39.10. Payment for manufacturing materials delivered to and accepted by the Purchaser and for the protection and preservation of property shall be in an amount agreed upon by the Contractor and Purchaser, failure to agree to such amount shall be a dispute within the meaning of Clause 41 (Disputes).
- 39.11. The Purchaser may withhold from amounts otherwise due to the Contractor for such completed Work or manufacturing materials such sum as the Purchaser determines to be necessary to protect the Purchaser against loss because of outstanding liens or claims of former lien holders.
- 39.12. If, after notice of termination of this Contract under the provisions of this Clause, it is determined for any reason that the Contractor was not in default under the provisions of this Clause, or that the default was excusable under the provisions of this Clause, the rights and obligations of the Parties shall be the same as if the notice of termination had been issued pursuant to Clause 40 (Termination for the Convenience of the Purchaser).
- 39.13. If after such notice of termination of this Contract under the provisions of this Clause, it is determined for any reason that the Contractor was not in default



under the provisions of this Clause and that the Parties agree that the Contract should be continued, the Contract shall be equitably adjusted to compensate for such termination and the Contract modified accordingly. Failure to agree to any such adjustment shall be a dispute within the meaning of Clause 41 (Disputes).

- 39.14. The rights and remedies of the Purchaser provided in this Clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.

**40. TERMINATION FOR THE CONVENIENCE OF THE PURCHASER**

- 40.1. The performance of Work under this Contract may be terminated by the Purchaser in accordance with this Clause in whole, or from time to time in part, whenever the Purchaser shall determine that such termination is in the best interest of the Purchaser.

- 40.2. Any such termination shall be effected by delivery to the Contractor of a written notice of termination, signed by the Contracting Authority, specifying the extent to which performance of Work under the Contract is terminated, and the date upon which such termination becomes effective.

- 40.3. After receipt of a Notice of Termination and except as otherwise directed by the Contracting Authority, the Contractor shall:

40.3.1. stop the Work on the date and to the extent specified in the notice of termination;

40.3.2. place no further orders or Sub-contracts for Work, Parts, materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Contract as is not terminated;

40.3.3. terminate all orders and Sub-contracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;

40.3.4. assign to the Purchaser, in the manner, at the times and to the extent directed by the Purchaser, all of the right, title and interest of the Contractor under the orders and Sub-contracts so terminated, in which case the Purchaser shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and Sub-contracts;

40.3.5. settle all outstanding liabilities and all claims arising out of such termination of orders and Sub-contracts, with the approval or ratification of the Purchaser to the extent he may require, which approval or ratification shall be final for all the purposes of this Clause;

40.3.6. transfer title and deliver to the Purchaser in the manner, at the times, and to the extent, if any, directed by the Contracting Authority of:

- 40.3.6.1. the fabricated parts, work in process, completed work, Work, and other material produced as a part of, or acquired in connection with the performance of the Work terminated by the notice of termination, and
  - 40.3.6.2. the completed or partially completed plans, drawings, information, and other property which, if the Contract had been completed, would have been required to be furnished to the Purchaser;
- 40.3.7. use his best efforts to sell, in the manner, at the times, to the extent, and at the price or prices directed or authorised by the Contracting Authority, any property of the types referred to in Clause 40.3.6 above. However, the Contractor:
- 40.3.7.1. shall not be required to extend credit to any Buyer; and
  - 40.3.7.2. may acquire any such property under the conditions prescribed by and at a price or prices approved by the Purchaser; and provided further that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Purchaser to the Contractor under this Contract or shall otherwise be credited to the price or cost of the Work or paid in such manner as the Contracting Authority may direct;
- 40.3.8. complete performance of such part of the Work as shall not have been terminated by the Notice of Termination; and
- 40.3.9. take such action as may be necessary, or as the Purchaser may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the Purchaser has or may acquire an interest.
- 40.4. The Contractor may submit to the Purchaser a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorised by the Purchaser, and may request the Purchaser to remove such items or enter into a storage agreement covering the same; provided that the list submitted shall be subject to verification by the Purchaser upon removal of the items, or if the items are stored, within forty-five (45) Days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.
- 40.5. After receipt of a notice of termination, the Contractor shall submit to the Purchaser his termination Claim for the Work covered by the notice of termination, in the form and with certification prescribed by the Purchaser. Such claim shall be submitted promptly but in no event later than six (6) months from the effective date of termination, unless one or more extensions

are granted in writing by the Purchaser, upon request of the Contractor made in writing within such six-month period or authorised extension thereof. However, if the Purchaser determines that the facts justify such action, the Purchaser may receive and act upon any such termination claim at any time after such six-month period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Purchaser may determine on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

- 40.6. Subject to the provisions of Clause 40.5, the Contractor and the Purchaser may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the total or partial termination of Work pursuant to this Clause, which amount or amounts may include a reasonable allowance for profit on work done; provided that such agreed amount or amounts exclusive of settlement costs shall not exceed total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of the Work not terminated. The Contract shall be amended accordingly and the Contractor shall be paid the amount agreed.
- 40.7. In the event of the failure of the Contractor and the Purchaser to agree as provided in Clause 40.6 upon the whole amount to be paid to the Contractor by reason of the termination of Work pursuant to Clause 40, the Purchaser shall pay to the Contractor the amounts determined by the Purchaser as follows, but without duplication of any amounts agreed upon in accordance with Clause 40.6 the total of:
- 40.7.1. for completed Work accepted by the Purchaser (or sold or acquired as provided in Clause 40.3 above) and not therefore paid for, a sum equivalent to the aggregate price for such Work computed in accordance with the price or prices specified in the Contract, appropriately adjusted for any saving of freight or other charges;
- 40.7.2. the costs incurred in the performance of the Work terminated including initial costs and preparatory expense allocable thereto, but exclusive of any costs attributable to Work paid or to be paid for under Clause 40.7.1;
- 40.7.3. the cost of settling and paying claims arising out of the termination of work under Sub-contracts or orders, as provided in Clause 40.3.5, which are properly chargeable to the terminated portion of the Contract, exclusive of amounts paid or payable on account of Work or materials delivered or services furnished by Sub-contractors or vendors prior to the effective date of the notice of termination, which amounts shall be included in the costs payable under Clause 40.7.2; and
- 40.7.4. a sum, as profit on Clause 40.7.1 above, determined by the Purchaser to be fair and reasonable; provided, however, that if it appears that the

Contractor would have sustained a loss on the entire Contract, had it been completed, no profit shall be included or allowed and an appropriate adjustment shall be made reducing the amount of the settlement to reflect the indicated rate of loss; and

- 40.7.5. the reasonable costs of settlement, including accounting, legal, clerical and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination and settlement of Sub-contracts there under, together with reasonable storage, transportation, and other costs incurred in connection with the protection, or disposition of property allocable to this Contract.
- 40.8. The total sum to be paid to the Contractor under Clause 40.7 shall not exceed the total Contract price as reduced by the amount of payments otherwise made and as further reduced by the Contract price of Work not terminated.
- 40.9. Except for normal spoilage, and except to the extent that the Purchaser shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to the Contractor, as provided in Clause 40.7 above, the fair value, as determined by the Purchaser, of property which is destroyed, lost, stolen, or damaged so as to become undeliverable to the Purchaser, or to a buyer pursuant to Clause 40.3.7 above.
- 40.10. The Contractor shall have the right to dispute, under the Clause 41 (Disputes), any determination made by the Purchaser under Clauses 40.5 and 40.7, except that if the Contractor has failed to submit his claim within the time provided in Clause 40.5 and has failed to request extension of such time, the Contractor shall be foreclosed from his right to dispute said determination. In any case where the Purchaser has made a determination of the amount due under Clauses 40.5 and 40.7, the Purchaser shall pay the Contractor the following:
- 40.10.1. if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the Purchaser, or
- 40.10.2. if an appeal has been taken, the amount finally determined on such appeal.
- 40.11. In arriving at the amount due to the Contractor under this Clause there shall be deducted:
- 40.11.1. all unliquidated advance or other payments on account theretofore made to the Contractor, applicable to the terminated portion of this Contract;
- 40.11.2. any claim which the Purchaser may have against the Contractor in connection with this Contract; and

- 40.11.3. the agreed price for, or the proceeds of the sale of, any materials, Work, or other things acquired by the Contractor or sold, pursuant to the provisions of this Clause, and not otherwise recovered by or credited to the Purchaser.
- 40.12. If the termination hereunder is partial, prior to the settlement of the terminated portion of this Contract, the Contractor may file with the Purchaser, in accordance with Clause 16 (Changes), a request in writing for an equitable adjustment of the price or prices relating to the continued portion of the Contract (the portion not terminated by the notice of termination), and such equitable adjustment as may be agreed upon shall be made in such price or prices.
- 40.13. The Purchaser may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of this Contract whenever in the opinion of the Purchaser the aggregate of such payments shall be within the amount to which the Contractor will be entitled hereunder. If the total of such payment is in excess of the amount finally agreed or determined to be due under this Clause, such excess shall be payable by the Contractor to the Purchaser upon demand, together with interest calculated using the average of the official base rate(s) per annum of the deposit facility rate as notified by the European Central Bank or such other official source as may be determined by the Purchaser, for the period from the date the excess is received by the Contractor to the date such excess is repaid to the Purchaser, provided, however, that no interest shall be charged with respect to any such excess payment attributed to a reduction in the Contractor's claim by reason of retention or other disposition of termination inventory until ten days after the date of such retention or disposition or such later date as determined by the Purchaser by reason of the circumstances.
- 40.14. Unless otherwise provided for in this Contract, the Contractor, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the Purchaser at all reasonable times at the office of the Contractor, but without direct charge to the Purchaser, all his books, records, documents, computer files and other evidence bearing on the costs and expenses of the Contractor under this Contract and relating to the work terminated hereunder, or, to the extent approved by the Purchaser, photographs, micro-photographs, or other authentic reproductions thereof.

#### **41. DISPUTES**

- 41.1. Except to the extent to which special provision is made elsewhere in the Contract, all disputes, differences or questions which are not disposed of by agreement between the Parties to the Contract with respect to any matter arising out of or relating to the Contract, other than a matter as to which the decision of the Contracting Authority under the Contract is said to be final and conclusive, shall be decided by the Contracting Authority. The Contracting Authority shall reduce his decision to writing and mail or otherwise furnish a

copy thereof to the Contractor.

- 41.2. The Contracting Authority shall not proceed with the evaluation and decision in respect of any claim until and unless the Contractor has submitted the attestation as foreseen in Clause 18 (Claims), as well as the complete proof and evidence of the claim (either by submission or by identification of the relevant documentation).
- 41.3. The Contracting Authority's decision shall be final and conclusive unless, within 30 Days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Authority his decision to open arbitration proceedings in accordance with the Clause 42 (Arbitration). The burden of proof for both receipt and delivery of such documentation shall be by signed and dated registered mail receipt or by hand receipt as acknowledged and signed by the Contracting Authority.
- 41.4. Pending final decision of a dispute, the Contractor shall proceed diligently with the performance of the Contract, unless otherwise instructed by the Contracting Authority.

## **42. ARBITRATION**

- 42.1. Within a period of thirty days from the date of receipt of the notification referred to in Clause 41.3 above, the Parties shall jointly appoint an arbitrator. In the event of failure to appoint an arbitrator, the dispute or disputes shall be submitted to an Arbitration Tribunal consisting of three arbitrators, one being appointed by the Purchaser, another by the other contracting party and the third, who shall act as President of the Tribunal, by these two arbitrators. Should one of the Parties fail to appoint an arbitrator during the fifteen days following the expiration of the first period of thirty days, or should the two arbitrators be unable to agree on the choice of the third member of the Arbitration Tribunal within thirty days following the expiration of the said first period, the appointment shall be made, within twenty-one days, at the request of the Party instituting the proceedings, by the Secretary General of the Permanent Court of Arbitration at The Hague.
- 42.2. Regardless of the procedure concerning the appointment of this Arbitration Tribunal, the third arbitrator will have to be of a nationality different from the nationality of the other two members of the Tribunal.
- 42.3. Any arbitrator must be of the nationality of any one of the member states of NATO and shall be bound by the rules of security in force within NATO.
- 42.4. Any person appearing before the Arbitration Tribunal in the capacity of an expert witness shall, if he is of the nationality of one of the member states of NATO, be bound by the rules of security in force within NATO. If he is of another nationality, no NATO classified documents or information shall be communicated to him.
- 42.5. An arbitrator, who, for any reason whatsoever, ceases to act as an arbitrator,

shall be replaced under the procedure laid down in Clause 42.1 above.

- 42.6. The Contractor agrees to submit to the Arbitration Tribunal only such issues, facts, evidence and proof which the Contractor had beforehand identified and submitted to the Contracting Authority for decision in accordance with Clause 41 (Disputes). The jurisdictional authority of the Arbitration Tribunal shall be restricted to consider only those identical issues, facts, evidence and proof so identified and submitted to the Contracting Authority.
- 42.7. The Purchaser likewise agrees to restrict its submissions only to the information on which the Contracting Authority based its decision and not to introduce new information and arguments which cannot reasonably be deduced or inferred from the written decision of the Contracting Authority in response to the original dispute.
- 42.8. The Arbitration Tribunal will take its decisions by a majority vote. It shall decide where it will meet and, unless it decides otherwise, shall follow the arbitration procedures of the International Chamber of Commerce in force at the date of signature of the present Contract.
- 42.9. The awards of the arbitrator or of the Arbitration Tribunal shall be final and there shall be no right of appeal or recourse of any kind. These awards shall determine the apportionment of the arbitration expenses.
- 42.10. Pending final decision of a dispute, the Contractor shall proceed diligently with the performance of the Contract, unless otherwise instructed by the Contracting Authority.

#### **43. SEVERABILITY**

- 43.1. If one or more of the provisions of this Contract is declared to be invalid, illegal or unenforceable in any respect under any applicable law, the validity, legality and enforceability of the remaining provisions shall not be affected. Each of the Parties shall use its best efforts to immediately and in good faith negotiate a legally valid replacement provision.

#### **44. APPLICABLE LAW**

- 44.1. This Contract shall be governed, interpreted and construed in accordance with the private contract law of the Kingdom of Belgium.

\* \*

**ANNEX 1 TO GENERAL PROVISIONS****PURCHASER'S PRICING PRINCIPLES****A. General**

1. With regard to all actions included in Clause 19, 'Pricing of Changes, Amendments and Claims', the Purchaser will honour the accounting standards and pricing principles to which the Contractor is required to conform by the national defence authority (or other governing national authority, as applicable) in the country of origin of the Contractor. Where such accounting standards are non-existent or incomplete, or where the Contractor is not required to conform to such standards and principles, the Parties agree that the Purchaser's Pricing Principles contained herein shall govern.
2. As may be requested by the Purchaser, the Contractor shall provide documentation that the standards or principles employed in the submission of cost or pricing data are in conformance with governing national policies and regulation. The Contractor, when submitting a price proposal based upon national standards and regulations, shall provide a point of contact within the national body governing such standards and regulations in order to allow Purchaser verification and audit.
3. Where such conformance cannot be demonstrated to the satisfaction of the Purchaser, the Purchaser's Pricing Principles will govern.
4. The Contractor shall clearly state whether national standards and rules or the Purchaser's Pricing Principles and formats are the basis for the price proposal.
5. Whether national standards or Purchaser pricing principles are applied, all cost and pricing data shall be verifiable, factual and include information reasonably required to explain the estimating process.
6. The Contractor shall also incorporate provisions corresponding to those mentioned herein in all sub-contracts, and shall require price and cost analysis provisions be included therein.



## B. Purchaser's Pricing Principles

### 1. Allowable cost

A cost is allowable for consideration by the Purchaser if the following conditions are fulfilled:

(a) it is incurred specifically for the Contract or benefits both the Contract and other work or is necessary to the overall operation of the business although a direct relationship to any particular product or service cannot be established and is allocated to them in respective proportion according to the benefit received;

#### i. Direct Costs

A direct cost is any cost which can be identified specifically with a particular cost objective as generally accepted. Direct costs are not limited to items which are incorporated in the end product as material or labour.

#### ii. Indirect Costs

An indirect cost is one which is not readily subject to treatment as a direct cost. When presented these costs shall be accumulated in logical cost groupings in accordance with sound accounting principles and the Contractor's established practices. An indirect cost may be allocated to more than one final cost objective. An indirect cost shall not be allocated to a final cost objective if other costs incurred for the same purpose, in like circumstances, have been included as a direct cost of that or any other final cost objective. Such costs shall be presented as overhead rates and be applied to each related direct cost grouping as presented in sub- paragraph 5 hereafter.

(b) The Contractor shall specify the allocation of costs to either of the cost groupings. The method by which costs are accumulated and distributed as part of direct or indirect costs cannot be modified during the duration of the Contract.

(c) it is reasonable and expedient in its nature and amount and does not exceed that which would be incurred by an ordinary prudent person in the conduct of competitive business;

(d) it is not liable to any limitations or exclusion as to types or amounts of cost items as set forth herein.

(e) The Purchaser will review other costs presented against the contract and will determine if they would be allowable.

## 2. Unallowable Costs

In general all costs which cannot be shown by the contractor to be directly or indirectly of benefit to the Contract are totally unallowable. Examples of such costs are, among others:

- (a) Advertising costs
- (b) Costs of remuneration, having the nature of profit sharing.
- (c) Costs of maintaining, repairing and housing idle and excess facilities.
- (d) Fines and penalties as well as legal and administrative expenses resulting from a violation of laws and regulations.
- (e) Losses on other contracts or on expected follow-on contracts
- (f) Costs incurred for the creation of reserves for general contingencies or other reserves (e.g. for bad debts, including losses).
- (g) Losses on bad debts, including legal expenses and collection costs in connection with bad debts.
- (h) Costs incurred to raise capital.
- (i) Gains and losses of any nature arising from the sale or exchange of capital assets other than depreciable property.
- (j) Taxes on profits.
- (k) Contractual penalties incurred.
- (l) Commissions and gratuities.
- (m) Interest on borrowings.

## 3. Rates and Factors

- (a) The Contractor shall inform the Purchaser of his rates and factors the basis upon which they were computed.
- (b) If the Contractor's rates and factors for similar contracts placed with national or international public services have not been established or approved by a government agency or an agency accepted by his government, the Contractor shall provide the necessary data to support

the proposed rates.

- (c) The term "provisional " used in the title of a rate or factor means a tentative rate established for interim billing purposes pending negotiation and agreement to the final rate or factor.
- (d) A rate or factor is pre-determined if it is fixed before or during a certain period and based on (estimated) costs to be incurred during this period. A rate or factor is post-determined if it is fixed after a certain period and based on costs actually incurred during this period. Pre-determined rates or factors shall be agreed upon as final rates whenever possible; otherwise the provisions of paragraph 3c above shall apply pending agreement to post-determined rates or factors.
- (e) Such rates or factors shall be determined on the basis of Contractor's properly supported actual cost experience.
- (f) If the rates or factors of the Contractor for similar contracts placed by national or international public services have been established or approved by a government agency or an agency accepted by his government and the Contractor proposes the application of these rates, he shall state the name and address of the agency which has accepted or approved the rates and the period for which they were established. If he proposes rates which vary from the rates mentioned above, he shall furthermore provide a justification for the difference.

#### 4. Profit/Benefit

- (a) Over the entire life cycle of a given acquisition, Profit and/or Benefit may be subject to negotiation.
- (b) Subcontracting profit/benefit amounts are dependent upon the size, nature and oversight needs of the subcontract(s) the prime contractor will use for work performance period.
- (c) Profit/benefit is considered by the Purchaser to be directly related to the anticipated risk of the Contractor during the performance of the Contract.

N A T O U N C L A S S I F I E D



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

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

**STATEMENT OF WORK (SOW)**

Version 1.0

21/12/2020

N A T O U N C L A S S I F I E D



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Date	Version	Changes
21 Dec 2020	1.0	IFB package release version





# 1 Introduction

## 1.1 Background

- [1] The Intelligence Functional Services (INTEL-FS) will provide an information management capability that will enable the Commands to execute the Intelligence Support function effectively and efficiently, and to provide comprehensive and relevant intelligence in a timely and responsive manner.
- [2] Delivery of the functionalities of INTEL-FS is planned to be done in spirals (where each spiral could consist of multiple increments). The first spiral (INTEL-FS Spiral 1) was delivered in 2016. INTEL-FS Spiral 2 capability will be procured as two separate systems:
  - (1) As a set of backend services; and
  - (2) As web-browser based collection of user applications.
- [3] This SOW is for the procurement of the web-browser based user applications hereafter referred to as INTEL-FS2 UA, or I2UA.
- [4] The backend services will be procured through a different contract. The procurement of the backend services is described in a separate SOW.

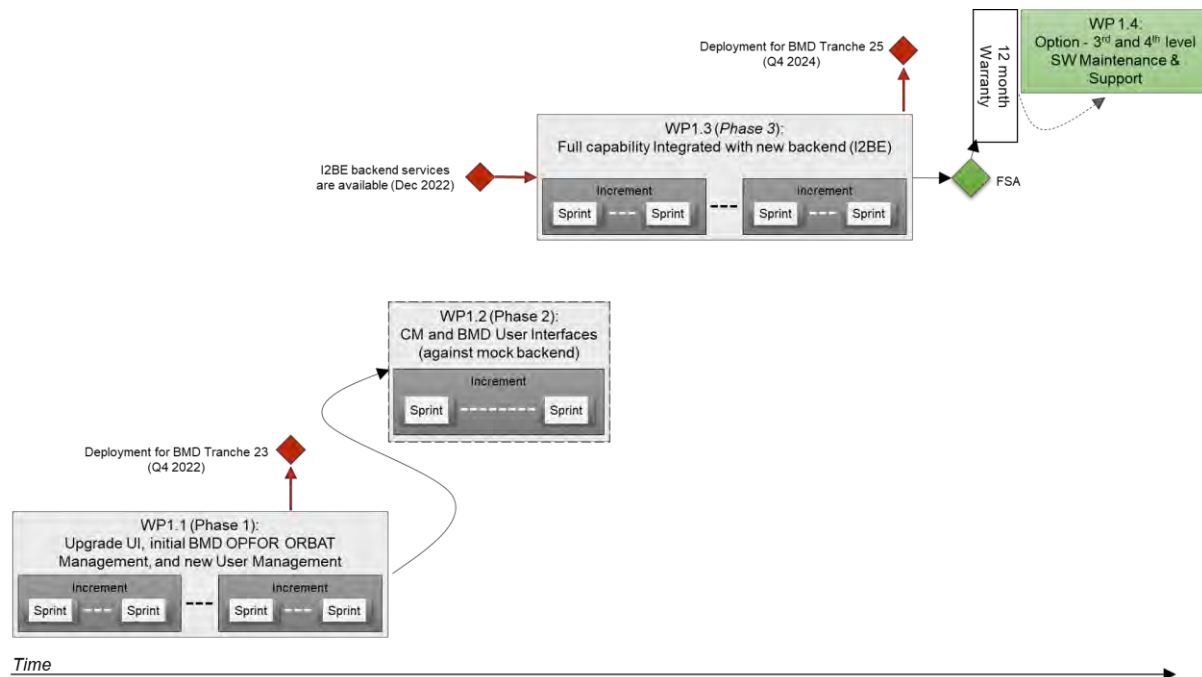
## 1.2 Purpose

- [5] The purpose of the present contract is to procure a new NATO-owned INTEL-FS User Applications capability (I2UA) for deployment to the NATO Command Structure (NCS) operational network.
- [6] The I2UA will replace the current user interface part of INTEL-FS Spiral 1.
- [7] The I2UA system requirements is defined in the Annex A to this SOW.

## 1.3 Scope of Work

- [8] The project will be executed in accordance with the principles from the Dynamic System Development Method (DSDM):
  - (1) Focus on the business need;
  - (2) Deliver on time;
  - (3) Collaborate;
  - (4) Never compromise quality;
  - (5) Build incrementally from firm foundations;
  - (6) Develop iteratively;
  - (7) Communicate continuously and clearly;
  - (8) Demonstrate control.
- [9] As shown in Figure 1-1, the main work will be organized in three work packages (WP 1.1, WP1.2, and WP1.3), and in addition an optional work package (WP 1.4) is defined for the eventuality of the Contractor, post the warranty period, is providing 3<sup>rd</sup> and 4<sup>th</sup> level software maintenance and support.

Figure 1-1 Work Packages, Increments, and Sprints



- [10] The main work package is subdivided into a set of increments, where each increment will deliver a tangible and payable deliverable. Each increment is again divided into multiple sprints.
- [11] The first work package (WP1.1) will start with the current INTEL-FS Spiral 1 and upgrade its user interfaces (UI) and it will also add some new UI functionality (in particular functionality for Ballistic Missile Defence (BMD) Order of Battle (ORBAT) management). For this work the Contractor will have to implement its UI functionality accessing the existing INTEL-FS Spiral 1 backend through an abstraction layer. To support the BMD ORBAT functionality the Contractor will have to implement some interim backend logic (it is interim, because it eventually will be replaced by the new I2BE backend services). Included in the work in WP 1.1 is also implementation of new functionality for managing users and their privileges while adapting to the new Bi-Strategic Command Automated Information System (B-SC AIS) identity management (IdM) platform.
- [12] The second work package (WP1.2) is introduced as a mitigation in case the new backend services (provided through a separate contract) is not ready after phase 1 is completed. In the period, waiting for the new I2BE services and the new I2BE application programming interface (API) to become ready, the Contractor will implement new user interfaces. This new UI will be implemented against mock backends (the Contractor will be responsible for establishing such mock backends).
- [13] The third work package (WP 1.3) will continue to evolve the new UI functionalities (started in WP 1.2) while integrating against the new I2BE API. The work also include upgrading all the functionality implemented in WP 1.1 to use the new I2BE API instead of accessing INTEL-FS Spiral 1 through an abstraction layer.
- [14] The Contractor will deliver training material for the usage of the user interfaces. This training material will be used to train a selected group of “students” during the sessions of testing the applications non-functional Learnability requirement.
- [15] The delivered SW at the end of each increment will have to have a quality at the level of being ready for deployment to production. The deployment of new software

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

- [16] A fourth and optional work package (WP 1.4) is defined for the eventuality of the Contractor, post the warranty period, is providing software (SW) maintenance support (3<sup>rd</sup> level support).
- [17] The Contractor is expected to apply the Scrum agile process framework for managing the implementation work and to apply Behaviour Driven Development (BDD) methodology.
- [18] The Contractor will have to deliver all supplies and services as specified in this SOW and as stated in the Schedule of Supplies and Services (SSS) for all categories of the project.
- [19] The deliverables of the work is defined in the Schedule of Services and Supplies (SSS) where each deliverable will have by contract line item number (CLIN), a cost, and an expected delivery time information. The CLIN delivery times in the SSS is defined through the increment number when the deliverable is expected.

## 1.4 Purchaser's Responsibilities

- [20] The following services and items will be provided by the Purchaser for the performance of the Contract.
  - (1) Access to Subject Matter Experts (SME) and required NATO documentation during project execution;
  - (2) Provide purchaser furnished items (PFI) as per section 1.5 of this SOW;
  - (3) Coordinating access to NATO sites the Contractor will have to visit.
- [21] The Purchaser's Project Manager (PM) will act as the Purchaser's representative and will be the primary interface between the Contractor and Purchaser after the Effective Date of Contract (EDC).
- [22] The Purchaser's Project Manager will be supported by specialists in certain areas (e.g. the project Technical Lead) who may, from time to time, be delegated to act on the Project Manager's behalf in their area of expertise.
- [23] Neither the Project Manager, nor any other NATO personnel may make changes to the terms and conditions of the Contract, but may only provide the Purchaser's interpretation of technical matters. All changes to the Contract will be made through the Purchaser's contracting office only.
- [24] The Purchaser will provide the Contractor with available technical descriptions of external NATO interfaces if such descriptions are required for the work.
- [25] The Purchaser will make available to the Contractor the facilities necessary to test and demonstrate the delivered software's interoperability with required external NATO interfaces.

## 1.5 Purchaser Furnished Items (PFI)

- [26] The Purchaser will provide access to reference test environment and integration testbed facilities for the required testing activities under this contract at the Purchaser's facility (either The Hague-Netherlands or Mons-Belgium).
- [27] The Purchaser will equip the Contractor with one NATO RESTRICTED (NR) laptop to be used for sharing of NR material.

- [28] The Purchaser will provide the Contractor with a set of user accounts on the NATO Software Factory (NSF), see section 2.4.1.
- [29] The Purchaser will provide the Contractor with the Service Oriented Architecture (SOA) and Identity Management (IdM) Platform, see [SOA-IdM].
- [30] The Purchaser will provide the Contractor with a reference test environment for system integration testing (this will be provided within the NSF).
- [31] The Purchaser will provide the Contractor with the current INTEL-FS Spiral 1 software.
- [32] The Purchaser will provide the Contractor with C4ISR Visualization Component (VC), see SRS for additional details.
- [33] The Purchaser will provide the Contractor with a software library for the video player component, see SRS for additional details.

## 1.6 Conventions

- [34] Requirements in the SOW are formulated using the form “shall”. Context information supporting the requirements definition is provided using the form “will”.
- [35] “Shall” statements are contractually binding; “Will” statements are non-mandatory, or they imply intent on the part of the Purchaser.
- [36] Mandatory requirements in the SOW are preceded by a unique heading number, consisting of a prefix, followed by a number.
- [37] Informational or context information not conveying any requirement on the Contractor is preceded by a number heading in brackets, [xx], without prefix letters.
- [38] The term “the Purchaser” means the NCI Agency or its authorised representatives.
- [39] Whenever requirements are stated herein to “include” a group of items, parameters, or other considerations, “include” means “include but not limited to”.
- [40] Whenever reference is made to a section or paragraph, the reference includes all subordinate and referenced paragraphs.
- [41] The convention to be used for dates appearing in free text (e.g. quoting dates of meetings) is day-month-year and not month-day-year.

## 1.7 Structure

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

## 1.8 Applicable documents

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

Table 1-1 Applicable documents

[ACMP-2009-SRD-41]	Examples of CM Plan Requirements, Edition A, Version 1, March 2017, NATO Standardization Office (NSO)
[AQAP-2110]	NATO Quality Assurance Requirements for Design, Development and Production, Edition D Version 1, JUNE 2016, NATO Standardization Office (NSO)
[INTEL-FS2-Special-Provisions]	CO-14873-INTELF2, INTEL-FS SPIRAL 2 – CONTRACT SPECIAL PROVISIONS – Book II, Part III, NCI Agency
[INTEL-FS2-General-Provisions]	CO-14873-INTELF2, INTEL-FS SPIRAL 2 – CONTRACT GENERAL PROVISIONS – Book II, Part III, NCI Agency
[NCIA AI TECH 06.03.01, 2015]	NATO Communications and Information Agency - Agency Instruction 06.03.01, "Identification of Software Assets", 2015.

## 1.9 Reference documents

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

Table 1-2 Reference documents

[ADMP-1]	Guidance for Developing Dependability Requirements, Edition A, Version 1, 14 August 2014, NATO non-classified
[ADMP-2]	Guidance for Dependability In-Service, Edition A, Version 1, August 2014, NATO non-classified
[AIA/ASD SX000i, 2016]	International guide for the use of the S-Series Integrated Logistic Support (ILS) specifications (issue 1.1)
[ALP-10]	NATO Guidance on Integrated Logistics Support for Multinational Armament Programs
[ASD S3000L]	International Procedure Specification for Logistics Support Analysis (LSA), 2011
[C-M(2002)49-G]	Enclosure "G" to C-M(2002)49: Classified Project and Industrial Security, Amdt 12, Sep 2015
[DOORS]	IBM® Engineering Requirements Management DOORS, <a href="https://www.ibm.com/support/knowledgecenter/en/SSYQBZ_9.7.0/com.ibm.doors.requirements.doc/topics/c_welcome.html">https://www.ibm.com/support/knowledgecenter/en/SSYQBZ_9.7.0/com.ibm.doors.requirements.doc/topics/c_welcome.html</a>
[INTEL-FS2-InformationModel]	CO-14873-INTELF2, INTEL-FS SPIRAL 2 – Information Model Book II - Part V, NCI Agency
[Jira]	Atlassian Jira, <a href="https://www.atlassian.com/software/jira">https://www.atlassian.com/software/jira</a>
[MIL-HDBK-338B]	Electronic Reliability Design Handbook, US Department of Defense, 1 October 1998
[MIL-HDBK-470A]	Designing and Developing Maintainable Products and Systems, Volume 1, US Department of Defense, 4 August 1997
[MIL-STD-1388-1A]	Logistics Support Analysis, 11 April 1983
[MIL-STD-1388-2B]	Logistics Support Analysis Records, 28 March 1991
[MIL-STD-1629A]	Procedures for Performing A Failure Mode, Effects and Criticality Analysis (FMECA), 24 November 1980
[SOA-IdM]	CO-14176-SOA-IDM Service Oriented Architecture (SOA) and Identity Management (IdM) Platform – Wave 1, System Design Specification (SDS) and Interface Control Document (ICD), NCI Agency
[SonarQube]	SonarQube, <a href="https://www.sonarqube.org/">https://www.sonarqube.org/</a>

## 2 General Requirements

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

### 2.1 Project Management Requirements

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

#### 2.1.1 Project Management Office

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

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

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

[SOWG-4] The personnel identified below shall be considered as Key Personnel in accordance with the Special Provisions of this Contract.

- (1) Project Manager;
- (2) Quality Assurance Manager;
- (3) Configuration Manager;
- (4) Technical Team (see section 3).

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

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

##### 2.1.1.1 Project Manager

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

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

[SOWG-9] The Contractor's Project Manager shall meet the following qualifications:

- (1) Have a master's degree in management, engineering, or business administration;
- (2) Have a formal certification through Project Management Institute or equivalent source, PRINCE 2 certified or equivalent;



- (3) Have seven years of experience in managing projects similar to this project in technical and financial scope;
- (4) Have a NATO SECRET clearance.

### **2.1.1.2 Quality Assurance Manager**

- [SOWG-10] The Contractor shall designate a Quality Assurance Manager; who shall be responsible for all Quality Assurance Manager for activities under this Contract.
- [SOWG-11] The Quality Assurance Manager shall report to a separate manager within the Contractor's organisation at a level equivalent to or higher than the Project Manager.
- [SOWG-12] The Contractor's Quality Assurance Manager shall meet the following qualifications:
- (1) Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
  - (2) Have worked at least four years with quality control methods and tools;
  - (3) Have worked at least four years with supporting system development and test projects;
  - (4) Have a NATO SECRET clearance.

### **2.1.1.3 Configuration Manager**

- [SOWG-13] The Contractor shall designate a Configuration Manager, who shall be responsible for all configuration activities conducted under this Contract.
- [SOWG-14] The Contractor's Configuration Manager shall meet the following qualifications:
- (1) 3 years' experience as Configuration Manager in Projects of a similar nature, both in terms of the products to be delivered and the level of technicality;
  - (2) Have a NATO SECRET clearance.

### **2.1.1.4 Other Key Roles**

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

## **2.1.2 Project Management**

- [SOWG-15] The Contractor shall establish and maintain a Project Management Plan (PMP) as defined in section 2.5.2.1.
- [SOWG-16] The Contractor shall provide the initial baseline version of the PMP at the kick-off meeting and maintain it throughout the period of performance of the Contract.
- [SOWG-17] After approval by the Purchaser, the final version of the PMP shall be the official document against which the Contractor is expected to conduct the performance of the Contract.
- [SOWG-18] The approval of the PMP by the Purchaser signifies only that the Purchaser agrees to the Contractor's approach in meeting the requirements. This approval in no way relieves the Contractor from its responsibilities to meet the requirements stated in the Contract. The requirements of the Contract

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

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

### **2.1.3 Risk Management**

- [SOWG-20] The Contractor shall establish a risk management process and perform risk management throughout the period of performance of this Contract.
- [SOWG-21] The Contractor shall document, update and maintain status of all risks in the Risk Register (see section 2.5.2.2).
- [SOWG-22] The Contractor shall update and maintain the Risk Register throughout the period of performance of the Contract.

### **2.1.4 Issue Management**

- [SOWG-23] The Contractor shall establish and maintain a process for identifying, tracking, reviewing, reporting and resolving all project issues.
- [SOWG-24] The Contractor shall develop and maintain an Issue Register (see section 2.5.2.3) where all project issues are recorded and tracked regardless of their status.
- [SOWG-25] The Contractor shall use the Issue Register to track reported bugs in software previously delivered by the Contractor under this Contract.
- [SOWG-26] The Contractor shall update and maintain the Issue Register throughout the period of performance of the Contract.
- [SOWG-27] The Contractor shall ensure that the Purchaser always have access to the latest version of the Issue Register.

### **2.1.5 Configuration Management**

- [SOWG-28] The Contractor shall be responsible for all necessary Configuration Management activities throughout the duration of the Contract.
- [SOWG-29] The Contractor shall establish and maintain a Configuration Management Plan (CMP) in compliance with section 2.5.2.4 that describes how the Contractor will implement Configuration Management within the project.
- [SOWG-30] All Contractor and Purchaser activities and milestones related to CM shall be identified and included in the Delivery Plans schedules (see section 2.5.3.1).
- [SOWG-31] The Contractor shall be responsible for the Configuration Status Accounting (CSA) and reporting for all CIs.
- [SOWG-32] Upon request from the Purchaser, the Contractor shall support configuration audits to demonstrate that the actual status of all CIs matches the state of CIs as registered in the CSA reports; this support shall include:
- (1) Providing the required baseline documentation;
  - (2) Answering questions from the Purchaser's Auditor;
  - (3) Summarizing the audit results in a Configuration Audit Report and providing this report the Purchaser's approval.

- [SOWG-33] The Contractor shall ensure that the Configuration Baselines and CIs are persistently stored, maintained and managed in the Configuration Management Database CMDB.
- [SOWG-34] The Contractor shall keep the CMDB consistent and updated throughout the duration of the project.
- [SOWG-35] The Contractor shall before FSA conduct a handover of a fully populated CMDB instance (including the full history of all changes to the CIs) to the Purchaser.
- [SOWG-36] The Contractor shall solve any deficiencies found during the Configuration Management Audits within the agreed timeframe and update the baseline accordingly.

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

- [SOWG-37] The Contractor shall establish and maintain a CMDB that persists the Configuration Items (CIs) attributes, (inter-) relationships/ dependencies, and Configuration Baselines.
- [SOWG-38] The CMDB and CM Tools shall to the maximum extent possible integrate with, or use, the Azure DevOps tools provided within the NSF.
- [SOWG-39] The CMDB and CM Tools shall to the maximum extent possible support DevOps practices and integrate with tools used for automated deployment to production where such deployment scripts also are managed as CIs.
- [SOWG-40] Each CI in the CMDB shall be assigned a unique identifier.
- [SOWG-41] The CIs in the CMDB shall be organized around working and executable software units (e.g. applications or executable services).
- [SOWG-42] The top-level CIs in the CMDB shall be broken down into a tree/ hierarchy of its parts and sub-parts consisting of deliverables, the relevant documentation of these deliverables, all dependent third party components and libraries and respective documentation.
- [SOWG-43] The CMDB shall have support for tracing higher and subordinate CIs using CI identifiers or other CI attributes.
- [SOWG-44] It shall be possible from the CMDB, at any time, to generate Configuration Status Reports for any specified baseline where the report provides a full history on all CIs in the baseline including information on changes, deviations/ waivers, releases, etc.
- [SOWG-45] The CMDB/ CM Tools shall support generation of Configuration Status Accounting (CSA) Reports in two different formats:  
(1) Readable document format (either in PDF or Microsoft Word format);  
(2) XML format in accordance with a Contractor proposed XML schema.
- [SOWG-46] A baseline in the CMDB shall:  
(1) Be defined by version controlled artefacts that all resides in the proper repositories in the NSF;  
(2) Include (off-the-shelf) software and (off-the-self) software license(s) where all software license(s) shall be registered with the NCI Agency as the end-user;  
(3) Include all (supporting) documentation, e.g. off-the-shelf OEM manuals, operations and maintenance support documentation, training

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

- [SOWG-47] The CMDB shall implement support for baselining of Configuration Items (CIs) into the Functional Baseline (FBL), Allocated Baseline (ABL), and Product Baseline (PBL).
- [SOWG-48] It shall be possible from the CMDB and CM Tools to generate a package (as one or several electronic files) with all the artefacts included in a PBL release.
- [SOWG-49] The Contractor's PBL version numbering strategy shall be compliant with [NCIA AI TECH 06.03.01, 2015].
- [SOWG-50] The Contractor shall not use any names that can be associated with the Contractor (e.g. company name) on any of the developed software artefacts (i.e. file names, class names, XML namespaces, etc.)
- [SOWG-51] The CM Tools using the CMDB shall have support for comparison of baselines and precisely identify the changes to the individual items from one baseline to the other (including versions of third-party software components and libraries).

### 2.1.5.2 Engineering Change Proposals (ECP)

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

Table 2-1 ECP type and class

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

- [SOWG-52] The Contractor shall prepare and process the ECP for engineering, design, or development changes.
- [SOWG-53] The Contractor shall use the configuration control procedures specified in the CMP for the preparation and processing of ECPs.
- [SOWG-54] The Contractor shall use the ECP format as defined in the CMP when submitting ECPs.
- [SOWG-55] The Contractor shall in the ECP:
- (1) Include a unique ECP reference number;
  - (2) Describe the rationale for the change;
  - (3) Describe the nature of the change (Deletion, Modification, or Addition);

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

- [SOWG-56] Class I ECPs shall have to be mutually agreed upon by the Contractor and Purchaser.
- [SOWG-57] The Contractor shall submit all Class II ECPs to the Purchaser for review and classification concurrence before starting implementation of the change.
- [SOWG-58] The Contractor shall, after the Purchaser's approval of the ECP, update the SDD with a reference to the Purchaser-approved ECP.
- [SOWG-59] Where a change affects more than one document, or affects documents previously approved and delivered, the Contractor shall update and properly reflect the change in all baseline documents affected by that change.
- [SOWG-60] The Contractor shall place all submitted ECPs under configuration control.

### 2.1.5.3 Requesting Deviations/ Waivers

- [49] A Request for Deviation (RFD) is defined as "planned departure" from a specific requirement where "departure" defined as the "inability of a product to meet one of its functional performance or technical requirements".
- [50] A Request for Waiver (RFW) is defined as "unplanned departure" from a specific requirement.
- [SOWG-61] If required, the Contractor shall submit RFDs/ RFWs for Purchaser's approval.
- [SOWG-62] The Contractor shall be aware that permanent departures from contractual requirements shall be accomplished by ECP action rather than by RFD.
- [SOWG-63] The Contractor shall use the RFD/ RFW format as defined in the CMP when submitting RFDs/ RFWs.
- [SOWG-64] The Contractor shall in the RFD/ RFW:
  - (1) Include a unique reference number;
  - (2) Identify the requirement that cannot be fully met (to include references to the affected CLIN in the SSS and the requirement(s) in the SRS );
  - (3) Describe what impact the departure will have on cost, schedule, ILS, scope, and/or performance;
  - (4) Description of the deviation/ waiver;
  - (5) Justify the departure from the specific requirement.
- [SOWG-65] The Contractor shall place all submitted RFDs/ RFWs under configuration control.

#### **2.1.5.4 Deficiency Reporting**

- [SOWG-66] The Contractor shall establish and maintain a process for reporting, tracking, and resolving deficiencies.
- [SOWG-67] The Contractor shall use Deficiency Reports (DRs) to document problems during the design, configuration, implementation, or operation of the system.
- [SOWG-68] The Contractor shall close out DRs after the identified problem is resolved.
- [SOWG-69] The Contractor shall place all DRs under configuration control.

#### **2.1.6 Security Aspects**

- [51] Security aspects relevant to the Contractor's work are defined in the Contract Special Provisions document and in the Contract General Provisions document. This section identifies additional security oriented requirements related to the execution of the Contractor's work.
- [SOWG-70] The Contractor shall ensure that all software implementation activities in the NSF is kept at NATO UNCLASSIFIED level.

### **2.2 Quality Assurance (QA) Requirements**

- [SOWG-71] The Contractor shall comply with the requirements as defined [AQAP-2110].
- [SOWG-72] The Contractor shall provide a Quality Plan (QP) as defined by [AQAP-2110] to the Purchaser.
- [SOWG-73] The Contractor shall manage the QP as a living document subject to revision/update, as required.

#### **2.2.1 Audits**

- [52] The Purchaser reserves the right to perform Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities.
- [53] Audit activities at Sub-supplier's facilities do not relieve the Contractor and Subcontractors from any contractual quality responsibilities.
- [SOWG-74] The Contractor shall fully support the Purchaser in performing Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities activities and in particular:
- (1) Host inspection visits by Purchaser's auditors;
  - (2) Make himself available for answering questions and furnishing information related to the project;
  - (3) Allow the Purchaser's auditors to inspect and monitor the Contractor's processes applicable to this project.
- [SOWG-75] The Contractor shall transfer to the Purchaser's auditors all information deemed necessary to perform the activities, on his own initiative or on request by Purchaser's auditors.

### **2.3 Integrated Logistics Support (ILS) Requirements**

#### **2.3.1 General**

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

- [SOWG-77] The Contractor shall use the [ALP 10-2016] and [AIA/ASD SX000i, 2016] specification as guidance when establishing and conducting the ILS Process (i.e. Integrated Logistics Support – ILS Process), in accordance with the requirements of the contract.
- [SOWG-78] The Contractor shall use [ADMP-1], [ADMP-2], [MIL-HDBK-338B], [MIL-HDBK-470A], [MIL-STD-1388-1A], [MIL-STD-1388-2B] and [ASD S3000L] as guidance when establishing and conducting the Logistic Support Analysis (LSA) programme, including the Reliability, Availability, Maintainability and Testability (RAMT) programme, in accordance with the requirements of the Contract.
- [SOWG-79] All ILS related deliverables and activities shall be aligned with the incremental delivery approach of the project, and be delivered as required.

### 2.3.2 Integrated Logistics Support Plan (ILSP)

- [SOWG-80] The Contractor shall provide and maintain an ILSP, tailored to the project and in accordance with the requirements of this section.
- [SOWG-81] The Contractor shall detail in the ILSP how ILS will be designed, managed, procured and provided throughout the system lifetime.
- [SOWG-82] The Contractor shall provide an updated version of the ILSP to the Purchaser for each milestone for Purchaser acceptance, and update it as required to reflect the changes in baselines.
- [SOWG-83] The Contractor shall cover the following sections at minimum including the processes to perform the related activities in ILSP:
- (1) The Contractor's ILS organization, roles, responsibilities and procedures;
  - (2) Maintenance Concept (Maintenance Plan, detailed Maintenance Level definitions and tasks );
  - (3) Planning of supply support (System Inventory, Codification, Recommended Spare Parts and Consumables list);
  - (4) Design Influence:
    - (a) RAMT Programme planning, activities, processes;
    - (b) Logistics Support Analysis planning, activities and processes;
    - (c) Support Case planning, releases and processes.
  - (5) Support and Test Equipment Lists;
  - (6) Computer Resources (licences, SWDL etc.);
  - (7) Manpower and Personnel Requirements;
  - (8) Technical Documentation (organization, process, inputs, reviews, release schedule);
  - (9) Planning of packaging, handling, storage, and transportation (PHS&T);
  - (10) Planning of supply chain security;
  - (11) In-Service Support Plan (ISSP).
- [SOWG-84] The Contractor shall provide an In Service Support Plan (ISSP) as an annex to the ILSP and the ISSP shall cover the following topics at minimum with practical instructions:
- (1) The Contractor's Support organization, roles, responsibilities, processes and procedures (until FSA; during warranty and optional support period);
  - (2) Description of the system of interest (SOI) in scope of integrated support,

- (3) Description of the integrated support concept, including the maintenance concept, warranty concept, customer support concept, service management & control concept including but not limited to the incident, problem management, release and deployment management, and configuration and change management;
- (4) Description of the parties involved, their responsibilities for the various levels of support (with indication of start and end dates), interfaces, response times and POC details;
- (5) Description and allocation of operation, SM&C and corrective and preventive maintenance tasks required to operate and maintain the system;
- (6) Description of the Sustainability measures (obsolescence management, failure reporting, performance monitoring, reliability and availability assessment and reporting);
- (7) Procedures to follow when any part of the system fails; response times for analyses and resolution by the Contractor;
- (8) Comprehensive lists (as applicable) of all available software licenses (SWDL), support software tools, COTS documentation, technical documentation, training documentation and manuals;
- (9) Description of services during optional Contractor Logistics Support (CLS) period.

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

### 2.3.3 Maintenance and support concept

#### 2.3.3.1 Definitions

- [54] Level of Support: Level of support indicates a specific extent of technical assistance in the total range of assistance that is provided by an information technology product to its customer. The Service management is divided in three different level of service, which interface each other, in order to activate the proper level of maintenance in accordance with the event (incident) happened on the system.
- [55] Level of Maintenance: are various echelons at which maintenance tasks are performed on systems and equipment. The levels are distinguished by the relative sophistication of skills, facilities and equipment available at them. Thus, although typically associated with specific organisations and/or geographic locations, in their purest form, the individual maintenance levels denote differences in inherent complexity of maintenance capability.
- [56] First Level Support Process: implements the Incident Management process in accordance with the ISO/IEC 20000 and Information Technology Infrastructure Library (ITIL) framework or equivalent; As part of the Incident Management, the Service Desk receives the issue from the user, puts it into a standard format (Trouble Ticket (TT)), performs an initial assessment and distributes it to the predefined actors to solve it
- [57] Second Level Support Process: implements the Problem Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Problem Management process receives the TT from the Service Desk and performs the following tasks (not limited to):
- (1) (Re-)evaluation of TT category, criticality and priority,
  - (2) Identification of the root cause of the issue (e.g. by issue replication testing),
  - (3) Identification of workarounds,



- (4) Identification and initial planning of possible short, medium and long-term solutions (e.g. workarounds, patches, or new baseline or CI releases),
  - (5) Create Problem Analysis Report and Change Request incl. schedule of implementation, and synchronisation with the Baseline Maintenance process;
  - (6) Presentation of the Problem Analysis Report and Change Request to the Change Control Board (CCB) for approval,
  - (7) Monitor and Control the approved Change Request during implementation,
  - (8) Trigger 3rd Level Support and/or 3rd Level Maintenance process to implement the Change Request, in case the incident cannot be solved at 2nd level;
  - (9) Perform the post- Change Request implementation review.
- [58] Third Level Support Process: implements the Deployment and Release Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent. The Deployment and Release Management process receives the approved Change Request from the 2nd Level Support and performs the following tasks (not limited to):
- a. Activating Level 3 maintenance when new solutions shall be developed;
  - b. Development of the solution (e.g. new CI Fix, Repair, Replacement, Patch, or Release);
  - c. Testing of the solution (e.g. Regression testing, issue/deficiency replication testing);
  - d. Update of baseline content and status;
  - e. Release of the solution (release unit/record);
  - f. Delivery and deployment of the solution.
- [59] First Level of Maintenance: It is responsible for the very basic maintenance activities. It is responsible to activate the second level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding O&M Manual. All 1st Level Maintenance procedures do not require specialised tools and/or specialised personnel.
- [60] Second Level of Maintenance: It is responsible of isolation and resolution of system-level maintenance and management of deficiency reports and repair. It is responsible to activate the third level of maintenance when it is needed. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/or site specific procedures that are defined in the corresponding Manual. All 2nd Level Maintenance procedures do not require specialised tools and/or specialised personnel.
- [61] Third Level of Maintenance: It is responsible of any support that involves a change to the system baseline, such as software patches or new releases. It is responsible of specialised hardware repair, if applicable. Third level maintenance is activated by third level support and can be initiated either to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs. It implements the initial preventive Maintenance procedures and any additional Service/Capability and/ or site specific procedures that are defined in the corresponding Manual. 3rd Level Maintenance procedures can require specialised tools and/ or Personnel
- [62] Fourth Level of Maintenance: It is the hardware vendor or the software original developer. It is activated from the 3rd level of maintenance only when it is needed.

### 2.3.3.2 General Requirements

- [SOWG-86] The Contractor shall develop and maintain the Maintenance and Support Concept that defines the maintenance and support environment, constraints, locations, procedures, artefacts, roles and responsibilities (Responsible, Accountable, Consulted and Informed (RACI), organisation and personnel skills to maintain the Delivered baselines.
- [SOWG-87] The Contractor shall design/deliver the system/elements and the Operation/Support/Maintenance documentation, training (when applicable), instructions, and resources (skills, tools/test equipment) in order to allow the Purchaser to fully operate the system, to perform Level 1, Level 2 and Level 3 Maintenance and Support from the first SW release.
- [SOWG-88] Until FSA, the Contractor shall be responsible for the Level 2, Level 3 and Level 4 maintenance and support activities for the releases.
- [SOWG-89] Starting from FSA and until the end of warranty period, all maintenance activities beyond Purchaser capabilities/skills (Level 3 and Level 4 maintenance) required to restore the System from a critical failure shall be carried on by the Contractor by dedicated on-site interventions and/or off-site resolutions.
- [SOWG-90] The Contractor shall ensure the Maintenance and Support Concept refers to the functional and non-functional Requirements of the System.
- [SOWG-91] The Contractor shall define the 2nd and 3rd Level Support process interfaces to the other processes, including the existing NCIA Service Desk (1st Level of Support) and various NATO locations, organisations.
- [SOWG-92] The Contractor shall ensure the process interface definition includes the input and output information, its structure, the communication path (i.e., Points of Contact (POC)), the time constraints for sending and receiving information, and quality criteria to evaluate the integrity of the interface. This shall include the related ITIL Processes to be tailored and detailed for the purposes of Support Concept.

### 2.3.4 Design Influence

#### 2.3.4.1 Reliability, Availability, and Maintainability (RAM) Requirements

- [SOWG-93] The Contractor shall develop its RAM Programme and perform the analysis based on the RAM metrics and requirements outlined in the SRS.
- [SOWG-94] The Contractor shall ensure the design of the system includes sufficient redundancy and other Reliability, Maintainability, Availability and Testability measures to ensure the RAM requirements in this Contract are achieved and attained at an optimal Total Cost of Ownership (TCO), minimising preventive maintenance, manpower requirement and usage of special-to-type tools and test equipment.
- [SOWG-95] The RAM analysis shall clearly capture and display the RAM characteristics of each main component, aggregated up to the level of sub-system, and subsequently the entire system. System breakdown in line with the configuration item structure shall be used as reference to perform the analysis.

- [SOWG-96] The RAM analysis shall include the reliability prediction based on the proposed design solution and created Reliability Block Diagrams (RBD), as well as the reliability allocation model to include to trigger the design changes
- [SOWG-97] The RAM analysis shall include Failure Modes, Effects and Criticality Analysis (FMECA) in accordance with [MIL-STD-1629A].
- [SOWG-98] The Contractor shall ensure that the first issue RAM analysis is performed and delivered for each increment, to include all relevant data to demonstrate compliance with the SRS and SOW requirements. Such data shall be documented in the Support Case as outlined below.

#### **2.3.4.2 Logistics Support Analysis (LSA)**

- [SOWG-99] The Contractor shall conduct a Logistic Support Analysis (LSA) Process, tailored to support the specific scope of the System operation activities.
- [SOWG-100] The Contractor's LSA analysis shall include, as a minimum:
- (1) Task Analysis for identification of operational tasks, SM&C tasks, administration and maintenance tasks (corrective, preventive, adaptive)
  - (2) Planning and execution of the O&M Procedures Verification Test with references to the Master Test Plan.
  - (3) Total Cost of Ownership Analysis, which shall include the warranty cost and all the operational costs and all the maintenance cost for all the support and Maintenance levels for at least 5 years after FSA
- [SOWG-101] The Contractor shall ensure that Operation tasks are identified through analysis of the functional and non-functional requirements of the new system taking into account mission scenarios and conditions under which the system will be operated.
- [SOWG-102] The Contractor shall ensure that maintenance tasks are identified using the RAM data and results.
- [SOWG-103] For each task in Task Analysis, the Contractor shall determine the properties and physical resources required to execute the task. For that purpose, each task shall be analysed to identify and capture:
- (1) The support level to be assigned;
  - (2) Location/ facility involved;
  - (3) Personnel skills required;
  - (4) Roles;
  - (5) Task duration and frequency, reusing Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) data available;
- [SOWG-104] The Contractor shall ensure the data and results of the Task Analysis are used as input to the development of technical publications and the development of training material.

#### **2.3.4.3 Support Case**

- [SOWG-105] The Contractor shall develop and maintain the necessary Support Cases in which all LSA and RAM activities shall be documented. The Support Case shall include:
- (1) System description and breakdown down to lowest level of maintenance significant items and in accordance with the CI structure and identifications;

- (2) All COTS equipment datasheets, clearly indicating the reliability and maintainability characteristics which will be used as input for LSA and RAM;
- (3) Availability, Reliability, and Maintainability analysis modelling, calculations and results (complete set of RBDs, FMECA including a list of critical items);
- (4) The complete data set of the Task Analysis, including listings of all operation tasks, administrative tasks, corrective maintenance tasks and preventive maintenance tasks;
- (5) References to deliverable test plans and other relevant testing documentation for RAM requirements verification and validation;
- (6) The results from the O&M Task Procedures Verification Test.

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

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

## 2.3.5 Training

### 2.3.5.1 Training Plan

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

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

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

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

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

### 2.3.5.2 Training Material

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

[SOWG-114] The Contractor shall generate the following Training Material:  

- (1) Training syllabus;
- (2) Student manual;

- (3) Instructor guide and material;
- (4) Learning guide;
- (5) Quick reference card.

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

### **2.3.5.3 Training the Purchaser's O&M team**

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

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

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

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

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

## **2.3.6 Supply Support**

### **2.3.6.1 System Inventory**

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

[SOWG-122] The System Inventory shall include, in separate chapters, all items furnished under this Contract, as follows and as applicable:

- (1) All SW artefacts – i.e. all SW tools, SW test equipment, etc.;
- (2) All Purchaser Furnished Items (PFI);
- (3) All documentation, such as manuals, handbooks and drawings;
- (4) All training materials.

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

- (1) CSCI identification number;
- (2) Nomenclature;
- (3) Version number;
- (4) License key (if applicable);
- (5) License renewal date (if applicable);
- (6) Warranty expiration date;
- (7) Date of distribution.

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

### **2.3.6.2 Physical labelling (if applicable)**

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

### **2.3.6.3 SW shipment (if applicable)**

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

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

[SOWG-127] 14 (fourteen) calendar days before each delivery of supplies, the Contractor shall provide the Purchaser with a Notice of Delivery comprising the following details:

- (1) Shipment Date;
- (2) Purchaser Contract Number;
- (3) CLIN;
- (4) Consignor's and Consignee's name and address;
- (5) Number and type of Installation media and/or Packages/Containers;
- (6) Number of 302 Forms used (if applicable).

### **2.3.6.4 Customs**

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

### **2.3.7 Warranty Requirements**

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

[SOWG-130] The Contractor shall support the system as part of the project implementation scope from the first site activation until FSA milestone is successfully completed. During this period, the Contractor shall provide on-site and off-site maintenance and support services as required.

[SOWG-131] The Contractor shall integrate the 3rd Level Maintenance and Support services within its warranty services, to be provided off-site from the Contractor's premises or on-site from the Purchaser premises, as required

due to the corrections in SW. If the on-site Level 3 support is requested by the Purchaser for additional technical support or due to the changes in SW environment without any reported SW deficiency, then the Contractor shall provide this on-site support up to 6 times a year without any additional cost to the Purchaser.

- [SOWG-132] The Contractor shall provide a specific Customer POC for all warranty and support requests. The Contractor shall detail all the warranty and support requirements in its ISSP including the roles and responsibilities.
- [SOWG-133] The Contractor shall ensure that the warranty conditions remain valid even if the software is relocated/ redeployed to an equivalent platform during the warranty period.
- [SOWG-134] The Contractor shall fix all software defects as per the Contractor's internal procedures with the highest priority allocated. The Contractor shall provide the workaround within maximum 3 business days and the fixed solution within 20 business days after the Purchaser has provided the failure notification in written. The Contractor shall follow the Configuration and Change Management processes before the release of each fix. For this purpose the Contractor shall identify the changes, propose to the Purchaser, perform the test activities required and perform the Release Management activities.
- [SOWG-135] The Contractor shall provide 3rd Level maintenance, when requested by the Purchaser, to define the solution to a problem (corrective maintenance) or to maintain up to date software configuration (adaptive maintenance following changes to the underpinning hardware, firmware and software environment) e.g. security patches, operating system upgrades, minor software configuration changes due to operational/interface needs.
- [SOWG-136] If the Contractor becomes aware at any time before acceptance by the Purchaser that a defect exists in any Contract deliverables, the Contractor shall coordinate with the Purchaser and promptly correct the defect.
- [SOWG-137] During the warranty period, the Contractor shall be responsible for supplying all COTS software upgrades and updates.
- [SOWG-138] The availability of COTS software upgrades and updates shall be made known to the Purchaser and, if proposed for introduction by the Contractor (including any corrective action for an identified fault), shall always be subject to Purchaser approval. The Contractor shall support the Purchaser to update the CMDB with information on all changes made to CIs in the warranty period.
- [SOWG-139] The Contractor shall provide Technical Assistance, during business hours between 08.30-17.30 CET, to the Purchaser or his representatives during the warranty period. Technical assistance information details shall be indicated in the ISSP.
- [SOWG-140] The Technical Assistance shall provide on-call support in English for requests that correspond to information demands limited to the perimeter of delivered products, evolution proposals, problem reports, or any information needed by the Purchaser or its representatives, which are not included in the supplied technical documentation. The Contractor shall not be responsible for the correction of defects in Purchaser furnished property, except for defects in installation, unless the Contractor performs, or is obligated to

perform, any modifications or other work on such property. In the event described above, the Contractor shall be responsible for correction of defects that result from the modifications or other work.

### **2.3.7.1 COTS Component Warranty Requirements**

- [SOWG-141] The contractor shall warrant the COTS Software components warranty whose duration shall be consistent with the identified Warranty Period.
- [SOWG-142] The Contractor shall coordinate the COTS Software warranty activation with the Purchaser in order to facilitate the system's handover to the Service Provision Authority.

### **2.3.7.2 Developed Components Warranty Requirements**

- [SOWG-143] The Contractor shall be able to extend the warranty for a further period based on Purchaser's request.
- [SOWG-144] The price of the extended warranty shall be consistent with the bid prices, and shall be negotiated at the time of extension.
- [SOWG-145] The Extended warranty shall provide the same coverage as the original warranty and guarantee of the reliability of the Software Component under conditions of ordinary use.

## **2.4 Work Execution Requirements**

### **2.4.1 NATO Software Factory (NSF)**

- [64] The NCI Agency is moving towards a short-cycle capability development approach embracing a high degree of componentization and reuse through services, leading to composite capabilities with a much shorter time to in-service value, cost optimization and transparency. The approach makes use of standardized software engineering processes and common tooling in a test and development cloud DevSecOps Platform (the NSF) shared by NCI Agency, Industry and potentially by Nations.
- [65] The NSF toolchain includes a number of tools that the Contractor can make use of in execution of this work including:
  - (1) Azure DevOps
  - (2) GitLab
  - (3) Jira
  - (4) Jenkins
  - (5) Nexus
  - (6) SonarCube
- [SOWG-146] The Contractor shall, unless otherwise agreed with Purchaser, use the NSF as the platform for all software engineering, implementation work, and testing (including system integration testing).
- [SOWG-147] As the Contractor can only create and maintain engineering artefact at unclassified level on the NSF, the Contractor shall
  - (1) On occasions be able to use mock data values (e.g. mock domain values) and/ or data structures to enable work at unclassified level;
  - (2) For any module/ component where it is not feasible to do work at unclassified level (using mock data is not feasible), be able to do the



work in Contractor's own secure software engineering environment at NATO RESTRICTED level.

- [SOWG-148] The Contractor shall when feasible use existing NSF tooling (see list above) for managing the project engineering artefacts. The Contractor may propose additional tooling for managing engineering artefacts on the NSF for Purchaser's approval.
- [SOWG-149] The Contractor shall organize the engineering artefacts in a structured and logical way that will enable the Purchaser to quickly find any artefacts based on context (e.g. work package, increment/ deliverable, etc.) and artefact type.

## 2.4.2 Meetings – General Requirements

- [SOWG-150] Meetings and phone calls shall be conducted in English.
- [SOWG-151] Unless otherwise specified, at least one week before all meetings required under this Contract, the Contractor shall send an invitation, including:
- (1) Purpose;
  - (2) Agenda;
  - (3) List of participants;
  - (4) Date, hour, place, duration.
- [SOWG-152] The Contractor shall record meeting minutes and provide the minutes to the Purchaser within 3 working days.
- [SOWG-153] The Minutes shall include:
- (1) Date, place, and time of the meeting;
  - (2) Purpose of the meeting;
  - (3) Name of participants;
  - (4) Approval of previous meeting's minutes and all resolutions
  - (5) Record of principle points discussed, actions taken, and decisions made;
  - (6) Copies of materials distributed at the meeting.
- [SOWG-154] The minutes shall not be used as a mechanism to change the terms, conditions or specifications of the Contract nor as a vehicle to alter the design or configuration of equipment or systems. Such changes shall only be made by agreement, amendment or by authorized mechanisms as set forth in the Contract.
- [SOWG-155] If meeting facilities at a Purchaser location are not available at the specified Purchaser location in the time frame required to support an in-person meeting, the Contractor shall:
- (1) Reschedule the meeting to such time as meeting facilities are available at the Purchaser location, with no further adjustment to schedule or cost; or
  - (2) Provide suitable meeting facilities (e.g., hotel meeting facility) for the meeting/review at no additional cost to the Purchaser; or
  - (3) Arrange to host the meeting at the Contractor's facility. This facility shall be provided at no additional cost to the Purchaser.

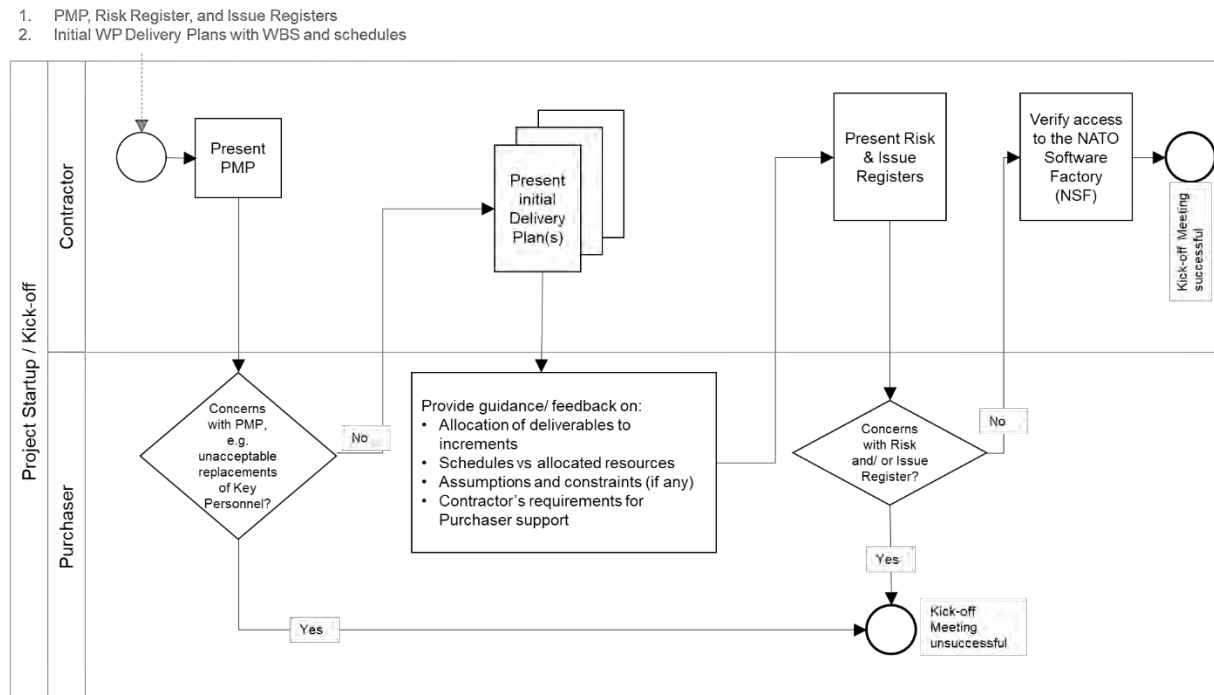
## 2.4.3 Kick-Off Meeting

- [66] The Purchaser will prior to the Kick-Off Meeting provide the initial MoSCoW prioritization to all the requirements as defined in the SRS. Note: The periodization

is used in this contract for scheduling reasons. I.e. at the end of the project all requirements are expected to be fulfilled.

- [67] The MoSCoW priorities for the WP requirements will be updated at regular interval based on the performance and progress of the work delivered by the Contractor.
- [68] The preparation for and the conduct of the Kick-Off meeting is depicted in Figure 2-1.
- [SOWG-156] The Contractor's key personnel shall meet with the Purchaser's Project Manager no later than 1 month after efficient date of contract (EDC). The meeting will normally take place in person at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but a video conference might be acceptable.
- [SOWG-157] The Contractor shall one week prior to the meeting submit to the Purchaser:
- (1) The Project Management Plan (see 2.5.2.1);
  - (2) The initial WP Delivery Plans for all of the project work packages (see 2.5.3) that as a minimum shall include the work breakdown structure (WBS) and schedules (see section 2.5.3.1);
  - (3) The Risk Register (see 2.5.2.2);
  - (4) The Issue Register (see 2.5.2.3).
- [SOWG-158] The Contractor shall be prepared to present the Project Management Plan, the initial WP Delivery Plans for all of the project work packages, the Risk Register, and the Issue Register.
- [SOWG-159] The initial WP Delivery Plans shall include:
- (1) A plan to deliver all requirements as defined in the SRS;
  - (2) The start and end time of all work packages where the Contractor's schedule shall be in accordance with the Contractor's bid. Note: This initial schedule will be the basis for progress and performance monitoring. The Purchaser may agree to schedule adjustments and re-baselining progress and performance monitoring milestones at WP start-up pending these adjustment are justifiable.
- [69] The Purchaser will review the PMP for concerns (for instance unacceptable replacement of key personnel where the replacement personnel does not have the skill sets compliant with the requirements set forth in this SOW). If there are concerns with the PMP, then the Purchaser will not give the Contractor the permission to proceed.
- [70] The Purchaser will provide feedback to the Contractor on the WBS and schedule.
- [71] The Purchaser will review the Risk Register and the Issue Register for concerns to the execution of the contract. If the registers are properly initialized with acceptable risks and manageable issues and contains appropriate mitigation/ action plans, the Purchaser will give Contractor permission to proceed.
- [SOWG-160] The Contractor shall verify that the Contractor's key personnel (in particular the SW developers) have access to the NSF.

Figure 2-1 Kick-Off Meeting



## 2.4.4 WP Start-up and Execution

### 2.4.4.1 WP Start-up Meeting

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

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

[SOWG-162] The Contractor shall submit a refined WP Delivery Plan (see section 2.5.3) and other supporting material to the Purchaser minimum a week prior to the WP Start-up Meeting. This shall include:

- (1) An extract of the CMDB, in the form of a Functional Baseline (FBL), that defines all configuration items of relevance for the WP;
- (2) A work breakdown structure (WBS) defining all increments in time (start and end time) and the deliverables planned for each increment (see section 2.5.3.1);
- (3) An initial Solution Description Document (SDD) (see section 2.5.3.2) which describes the overall solution design that can justify that the WP functional and non-functional requirements will be fulfilled;
- (4) The full Deliverable Requirements Traceability Matrix (DRTM) as defined in section 2.5.3.3. I.e. it shall
  - (a) Contain all WP requirements;
  - (b) Define delivery status for each requirement (NOT\_STARTED);
  - (c) Specify initial MoSCoW priority for each requirement.

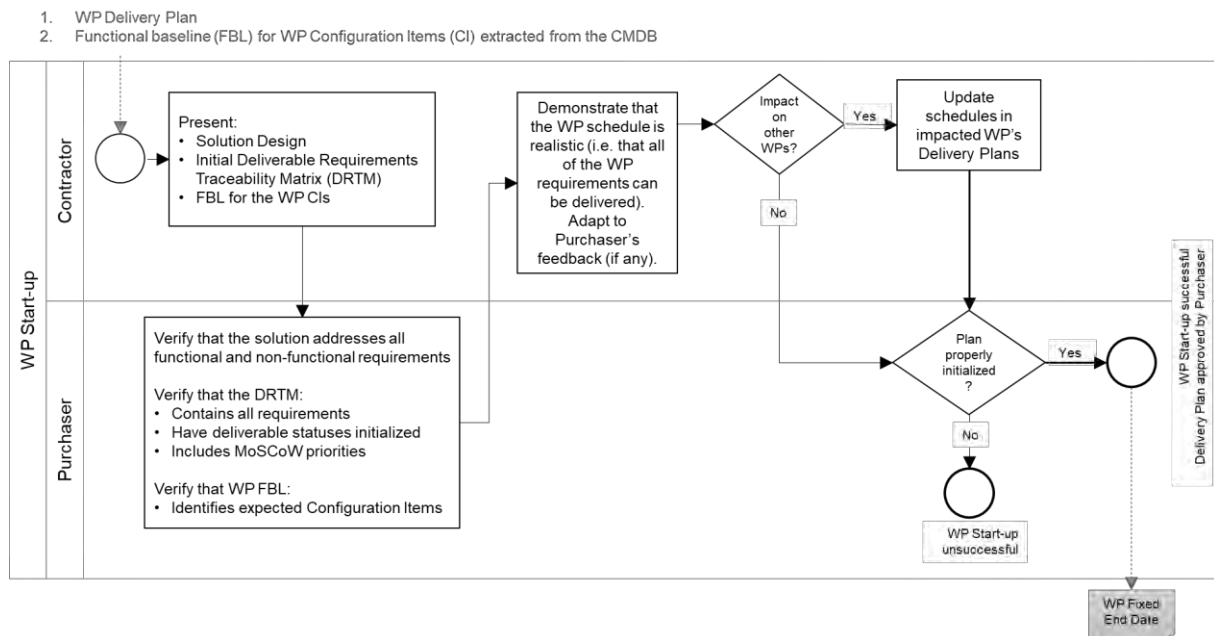
[SOWG-163] The Contractor shall at the meeting present the refined WP Delivery Plan. The presentation shall be:

- (1) Demonstrating that the WP schedule is realistic and that a team of skilled personnel has been allocated that matches the identified resource requirements;
- (2) Demonstrating that the solution design will address the SRS requirements;
- (3) Demonstrating the initial DRTM;
- (4) Demonstrating that the FBL contains all expected CIs.

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

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

Figure 2-2 WP Start-up Meeting



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

#### 2.4.4.2 WP Execution

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

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

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

[SOWG-165] The Contractor shall be cognisant of the fixed WP End-date and throughout the WP track the progress of implemented deliverables against the fixed WP

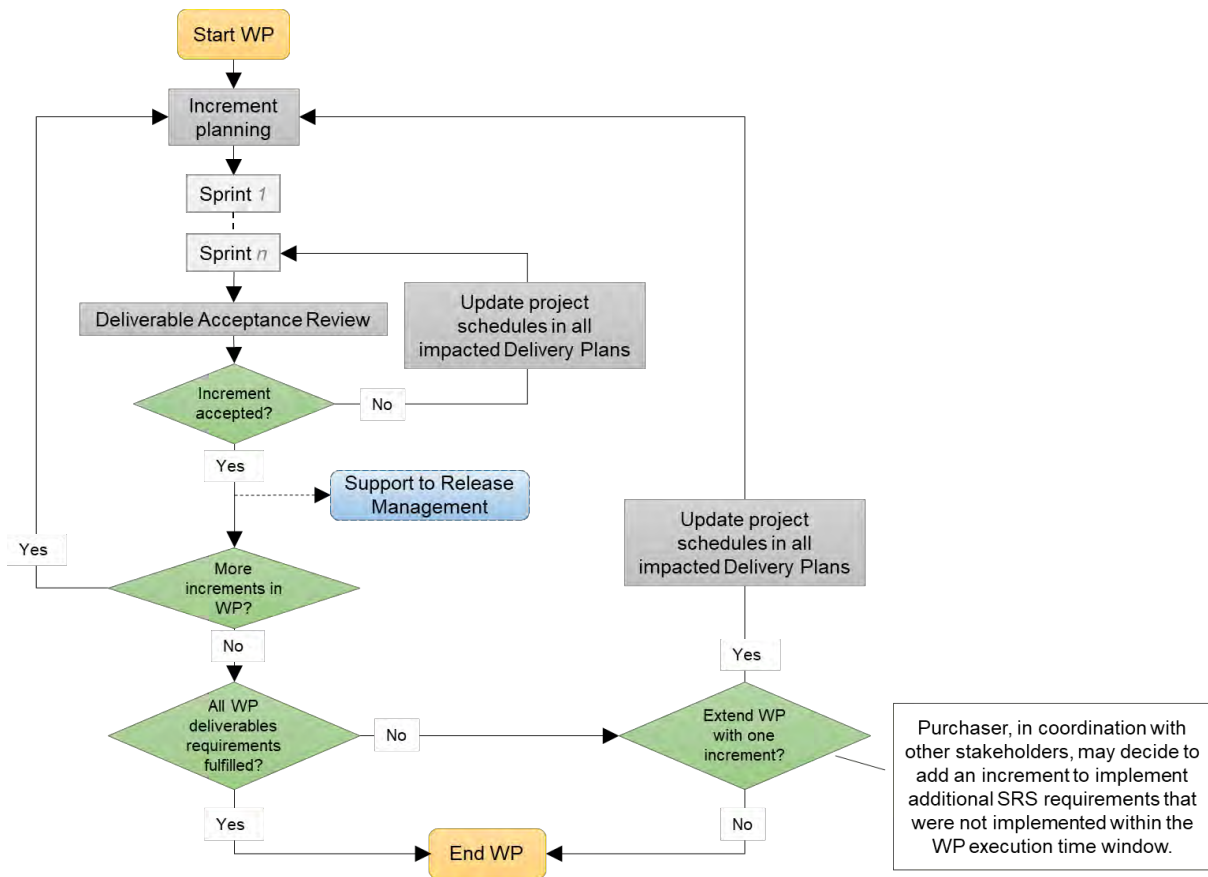
End-date, and whenever a potential schedule slippage is identified take corrective actions to prevent the schedule slippage.

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

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

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

Figure 2-3 WP execution



## 2.4.5 Increment Start-up and Execution

### 2.4.5.1 Increment Start-up Meeting

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

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

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

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

- [SOWG-170] The Contractor shall submit the planning artefacts of the Release Package (see section 2.5.4) and supporting material for the increment to the Purchaser minimum a week prior to the Start-up Meeting. This shall include:
- (1) A Scope and Requirements Analysis (see section 2.5.4.1). In case the increment deliverable includes any user interface (UI) applications the analysis shall also include UI wireframes<sup>1</sup> for all user interfaces to be implemented;
  - (2) An Integrated Logistics Support (ILS) Plan (see section 2.5.4.2);
  - (3) A Test Plan including test cases and test report templates (see section 2.5.4.3);
  - (4) If applicable, Site Activation Test Plan and Report templates (see section 2.5.4.6);
  - (5) An extract of the CMDB, in the form of an Allocated Baseline (ABL) that is an enrichment of the FBL that now includes information on third-party components and libraries and their licence costs and/ or constraints.
- [SOWG-171] The Contractor shall prior to the meeting provide the Purchaser with the latest version of the Solution Description Document (SDD) with content in accordance with section 2.5.3.2.
- [SOWG-172] The Contractor shall prior to the meeting, with a minimum of one week notice to the Purchaser, state the need for:
- (1) Prerequisites and required documentation;
  - (2) Purchaser provision of specific subject matter knowledge transfer.
- [SOWG-173] The Contractor shall one week prior to the meeting provide the Contractor with a Schedule Assessment Analysis that:
- (1) Report on accumulated schedule slippage over previous WP increments (if any) and the estimated impact on the on the WP Fixed End-date.
  - (2) Report on mitigations that will be implemented in the starting increment to reduce the schedule slippage with the goal of delivering the WP in accordance with the WP Delivery Plan schedule.
- [80] The Purchaser will at the meeting review:
- (1) The Scope and Requirements Analysis. If proposed changes are deemed to resolve inconsistencies or ambiguities, or suggests no-cost improvements, the Purchaser may approve the proposed changes. Any accepted changes to requirements will be updated in the relevant contractual documents;
  - (2) The Schedule Assessment Analysis.
- [81] The Purchaser will support the Contractor with:
- (1) Prerequisites (if feasible);

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

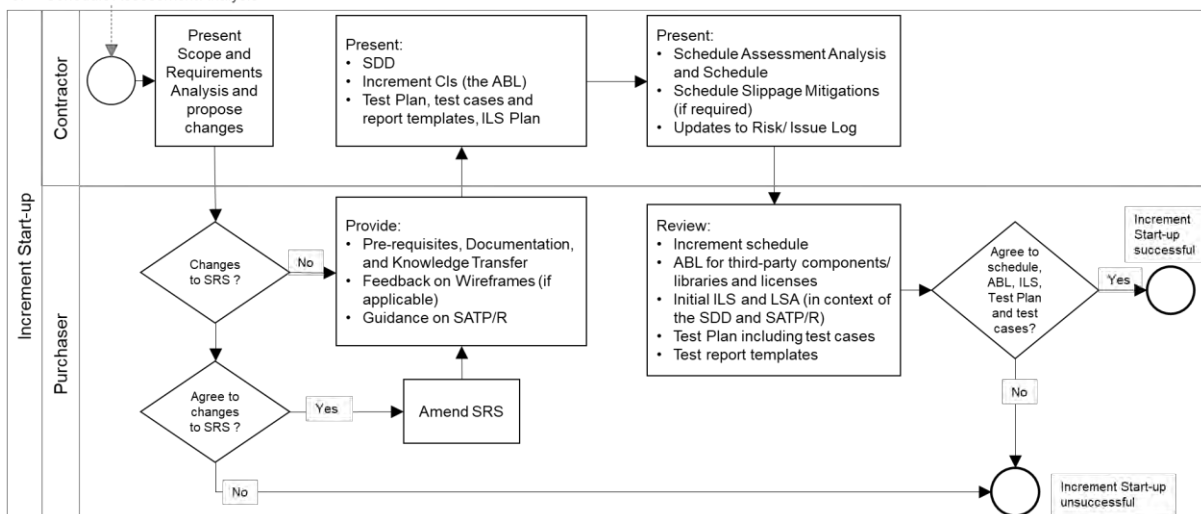
- (2) Documentation that is relevant to the contract and can be provided by the Purchaser at no cost to Purchaser;
- (3) Knowledge Transfer (if requested);
- (4) Guidance on UI Wireframes (if applicable);
- (5) Guidance on the solution design;
- (6) Guidance on the presented plans and report templates.

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

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

Figure 2-4 Increment Start-up Meeting

1. Release Plan that includes
  - Scope and Requirements Analysis
  - Initial ILS Plan and Logistics Support Analysis (LSA)
  - Test Plan including test cases & report templates (TP/R)
  - Site Activation and Test Plan & Report templates (SATP/R) (if applicable)
2. Latest version of Solution Description Document (SDD)
3. Allocated baseline (ABL) for Increment Configuration Items (CI) extracted from the CMDB
4. Requirements for Knowledge Transfer, pre-requisites, and documentation
5. Schedule Assessment Analysis



### 2.4.5.2 Increment Execution

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

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

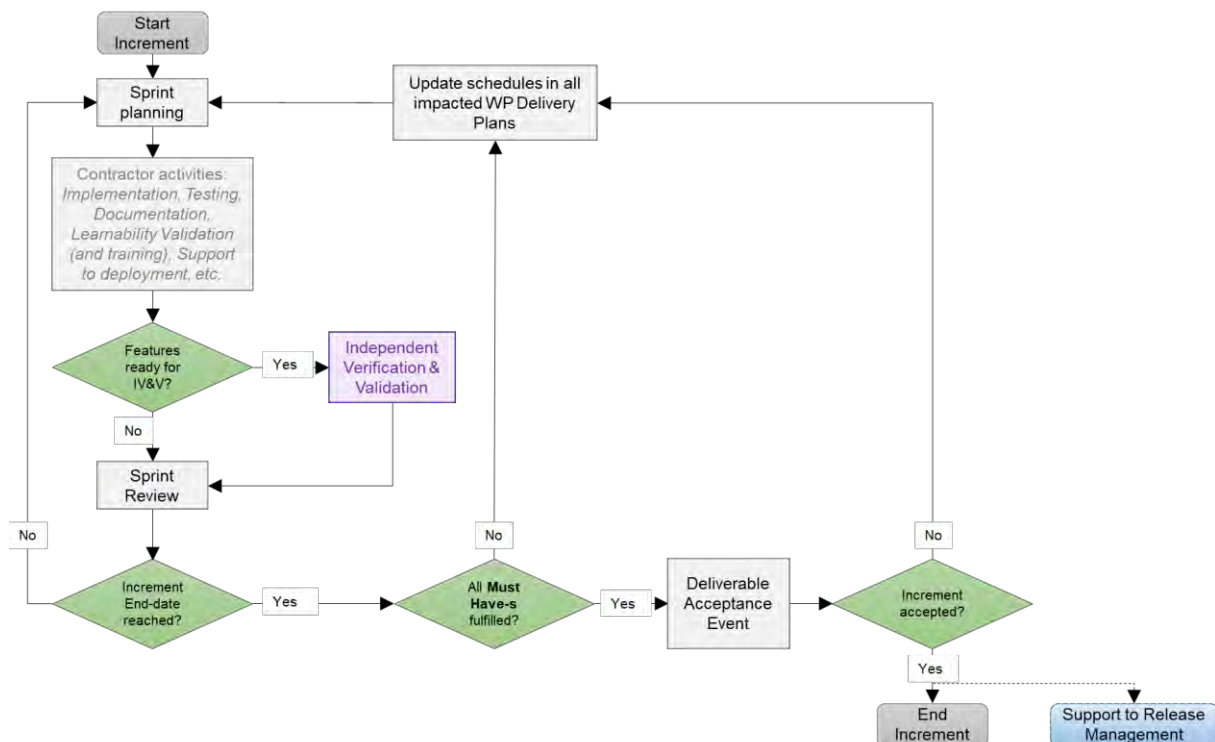
[85] In case the Contractor is not able to deliver all requirements at Must Have priority before the end of the increment, another sprint is added, and all project schedules are updated.

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

of a successful delivery, the delivery will not be approved and another sprint added to address the DAR deficiencies.

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

Figure 2-5 Increment execution



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

### 2.4.5.2.1 Sprints

- [SOWG-176] The Contractor shall break up the execution of an increment into a sequence sprints where the duration of a sprint is no longer than 4 weeks.
- [SOWG-177] The Contractor shall conduct a Sprint Planning Meeting and a Sprint Review Meeting and invite the Purchaser to take part in these meetings.
- [SOWG-178] The Sprint Planning and Review meetings shall normally take place at the Contractor's premises, but can, upon Contractor's request be conducted at Purchaser's facilities.
- [SOWG-179] The Contractor shall enable the Purchaser to participate remotely in Sprint Planning and Review meetings using video conferencing technology.

#### 2.4.5.2.1.1 Sprint Planning

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



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

#### **2.4.5.2.1.2 Sprint execution**

- [SOWG-182] The Contractor shall every day of the Sprint conduct a scrum meeting.
- [SOWG-183] The Contractor shall facilitate participation of the Purchaser in the daily scrum meetings (e.g. by using the Microsoft Teams tool available through the NSF).
- [SOWG-184] The Contractor shall each day of the sprint (typically at the end of the day) commit the implemented software changes to the Git repository in the NSF where the updated software shall pass the CI/ CD build tests.

#### **2.4.5.2.1.3 Sprint Review Meeting**

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

#### **2.4.5.2.2 Contractor's Test Activities**

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

- [SOWG-186] The Contractor shall maintain (i.e. improve and update if required) detailed test cases for how to perform tests that will produce the test report for the deliverable. I.e. there shall be detailed test cases enabling the production of the following reports:
- (1) Software Quality Metrics Report (SQMR), see 2.5.4.3.4;
  - (2) Source Code Review Report (SCRR), see 2.5.4.3.5;
  - (3) Security Test Report (SecTR), see 2.5.4.3.6;
  - (4) Deliverable Functional and Performance Test Report (DFPTR), see 2.5.4.3.7;
  - (5) System Integration Test Report (SITR), see 2.5.4.3.8;
  - (6) Continuous Delivery Assessment Report (CDAR), see 2.5.4.3.9.
- [SOWG-187] The Contractor shall, when executing automated tests make the output from the tests (i.e. test results) available in the NUnit report XML format.
- [SOWG-188] Test reports shall be uploaded to the Purchaser test reporting tool in the NSF. The report entry in the reporting tool includes shall include an input field reserved for Purchaser's use (to add remarks to the test result).

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

#### 2.4.5.2.2.2 Defect management process

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

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

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

Table 2-2 Definitions for defect categorization

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

Table 2-3 Classification of defects based on severity

Severity	Definition
Critical	<p>The failure of testing of a requirement.</p> <p>The failure results in the termination of the complete system or one or more component of the system.</p> <p>The failure causes extensive corruption of data.</p> <p>The failed function is unusable and there is no acceptable alternative method to achieve the required results.</p>
Major	<p>A significant failure that causes severely impaired functions but does not prevent operational processing. Applies to conditions under which the complete system or one or more component of the system are partially inoperative, but are still usable by the users. A work around may be available, but it may require manual intervention.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Absence of expected modules/ object or Unit</li> <li>• Failure of business operational process that affects a large group of users</li> <li>• Complete failure of a module</li> </ul>
Moderate	<p>The failure does not result in the termination and all functions are available but causes the system to produce incorrect, incomplete or inconsistent results. When resources are available and budgeted, should be resolved.</p>
Minor	<p>The failure does not result in termination and does not damage the functioning of the system. The desired results can be easily obtained by working around the failure.</p>
Cosmetic	<p>The failure is related to the look and feel of the application, typos in a document or user interfaces (amongst others), and not part of the immediate usability or contractual requirements. The failure does not adversely affect the overall system operation.</p>

Table 2-4 Priorities for defect classification

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

#### 2.4.5.2.2.3 Software Quality Metrics Reporting

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

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

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

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

#### **2.4.5.2.2.4 Source Code Review Reporting**

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

#### **2.4.5.2.2.5 Security Tests and Analysis and Reporting**

[SOWG-196] The Contractor shall, within the Contractor's continuous integration build pipeline, set up automated security test that tests security aspects of the implemented software in accordance with the OWASP Testing Guide. The automated security tests shall include:

- (1) Static Application Security Testing (SAST) (e.g. using the NSF SonarQube);
- (2) Dynamic Application Security Testing (DAST) (e.g. using OWASP ZAP);
- (3) Dependency checking (i.e. security scanning of third-party libraries);
- (4) Security-related unit and integration tests.

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

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

#### **2.4.5.2.2.6 Functional and Non-functional Tests and Reporting**

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

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

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

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

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

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

- [SOWG-204] The Contractor shall, if not deemed unnecessary by the Purchaser (see comment above), conduct a Learnability Test event and document the results from this event (see section 2.4.5.2.3 for details).
- [SOWG-205] The Contractor shall update the DRTM (see section 2.5.3.3) and link the DRTM to the functional and non-functional test results.
- [SOWG-206] The Contractor shall document all function, non-functional, and regression tests in the Deliverable Functional and Performance Test Report (DFPTR), see section 2.5.4.3.7.

#### **2.4.5.2.2.7 System Integration Tests (SIT) and Reporting**

- [SOWG-207] The Contractor shall in the Test Plan and test cases for the System Integration Tests identify all external interfaces and develop dedicated test cases for each interface.
- [SOWG-208] The Contractor shall, within the continuous integration build pipeline, set up automated testing of all interfaces that the software implements that can be consumed by external systems. The automated test of such interfaces shall:
- (1) Be implemented as a test harness using an appropriate test framework (e.g. using the NUnit framework)
  - (2) Test all methods of all services according to documented interface/ service specifications.
- [SOWG-209] The Contractor shall deploy the software to a Purchaser Provided reference environment and verify that the implemented software can consume needed services provided by other Bi-SC AIS systems (e.g. Open Geospatial Consortium (OGC) services provided by the NATO CoreGIS system).
- [SOWG-210] The Contractor shall document all SIT tests results in the System Integration Test Report (SITR), see section 2.5.4.3.8.

#### **2.4.5.2.2.8 Continuous Integration & Continuous Delivery Assessment Report**

- [SOWG-211] The Contractor shall, within the continuous integration and continuous delivery (CI/CD) build pipeline, set up automated deployment to a Purchaser provided reference environment and verify that the software functions correctly on a platform running the latest NATO security settings.
- [SOWG-212] For software with a user interface the continuous integration shall include automated tests to verify that users can log on and access the application (e.g. using tools like Selenium Webdriver).
- [SOWG-213] Behavioural aspects of the delivered software shall be tested using behaviour driven development (BDD) testing through usage of Gherkin scenarios with a test runner (e.g. Cucumber).
- [SOWG-214] The Contractor shall report on the tests in the Continuous Delivery Assessment Report (CDAR), see section 2.5.4.3.9.

#### **2.4.5.2.3 Learnability Test**

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

- [93] The Purchaser will select a group of people representing the users that are new to the user application developed by the Contractor. The test will be conducted as follows:
- (1) The Contractor will perform a short training session on the user interfaces for the users;
  - (2) The Users will subsequently be given a set of tasks covering most of the user interface's functionality, and will be given a time limit to perform these tasks;
  - (3) The result of the users' performance in conducting the selected tasks will be used to assess the Learnability of the user interface.
- [94] The Purchaser will most likely select people that will be responsible for providing training on the new user application as the users for these tests. This means that the Purchaser will use these Learnability Tests as an opportunity to "Train the Trainers".
- [SOWG-215] The Contractor shall produce training material for any new UI functionality. This training material shall:
- (1) Be in the form of a PowerPoint presentation;
  - (2) Be based on screenshots from the application user interface;
  - (3) Describe all features of the deliverables user interface.
- [SOWG-216] The Contractor shall develop a Learnability Test to be used for assessing the test-users' performance and efficiency in conducted a representative set of key tasks. The Learnability Test shall:
- (1) Include tasks covering all main features of the user interface;
  - (2) Enable a user that is a fast learner to conduct all the test steps in a relatively short time (maximum 10 minutes if feasible);
  - (3) Define a time limit for how much time the users will be given to conclude the test. This time limit shall be justifiable (e.g. 1.5 times the time it takes the Contractor to do the tests);
  - (4) Be designed such that each user's performance is recorded and can be evaluated (e.g. through recorded screen captures, or expected results entered into the application data set, etc.);
  - (5) Be of a binary nature (i.e. pass or fail).
- [95] Note: The Purchaser may from studying the Learnability Training material, and from hands-on experience with the delivered software, decide that it will not be necessary to execute the actual Learnability Test event as described in requirements [SOWG-217] through [SOWG-220] below.
- [SOWG-217] The Learnability Tests shall normally be done in person with the Purchaser's selected user group at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser), but, if feasible, a video conference might be acceptable.
- [SOWG-218] The Contractor shall train the users using the prepared training material (PowerPoint slides) and, if required, perform some limited demonstrations using the application.
- [SOWG-219] The Contractor shall start the test, time the tests, and stop the tests after an agreed end time.
- [SOWG-220] The Contractor shall review the individual test results for all the test users and calculate the following statistics:
- (1) The percentage of users passing each of the tests;
  - (2) The percentage of passed tests versus the total number of tests;

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

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

#### **2.4.5.2.4 Independent Verification and Validation (IV&V)**

[97] The Purchaser will be conducting IV&V activities that will:

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

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

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

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

#### **2.4.5.2.5 UAT**

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

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

[SOWG-223] The Contractor shall be physically present at the UAT with the right personnel to be able to support the UAT event.

#### **2.4.5.2.6 Deliverable Acceptance Review**

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

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

[SOWG-224] At the end of each Increment, the Contractor shall by default meet, in person, with the Purchaser's Project Manager and Purchaser's subject matter experts (SME) at the Purchaser's facility (either The Hague-Netherlands, Brussels-Belgium or Mons-Belgium, at the discretion of the Purchaser) for a Deliverables Acceptance Review. If agreed between Purchaser and Contractor, the meeting could be done as a video-conference meeting.

- [SOWG-225] The Contractor shall one week prior to the Deliverables Acceptance Review provide the Deliverable Acceptance Report (DAR) as defined in section 2.5.4.7.
- [SOWG-226] The Contractor shall at the Deliverables Acceptance Review Meeting present:
- (1) The updated Deliverable Requirements Traceability Matrix (DRTM) (see section 2.5.3.3) that reflect the deliverables and tests produced/ reported in this release;
  - (2) A calculation for the total value of the invoice to be submitted for the release. The invoice value shall be calculated as the sum the individual cost value of all successfully delivered requirements in the release.

#### **2.4.5.2.7 Supporting the release to production**

- [103] Following a successful Deliverable Acceptance Review the Purchaser may proceed with the release management process to obtain the approval to deploy the implemented capability to the production environment. The result of this approval process will be that the implemented capability is included on the NATO Approved Fielded Product List (AFPL).
- [104] With the implemented capability on the AFPL list, the Purchaser will seek to deploy it onto the production environment.
- [SOWG-227] The Contractor shall support the security testing (penetration tests) of the release management process.
- [SOWG-228] The Contractor shall support the Purchaser in meetings, and other communication, with the Change Advisory Board.
- [SOWG-229] The Contractor shall, prior to deployment to production, provide Administrator training for the Purchaser's O&M support staff, see section 2.3.5.3.
- [SOWG-230] The Contractor shall support the Purchaser in deploying the implemented capability to the production environment.

#### **2.4.6 Final System Acceptance (FSA)**

- [105] The FSA requirements are defined in the Contract Special Provisions document.

### **2.5 Documentation Requirements**

#### **2.5.1 Cross-cutting (General) Document Requirements**

- [106] The Purchaser's default software packages for managing projects are:
- (1) Microsoft Office Professional;
  - (2) Microsoft Project.

##### **2.5.1.1 Formatting and Naming Conventions**

- [SOWG-231] The Contractor shall use filenames for all documentation deliverables in compliance with the following filename convention [NU|NR]\_[Contract number]\_[Name of document]\_[v0.x|v1.0].[filename extension] and the fields used in the filename convention shall be used as follows:
- (1) [NU|NR] is the classification of the document: NATO Unclassified or NATO Restricted;



- (2) [Contract number] is the official Purchaser contract number;
- (3) [Name of deliverable] is the Contractor proposed, Purchaser agreed designation of the deliverable;
- (4) [v0.x|v1.0] is the version number in the range (v0.1, v0.2, ..., v0.9, v0.10, v0.11, ...) for drafts not eligible for acceptance and with v1.0 only for the final deliverable;
- (5) [filename extension] is the standard filename extension, but “.zip” may be used to aggregate multiple files.

[SOWG-232] COTS documents, such as a vendor supplied user manual, shall retain their original filenames and shall hence not be renamed according to the above filename convention.

[SOWG-233] All documentation produced under this contract shall adhere to the same presentation style (cover pages, approval pages, headers, footers, headings and paragraphs, font types and sizes within headings and paragraphs), irrespective of the source of the document within the Contractor's team, including any subcontractors except COTS equipment documentation.

[SOWG-234] All documentation (including source code comments) shall be written in UK English.

[SOWG-235] The first page shall show the document title, project title, contract number as well as version number and issue date, if applicable, and which shall also be shown on each subsequent page bottom. The first page shall also include the classification headers and footers with the highest classification of information contained in the entire document (including annexes and appendices).

[SOWG-236] Header and Footer Marking shall show the NATO classification, normally —NATO UNCLASSIFIED — or — NATO RESTRICTED —.

[SOWG-237] Developed documentation shall contain a Table of Contents. It shall be noted that depending on the type of document, a Table of Content might not be required. This shall be agreed between the Purchaser and Contractor beforehand.

[SOWG-238] All documents shall contain a preface, containing details of related documents and information on how to navigate the document.

[SOWG-239] All documents produced under this Contract shall use sans-serif fonts (e.g. Arial, Helvetica, Calibri, etc), and obey the following principles:

- (1) Headings shall be numbered and use bold font-types of sizes higher than the body text (the higher the Heading in the document hierarchy, the larger the font-size);
- (2) No document shall use Headings below level 6 (i.e. 1.1.1.2.3.1 Heading Text);
- (3) Body text (under the headings) shall not use fonts smaller than Arial 10 pt (or equivalent size if another font type(s) is (are) selected);
- (4) Any graphic material generated under this Contract, including network diagrams, shall not use font sizes smaller than Arial 8 (or equivalent size if another font type(s) is (are) selected).

[SOWG-240] Larger font sizes than those specified above shall be selected if the corresponding text or drawing is to be reduced in size when embedded in the document, in order to guarantee that the PDF output keeps the font size as specified.

- [SOWG-241] All documentation developed in Microsoft Word shall be printable if required and therefore the page format shall be A4, printable in loose-leaf form, and possible to be presented bound in stiff backed covers with 4-ringed binders which permit the removal and insertion of individual pages and drawings.
- [SOWG-242] The convention to be used for numbers appearing in textual documents is for a comma to be the thousands separator and a period to be the decimal separator (e.g., 1,365,276.24).
- [SOWG-243] The convention to be used for dates appearing in free text (e.g., quoting dates of meetings) is day-month-year and not month-day-year.
- [SOWG-244] Where documents contain many complex specialized or strongly domain oriented terminologies these shall be defined in a glossary.

### **2.5.1.2 Distribution**

- [SOWG-245] Documentation shall not contain warnings limiting the rights to use or reproduce the document. The Purchaser reserves the right to make additional copies of any documentation provided under this contract for his internal use.
- [SOWG-246] All contractual documentation (e.g., change proposals, invoices, etc.) shall be delivered electronically unless specified otherwise by the Purchaser Contracting Officer.
- [SOWG-247] All electronic copies shall be delivered in a format which is best suited for review and maintenance by the Purchaser. In general the following guidelines shall be used:
- (1) Microsoft Word shall be used for generating text document;
  - (2) Microsoft Excel shall be used for tabular or matrix data;
  - (3) Microsoft Project shall be used for schedule; and
  - (4) Microsoft PowerPoint shall be used for briefings.
- [SOWG-248] The Contractor shall submit documentation, intended for review by the Purchaser in electronic formats compatible guidelines in [SOWG-247].
- [SOWG-249] The Contractor shall submit all final and accepted versions of documentation deliverables in electronic format, as PDF. For non-COTS documentation, the documentation shall also be delivered in an editable Microsoft Office format.
- [SOWG-250] Documentation shall be distributed as follows:
- (1) For all documents unless otherwise instructed: an electronic copy to the Purchaser's Project Manager;
  - (2) For contractual documents: an electronic copy to the Purchaser's Contracting Officer and if required and additional hard copy.

### **2.5.1.3 Review and Updates**

- [107] The Purchaser will when reviewing a document provide comments, corrections, and suggested changes to the Contractor within two weeks of receipt, unless specified differently in this Contract
- [108] The Purchaser reserves the right to return without review a document that has significant deficiencies.
- [SOWG-251] All documentation is subject to Purchaser approval.

- [SOWG-252] The Contractor shall not rely on the Purchaser review to fill in deficiencies or obtain missing Purchaser information.
- [SOWG-253] The Contractor shall resubmit the document as a revised draft incorporating the Purchaser's comments within two weeks after receipt, unless specified differently in this SOW.
- [SOWG-254] If there is a change to an already delivered deliverable, then the Contractor shall be responsible for updating all documentation pertaining to the specific deliverable where the deliverable documentation is affected by the change.

## **2.5.2 Project Management Documentation Package**

### **2.5.2.1 Project Management Plan (PMP)**

- [SOWG-255] The PMP shall identify all major Contractor operating units and any Subcontractors involved in the work and a description of the portion of the overall effort or deliverable item for which they are responsible.
- [SOWG-256] The PMP shall cover all aspects of the project implementation, including the Contractor's project management methodology, project control processes, personnel assignments, and external relationships necessary to provide the deliverables as required by this Contract.
- [SOWG-257] The PMP shall be sufficiently detailed to ensure that the Purchaser is able to assess the Contractor plans, capabilities, and ability to satisfactorily implement the entire project in conformance with the requirements as specified in this SOW.
- [SOWG-258] The PMP shall identify key personnel in the project organization, their qualifications, and their responsibilities.
- [SOWG-259] The PMP shall describe the Contractor's, and Subcontractors', approach to security management, including personnel and facility security.
- [SOWG-260] The PMP shall identify Assumptions and Constraints.
- [SOWG-261] The PMP shall describe methodology used for cost and schedule estimation
- [SOWG-262] The PMP shall include a master schedule that defines the project start-up, all major milestones (to include increment start-up and increment end dates), the project durations (in months from the start-up), and the project end-date.
- [SOWG-263] The PMP shall define all expected Purchase involvements and all expected Purchaser Furnished Items (PFI) and associated timelines.

### **2.5.2.2 Risk Register**

- [SOWG-264] The Risk register shall list all project risks, and indicating for each risk the following information (but not limited to):
- (1) Risk identifier: unique code to allow grouping of all information on this risk;
  - (2) Description: brief description of the risk;
  - (3) Risk category (e.g. management, technical, schedule, quality and cost risks);
  - (4) Impact: effect on the project if this risk were to occur;
  - (5) Probability: estimate of the likelihood of the risk occurring;
  - (6) Risk rating (High, Medium, Low);

- (7) Proximity: how close in time is the risk likely to occur;
- (8) Response strategy: avoidance, mitigation, acceptance, transference
- (9) Response plan(s): what actions have been taken/will be taken to counter this risk;
- (10) Owner: who has been appointed to keep an eye on this risk;
- (11) Author: who submitted the risk;
- (12) Date identified: when was the risk first identified;
- (13) Date of last update: when was the status of this risk last checked;
- (14) Status: e.g. closed, reducing, increasing, no change.

[SOWG-265] It shall be possible to export the Risk Register to Microsoft Excel.

### 2.5.2.3 Issue Register

- [SOWG-266] The Issue Register shall comprise the following information (but not limited to):
- (1) Issue Number or Trouble Ticket Number (in case the issue is received through 1st Level Support Service Desk);
  - (2) Issue Type (Request for change, Schedule slippage, 2nd Level Support, general issue such as a question or a statement of concern);
  - (3) Author;
  - (4) Date identified;
  - (5) Date of last update;
  - (6) Description;
  - (7) Criticality;
  - (8) Resolution Analysis;
  - (9) Status.

[SOWG-267] It shall be possible to export the Issue Register to Microsoft Excel.

### 2.5.2.4 Configuration Management Plan (CMP)

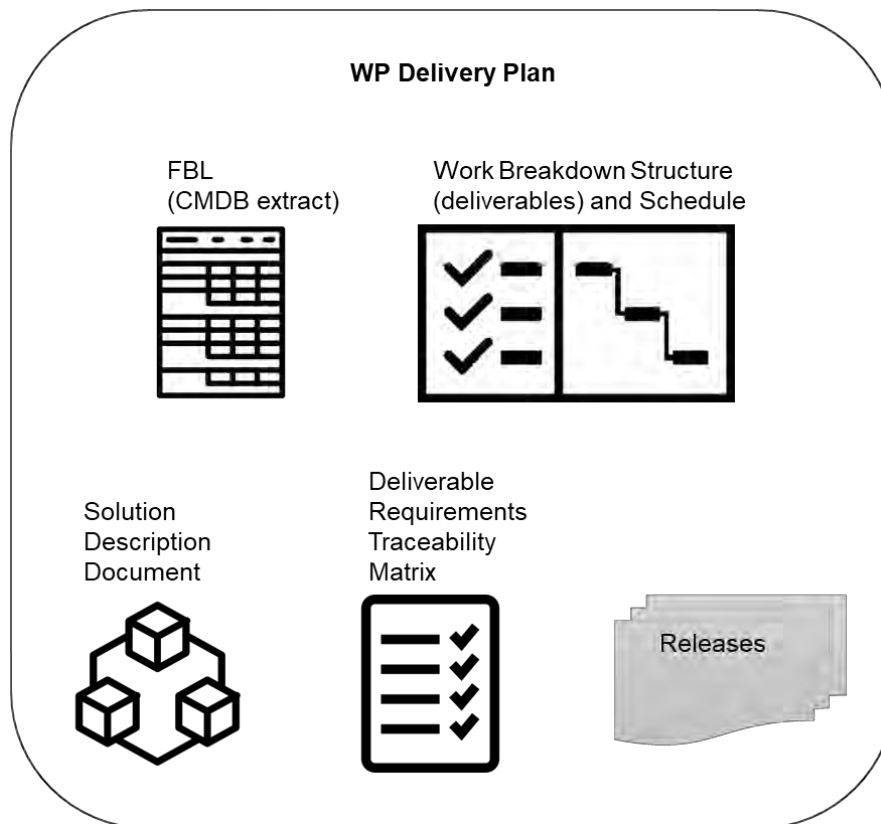
- [SOWG-268] The CMP shall in general comply with the requirements of a CMP as defined in [ACMP-2009-SRD-41], and shall be in the format defined by section 2.1 in [ACMP-2009-SRD-41].
- [SOWG-269] Any requirements in the [ACMP-2009-SRD-41] deemed by the Contractor to be not applicable for this contract shall in the CMP be specifically defined as not applicable (N/A) followed by a short justification why the requirement is not applicable.
- [109] Note: Requirements in [ACMP-2009-SRD-41] that are expected to be declared N/A for a SW acquisition contract are found in:
- (1) Paragraph 3.2.1 - Hardware Configuration Item (HWCI) Identification;
  - (2) Paragraph 3.7 - Drawing library;
  - (3) Paragraph 5.1.3 - Interface Control Working Group (ICWG).
- [SOWG-270] The CMP shall define the CM organisation including the Configuration Manager role and any other supporting CM personnel. Note: CM personnel shall have sufficient knowledge, experience, responsibility, authority, organisational freedom, organisation independence and security clearance to review and evaluate activities, identify problems and initiate or recommend corrective actions.
- [SOWG-271] The CMP shall be tailored to the requirements of the technical solution, specifically addressing how CM shall be achieved in an Agile project.

- [SOWG-272] The CMP shall be maintained as a living document subject to revisions and updates, as required.
- [SOWG-273] The CMP shall be placed under configuration control throughout the period of performance the Contract.
- [SOWG-274] The CMP shall identify and define all top-level configuration items (CI) to be delivered under this Contract and where these top-level CIs are traced to deliverables as defined in the SSS.
- [SOWG-275] The CMP shall define the format for Engineering Change Proposals (ECP) to be used during this Contract.
- [SOWG-276] The CMP shall defined the format for Request for Deviation (RFD)/ Request for Waiver (RFW) to be used during this Contract.
- [SOWG-277] The CMP shall describe how the Configuration Management Database (CMDB) will be implemented.
- [SOWG-278] The CMP shall define the format for the human readable Configuration Status Accounting (CSA) Report.

### 2.5.3 WP Delivery Plan

- [110] This section identifies documentation artefacts that are specific to the planning and execution of a work package (WP).
- [111] As shown in Figure 2-6 the WP Delivery Plan consists of:
  - (1) A Functional Baseline (FBL) extract from the CMDB;
  - (2) A Work Breakdown Structure (WBS) identifying all WP deliverables and schedule information for when the individual deliverable is planned to be delivered;
  - (3) A Solution Description Document (SDD) describing the solution design, solution decisions, and service specifications for implemented services;
  - (4) A Deliverable Requirements Traceability Matrix (DRTM);
  - (5) A number of Release documentation sets (see section 2.5.4).

Figure 2-6 WP Delivery Plan



- [112] The requirements defined for a deliverable will each have a Contractor defined cost assigned to it prior to starting an increment and prior to the final prioritization of the deliverable's requirements.
- [113] The requirements defined for a deliverable will be prioritized using the MoSCoW prioritization scheme where the Purchaser prior to starting the increment work, decides the individual priorities of the deliverable's requirements.
- [114] A deliverable will be accepted at the end of an increment pending all of the defined Must Have requirements have been fulfilled, and the deliverable passes all the required tests (see section 2.5.4.7).
- [115] The cost of the implemented deliverable will be calculated as the sum of the individually fulfilled requirements.

### 2.5.3.1 Work Breakdown Structure (WBS) with Schedule (WBS/ Schedule)

- [SOWG-279] The WBS/ Schedule shall identify each of the deliverables (e.g. applications, services, etc.) using the deliverables identifying code from the CLIN number in the SSS.
- [SOWG-280] The WBS/ Schedule shall group the deliverables by Increment where each Increment is identified by a unique number.
- [SOWG-281] The Level-of-Effort (LOE) in number of person-days shall be defined for each of the deliverables in the WBS/ Schedule.
- [SOWG-282] It shall be possible to view the WBS/ Schedule as a Gantt chart where the start and end time of the increment is depicted. I.e. it shall from this schedule

be possible to identify the time window when a particular deliverable will be delivered.

[SOWG-283] The WBS/ Schedule shall show all key events within the Work Package. The key events shall include:

- (1) All Increment Start-up and Increment Review meetings;
- (2) All Sprint Planning and Review meetings (where the duration of a sprint is expected to be 3 or 4 weeks);
- (3) All Test Events.

[SOWG-284] The WBS/ Schedules for each of the Delivery Plans shall be placed under configuration control throughout the period of performance the Contract.

### 2.5.3.2 Solution Description Document (SDD)

[116] The purpose of the SDD is to describe solution decisions to a level of detail that the enable the Purchaser to assess the solution's feasibility and ability to fulfil the requirements as defined by the SRS.

[SOWG-285] The SDD shall include a design that includes:

- (1) Diagrams identifying key components and services and how they relate to each other;
- (2) Description of purpose of each of the identified components/ services and a short description of the business logic it will implement;
- (3) Identification of key technologies and frameworks to be used;
- (4) Identification of all 3<sup>rd</sup> party components and/ or libraries to be used and including licensing information on these;
- (5) Assessment of the proposed solution against the non-functional requirements as defined in the SRS.

[SOWG-286] The SDD shall record all fundamental solution decisions. Each such decision shall include:

- (1) An Issue or Problem Statement paragraph/ subsection, that describes the issue/ problem and including motivation for change, and a reference to SRS requirements, if applicable;
- (2) An Assumption paragraph/ subsection, that provides background information on (external) context, expected future situations, etc.;
- (3) An Alternatives paragraph/ subsection, that describes the alternatives that have been considered, and their implications. These considerations shall include assessment of the alternative against non-functional requirements (including RAMT), risk of obsolescence, lifecycle costs, licensing constraints, and compute resources requirements (processing power and memory);
- (4) A Decision and Justification paragraph/ subsection, that identifies the recommended solution and justifies why this is the preferred solution.

[SOWG-287] The SDD shall identify all COTS and FOSS components and libraries to be included in the solution where this identification shall include Vendor Name, Product Name, SW version, and the full details of the component/ library's lifecycle cost and constraints (license/ subscription fee, licence type, etc.)

[SOWG-288] The SDD shall include detailed information on all aspects of the Contractor's Continuous Integration (CI) and Continuous Delivery (CD) pipeline. This shall include information on the tooling planned to be used, the approach to automated testing in general, automated integration testing, and automated security testing.

- [SOWG-289] The SDD shall, if required, include an Annex for documenting user interface wireframes or mock-ups.
- [SOWG-290] The SDD shall include annexes that documents implemented server-side services (if any), see section 2.5.3.2.1 below.
- [SOWG-291] The SDDs for each of the Delivery Plans shall be placed under configuration control.

### 2.5.3.2.1 Service Specifications

- [117] The purpose of a Service Specification is to document the service such that:
- (1) SW developers implementing functionality that consumes the service have sufficient information to build functionality that can successfully interact with the service;
  - (2) Maintenance of the service is possible as the SW maintenance team will have sufficient information to enable them to understand the inner workings of the service.
- [SOWG-292] Service Specifications shall include machine-readable interface files, in a standardized format/ representation (e.g. OpenAPI for describing RESTful services, Web Services Description Language (WSDL) files for SOAP services, etc.)
- [SOWG-293] Service Specifications shall, when applicable, include documentation of, or reference to, an underlying information model.
- [SOWG-294] Service Specifications shall include documentation of the business logic and business rules implemented by the service.
- [SOWG-295] Service Specification shall include documentation on the service non-functional/ performance characteristics (e.g. response times).

### 2.5.3.3 Deliverable Requirements Traceability Matrix (DRTM)

- [118] The DRTM will be used to track the progress on all the individual requirements of the WP deliverables as defined in the SRS.
- [119] The Purchaser will provide the contracted requirements as an extract from the Purchaser's requirement management system (see [DOORS]) in a format that can be imported into Jira (see [Jira]).
- [SOWG-296] The DRTM shall be integrated with (or if feasible fully implemented in) the Jira tool (see [Jira]) on the NSF (the Jira tool will be provided as PFI in the NSF).
- [SOWG-297] The DRTM shall record the delivery status for all requirements. The delivery status of a requirement shall be {NOT\_STARTED, IN\_DEVELOPMENT, COMPLETE}.
- [SOWG-298] The DRTM shall for each requirement record references to the location(s) in the software where the requirement is implemented (e.g. file(s), package(s), classes).
- [SOWG-299] The DRTM shall for each requirement include the verification method based on the SRS. The verification methods are defined in Table 2-5.



Table 2-5 Verification methods

Method	Description
Analysis	The processing of accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results; analysing the performance of design by running simulations. This method can be used if a test scenario cannot be created at the Test Environment.
Test	The operation of the software element or component, using instrumentation or other special test equipment to collect data for later analysis. Controlled condition, configurations, and inputs are used in order to observe the response. Results are quantified and analysed. This method can be used where user interaction is involved and when computations with input data are necessary.
Demonstration	The operation of the software element or component, that relies on observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis. This method is used to demonstrate a capability to be provided by the requirement.
Inspection	The visual examination of software code, documentation, etc. This method can be used where testing is not possible (e.g. the maximum number of items used as a limitation inside the code).
Special Case	Any special qualification methods for the software element, such as special tools, techniques, procedures, facilities, and acceptance limits.

- [SOWG-300] The DRTM shall for each requirement, in the COMPLETE state, record a reference to the requirement test result within the Deliverable Functional and Performance Test Report (DFPTR) (see section 2.5.4.3.7).
- [SOWG-301] The DRTM shall include a comments field with the test results records that shall be reserved for the Purchaser's use (the Purchaser will use this comments field to raise comments to the test results).
- [SOWG-302] The DRTM shall for each requirement, in addition to recording the individual test result for the requirement, also include a reference to the Deliverable Acceptance Report (DAR) (see section 2.5.4.7), identifying the requirement was formally accepted by the Purchaser.
- [SOWG-303] The DRTM shall for each requirement record that a requirement has been invoiced by providing a reference number to the invoice where the Contractor requested payment for the requirement.
- [SOWG-304] The DRTM shall for each invoiced requirement record the invoice number and date.
- [SOWG-305] The DRTM shall record the current MoSCoW priorities for all requirements in the work package {M, S, C, W}.
- [SOWG-306] The DRTM shall for each requirement record the date for the last change to the requirement's tracking information.
- [SOWG-307] The Contractor shall be able to provide the DRTM in Excel format to the Purchaser where the information is organized in accordance with the following rules:

- (1) The Excel spreadsheet shall contain the complete DRTM where each attribute of the DRTM is represented by a column, and where each row represents a requirement;
- (2) The Excel spreadsheet shall be sortable by column values;
- (3) It shall be possible to organize the information around the individual deliverables for the work package. I.e. all requirements pertaining to a deliverable can be grouped together in subsequent rows in the matrix.

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

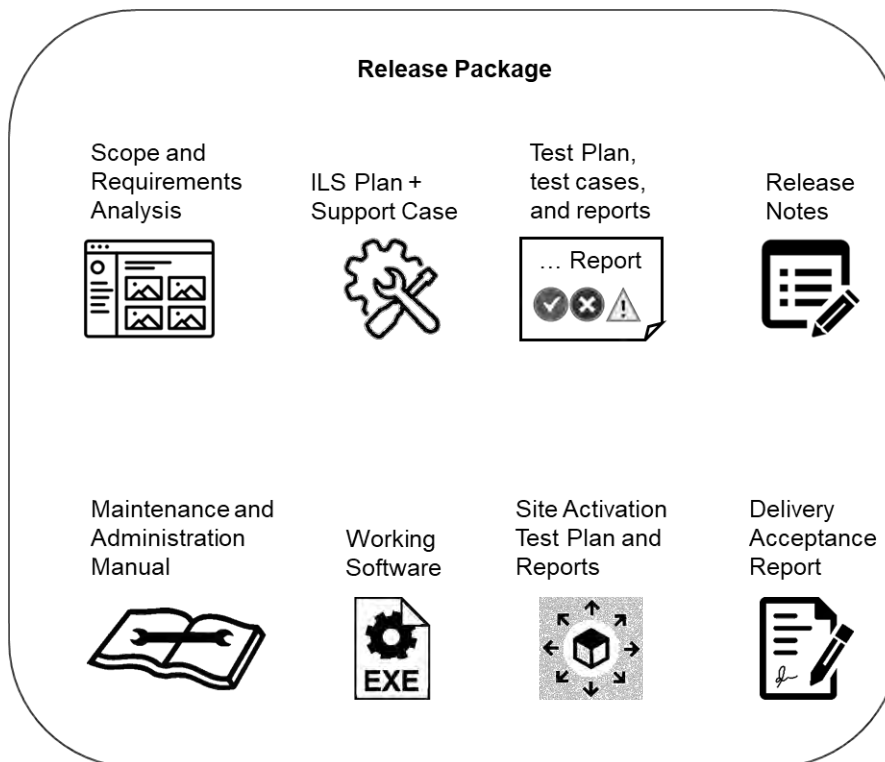
#### **2.5.4 Release Package**

[120] This section identifies documentation artefacts that are specific to the planning and execution of the work required to produce a software release (where the release could be deployed to production). Each WP increment will result in a release; i.e. working software including a set of deliverables.

[121] As shown in Figure 2-7 the Release Package consists of:

- (1) A Scope and Requirements Analysis (SRA);
- (2) An Integrated Logistics Support (ILS) Plan (ILSP) and a Support Case;
- (3) A Test Plan including test cases and Reports (TP/R);
- (4) A Release Note;
- (5) A Maintenance and Administration Manual;
- (6) A working software component;
- (7) Site Activation Test Plans and Reports (SATP/R);
- (8) A Deliverable Acceptance Report (DAR).

Figure 2-7 Release Package



### 2.5.4.1 Scope and Requirements Analysis (SRA)

- [SOWG-309] The SRA shall include an analysis of all requirements pertaining to the deliverables planned for the next release where this analysis shall:
  - (1) Identify potential issues with the requirements for the planned release;
  - (2) Propose changes to the requirements definitions to resolve inconsistencies or ambiguities, or to suggest no-cost improvements.
- [SOWG-310] The SRA shall identify any pre-requisites, documentation, and knowledge transfer required for implementation of the Increment’s deliverables.
- [SOWG-311] The SRA shall provide UI wireframes (e.g. using Balsamiq Wireframes) or mock-ups for any deliverables in the release that includes user interface (UI) components (the UI wireframes or mock-ups shall also be recorded in the SDD).
- [SOWG-312] The SRA shall identify all documentation artefacts required for the release (to be configuration controlled with the PBL). This list shall include Release Notes, Maintenance and Administration Manual, and Service Specifications (if applicable), etc.
- [SOWG-313] The SRA shall include a general Site Activation Test Plan & Report (SATP/R) that shall defines how the deliverables can be deployed to production, and define the test steps to verify a successful deployment.
- [SOWG-314] Each release shall as a minimum plan for deploying to a staging server on the production environment where the Contractor shall support the Purchaser in the installation and activation at the site.
- [SOWG-315] The SRA and all its individual artefacts shall be placed under configuration control throughout the period of performance the Contract.

### 2.5.4.2 Integrated Logistic Support Plan (ILSP) and Support Case

[122] See section 2.3.2 and section 2.3.4.3.

### 2.5.4.3 Test Plan and Reports (TP/R)

[123] The purpose of the TP/R is to plan for and record the results of all tests, verification and validation activities for the deliverables of the release.

#### 2.5.4.3.1 General

[SOWG-316] The TP/R shall be structured in accordance with the deliverable configuration items and the TP/R also shall form configuration items. I.e. the TP/R shall be included in the PBL.

[SOWG-317] The TP/R shall include:

- (1) Overall Test Plan;
- (2) All test cases for the deliverables planned for the release;
- (3) Software Quality Metrics Report (SQMR);
- (4) Source Code Review Report (SCRR);
- (5) Security Test Report (SecTR);
- (6) Deliverable Functional and Performance Test Report (DFPTR);
- (7) System Integration Test Report (SITR);
- (8) Continuous Delivery Assessment Report (CDAR).

[SOWG-318] Whenever feasible the test reports shall be automatically generated (e.g. through the NUnit report XML format).

[SOWG-319] All manually written test reports (in a document format) shall on their front page show how many tests cases that passed, failed or were not run.

#### 2.5.4.3.2 Overall Test Plan

[SOWG-320] The Overall Test Plan shall describe the Contractor's approach to testing. I.e. how the Contractor will conduct tests that will collect the results to populate the individual reports as defined in section 2.5.4.3.4 through 2.5.4.3.9 below.

[SOWG-321] The Overall Test Plan shall include templates for all the individual test reports.

#### 2.5.4.3.3 Test cases

[SOWG-322] The test cases shall document and describe all the test steps that meet or demonstrate Purchaser's requirements with an expected Test Result and pass/fail result.

[SOWG-323] Whenever feasible, the test cases shall be defined, documented and implemented as executable test code (e.g. as Gherkin scenarios) to enable fully automated tests.

#### 2.5.4.3.4 Software Quality Metrics Report (SQMR)

[SOWG-324] The SQMR shall be auto-generated from full SonarCube (see [SonarCube]) static code analysis and dependency checking.

[SOWG-325] The SQMR shall include an analysis on the test coverage achieved.

#### 2.5.4.3.5 Source Code Review Report (SCRR)

- [124] Source code reviews is expected to be produced as a result of peer review of implemented source code. However, tool-based source code analysis (e.g. HP Fortify) could be used instead or in combination to the manual reviews.
- [SOWG-326] The SCRR shall document the source code review findings, and record any action items (or issues) resulting from such reviews, and the latest status of these action items (or issues). The SCRR shall include assessments on:
- (1) Readability of developed code;
  - (2) Level of, and quality of, comments embedded in the source code. E.g.:
    - (a) Comments explaining the purpose of a class;
    - (b) Comments explaining what a function does, including descriptions of input parameters and return values;
    - (c) Comments explaining member variables; what the variable means (including unit of measure where appropriate);
    - (d) Comments on type definition explaining what the type represents;
  - (3) Compliance with programming style guides and naming conventions;
  - (4) Security vulnerability analysis against the Open Web Application Security Project (OWASP) identified vulnerabilities.

#### 2.5.4.3.6 Security Test Report (SecTR)

- [SOWG-327] The SecTR shall record the results of source code analysis of security vulnerabilities, of manual security tests, and of automated security tests.
- [SOWG-328] The SecTR shall describe any security measures that aim to mitigate security issues identified in the SecTR.

#### 2.5.4.3.7 Deliverable Functional and Performance Test Report (DFPTR)

- [SOWG-329] The DFPTR shall report the results of tests that verifies that the deliverable's functional and non-functional requirements (as defined in the SRS) are fulfilled.
- [SOWG-330] The DFPTR shall include test results from a test environment mimicking the actual production environment. This means:
- (1) Test results from the PBL release executing in a reference environment with all the same security constraints, compute resources, etc.;
  - (2) Test results from using real operational data in the same volume, size, and quality (or "flaws") as in the production environment.
- [SOWG-331] The DFPTR shall include references to the SRS requirements being tested.
- [SOWG-332] Each individual test record in the DFPTR shall include a unique identifier, a date for when the test was recorded, and an identification of the PBL being tested.
- [SOWG-333] The DFPTR shall include regression testing as required and specifically report on, and record, the results of regression tests performed.
- [SOWG-334] In case a feature has been discontinued and no regression tests has been performed for this feature, this shall be explicitly called out and recorded.
- [SOWG-335] The DFPTR shall, in accordance with section 2.4.5.2.2.2, identify and describe defects found during testing.

#### **2.5.4.3.8 System Integration Test Report (SITR)**

- [125] The purpose of this report is to record of testing interfaces used for communicating with external applications and services. Such tests could be done through usage of test harnesses executed as part of the build process (Continuous Integration), or by direct test with the external application and services, or by a combination of the two approaches.
- [SOWG-336] The SITR shall be organized around the interfaces implemented in the PBL release.
- [SOWG-337] The SITR shall record results of integration tests for each of the identified interfaces in the PBL release.

#### **2.5.4.3.9 Continuous Delivery Assessment Report (CDAR)**

- [126] The purpose of the CDAR is to track the maturity and quality of the Continuous Integration & Continuous Delivery (CI/CD) processes implemented.
- [SOWG-338] The CDAR shall describe in detail setup of the CI/CD pipeline to include details on:
- (1) The steps in the pipeline;
  - (2) What tools are being used;
  - (3) What tests are being run.
- [SOWG-339] The CDAR shall describe the main or high-level GitHub activities (Git flows, branches, commits, pull-requests, etc.) for the work of implementing the PBL release.
- [SOWG-340] The CDAR shall include identified weaknesses in the current CI/CD setup and proposal for possible improvements to the CI/CD pipeline.

#### **2.5.4.4 Maintenance and Administration Manual (MAM)**

- [SOWG-341] The Contractor shall develop, provide and maintain the System Maintenance and Administration Manual.
- [SOWG-342] The Contractor shall detail all Scheduled and Unscheduled maintenance procedures and all Administration procedures in accordance with the Task Analysis.
- [SOWG-343] The Contractor shall test and validate the procedures and resources described in the MAM and in original equipment manufacturer (OEM) manuals.
- [SOWG-344] The Contractor's MAM shall provide product breakdown list (with CIs), functional descriptions and specifications, screenshots from the software with the procedures required for: deployment, installation, configuration and settings, use of LOG files, security procedures, disaster recovery, backup/restore, BIT/condition monitoring, troubleshooting techniques, test remove/ replace.
- [SOWG-345] The MAM shall describe in detail how to install a new baseline, including description on how to recover the old baseline if the new baseline installation must be aborted. If data migration is needed between baseline versions, the MAM shall describe how to migrate data form the previous baseline to the new baseline.

- [SOWG-346] The Contractor's Maintenance Manual shall provide the description for the usage of all third-party applications needed to configure, manage and maintain the system.
- [SOWG-347] The Contractor's Maintenance Manual shall define the in-depth, step-by-step procedure how to perform the 1st, 2nd and 3rd level corrective and preventive maintenance tasks and SM&C tasks.
- [SOWG-348] The MAM shall include troubleshooting guidance with details on how to solve a full range of potential problems or on how to provide workarounds for potential problems.
- [SOWG-349] The Contractor shall ensure that each and every procedure include as a minimum the following information:
- (1) The support level to be assigned;
  - (2) Location/facility involved (if the operation is performed remotely, it has to be specified);
  - (3) Personnel skills required;
  - (4) Task duration and frequency (if applicable), reusing MTBF and MTTR data available;
  - (5) Manpower required;
  - (6) Tools, test equipment and special tools required (if any);
  - (7) The steps needed to perform the procedure.

#### **2.5.4.4.1 OEM Manuals for COTS products**

- [SOWG-350] The Contractor shall provide original OEM manuals for all COTS software installed.
- [SOWG-351] The Contractor shall be responsible to keep the COTS OEM manual under configuration control and to assure that all the COTS OEM Manuals will be always coherent with the operational configuration deployed.

#### **2.5.4.5 Release Note**

- [SOWG-352] The Release Note shall identify and explain new features provided in the PBL release.
- [SOWG-353] The Release Note shall identify all Configuration Items in the PBL release that has changed since the previous release.
- [SOWG-354] The Release Notes shall, for the deliverables in the release, identify all known issues and limitations, and workarounds for these.

#### **2.5.4.6 Site Activation Test Plan and Report (SATP/R)**

- [SOWG-355] The SATP/R shall describe how the deployment of the new PBL release to the site is tested and verified to be successful.
- [SOWG-356] The SATP/R shall include tests that verifies that the PBL release is fully functional at the site which includes:
- (1) Verifying that the users of the PBL release (if any) can correctly access it and its data;
  - (2) Verifying that PBL release's interfaces to external systems is properly configured and functional.

### 2.5.4.7 Deliverable Acceptance Report (DAR)

- [127] The purpose of the DAR is to serve as a record of the Purchaser's formal acceptance of a PBL release and through the PBL the SRS requirements it fulfils
- [SOWG-357] The DAR shall include a summary describing the PBL release, a sheet for the sign-off of the formal acceptance of the PBL, and then include the following reports as annexes:
- (1) A Configuration Status Report for the PBL;
  - (2) ILSP with the Logistics Support Analysis;
  - (3) Software Quality Metrics Report;
  - (4) Source Code Review Report;
  - (5) Security Test Report;
  - (6) Deliverable Functional and Performance Test Report;
  - (7) System Integration Test Report;
  - (8) Maintenance and Administration Manual;
  - (9) Release Notes;
  - (10) Site Activation Test Plan/ Reports (if applicable).
- [SOWG-358] The Contractor shall provide the DAR in a PDF format.
- [128] The Purchaser will sign off the DAR pending that:
- (1) All requirements with a Must Have priority for the defined deliverable(s) have been fulfilled;
  - (2) All relevant test reports have been provided and the tests are successful.
- [SOWG-359] The Contractor shall place the Purchaser-approved DAR under configuration control.



### 3 Project-Specific Requirements

#### 3.1 Contractor's Technical Personnel Qualifications

[129] This section specifies special skills for individuals of the Contractors project team that are deemed required for this project in particular. The skills for generic project management roles are defined in section 2.1.1.

##### 3.1.1 Technical Lead

[SOWG-360] The Contractor shall designate a Technical Lead for the project; who shall lead the efforts in analysis, design, development, integration, and follow-on enhancement efforts of the Contractor.

[SOWG-361] The Contractor's Technical Lead shall meet the following qualifications:

- (1) Have a master's degree in Computer Science, or related/ equivalent studies;
- (2) Have seven years of experience in leading technical roles in projects similar to this project in technical scope;
- (3) Have documented expert knowledge and experience in Angular application framework, OData REST API, OWASP, C# and .Net, Web-applications, JavaScript, SQL databases, Graph databases;
- (4) Have documented knowledge and experience on Elasticsearch and Neo4j (both used with components of the INTEL-FS Spiral 1 software);
- (5) Have documented knowledge and experience with social network analysis (SNA) and/ or link analysis, and preferably have experience with implementation of SNA Web and/ or link analysis applications (e.g. using the KeyLines software development kit (SDK), GoJS JavaScript/ TypeScript library, etc.)
- (6) Have a NATO SECRET clearance.

##### 3.1.2 Scrum Master

[SOWG-362] The Contractor shall designate a Scrum Master for the project; who shall manage and assist the SW development team in planning and executing their work so that the expected delivery goals are achieved.

[SOWG-363] The Contractor's Scrum Master shall meet the following qualifications:

- (1) Have a bachelor's degree in Computer Science, or related/ equivalent studies;
- (2) Have five years of experience in leading technical roles in projects similar to this project in technical scope;
- (3) Have a minimum of two years of experience in the role of a Scrum Master;
- (4) Have a NATO SECRET clearance.

##### 3.1.3 Test Director

[SOWG-364] The Contractor shall designate a Test Director for all test activities conducted under this Contract; who shall direct the test planning and test implementation/ execution.

[SOWG-365] The Contractor's Test Director shall meet the following qualifications:

- (1) Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;

- (2) Have seven years of experience working on SW intensive projects;
- (3) Have documented expert knowledge and experience with automating testing and test reporting (e.g. using the NUnit framework, Jasmine, Gherkin test-scenarios, Selenium, etc.) for Azure DevOps;
- (4) Have documented expert knowledge in automated security testing of Web-applications;
- (5) Have documented knowledge and experience of Angular application framework, OData REST API, OWASP, JavaScript, and Typescript;
- (6) Have a NATO SECRET clearance.

### 3.1.4 Software Developers

[SOWG-366] The Contractor shall designate a team of experienced User Interface Software Developers, who shall implement the INTEL-FS2 UA user interfaces.

[SOWG-367] The Contractor's User Interface Software Developers shall meet the following qualifications:

- (1) Have a bachelor's, or higher, degree in Computer Science, or related/ equivalent studies;
- (2) Have five years of documented expert knowledge and experience with software implementation of user interfaces in Web-Applications in particular in the latest versions of the Angular application framework;
- (3) Have a UX design certification;
- (4) Have documented experience of working with OData REST API;
- (5) Have a NATO SECRET clearance.

## 3.2 Augmentation of SOW General Requirements

### 3.2.1 Additional requirements for deliverable acceptance

[SOWG-368] The Contractor shall be able to demonstrate that whenever any UI is auto-generated (e.g. UI for entering IIE attributes) then such auto-generated UI shall be generated from the [INTEL-FS2-InformationModel]. The Contractor shall for auto-generated UI be able to demonstrate that a change in [INTEL-FS2-InformationModel] is automatically processed to update the relevant UI.

[130] The purpose of the requirement above is to ensure that the UI is not auto-generated from aspects in the source code (as it is in INTEL-FS Spiral 1).

[SOWG-369] The Contractor shall instrument the delivered software source code with additional logging that provides diagnostics information in case of issues with use of any Purchaser provided software component as PFI (this is of particular importance for issue the usage of the PFI-provide map visualization component (VC)).

[SOWG-370] The Contractor shall for any requirements that cannot be fulfilled because of supposed issues in the usage of PFI software provide an analysis based on logged diagnostics information proving/ justifying that the root cause of not being able to meet the requirement is a defect in the PFI provided software. This analysis shall also include proof that the Contractor developed is complete and that once the issue in the PFI the requirement will be fulfilled without requiring any changes to the Contractor provided software.

### 3.2.2 Additional requirements for supporting release to production

- [SOWG-371] The Contractor shall, starting immediately after the first release to production (see 2.4.5.2.7) until the Final System Acceptance (FSA), provide support to ensure that the software running in production fulfils its availability requirements. This support shall, for all releases to production include:
- (1) 2<sup>nd</sup> level support by performing problem analysis to identify the cause of reported issues with the software in production;
  - (2) 3<sup>rd</sup> level support by implementing bug fixes to identified issues and to subsequently produce a new PBL Release;
  - (3) 4<sup>th</sup> level support by obtaining and including new versions of 3<sup>rd</sup> party components and libraries when this is required to resolve issues in production.
- [SOWG-372] The Contractor shall, after FSA, in the Warranty period, continue to provide the 3<sup>rd</sup> level and 4<sup>th</sup> level support.

## 3.3 WP1.1 Upgrade UI, initial BMD OPFOR ORBAT Management, and new User Management – Phase 1

### 3.3.1 Deliverables

- [131] Table 3-1 below show an extract of the SSS for WP 1.1 identifying the high-level CLIN numbers for the deliverables of the WP sorted by Purchaser-expected delivery increment (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-1 WP 1.1 SSS high-level CLIN numbers

CLIN	Description	Delivery at increment number
1.1	User Management Application	1
2.3	Battlespace Object (BSO) Management Application	1
2.2	Products Management Application	2
2.5	Intelligence Situation Application	3
2.7	Search Application	3
2.10	Intelligence Requirements Management (IRM) Application	4
2.8	Analysis Application	5
2.1	Dashboard Application	6
2.9	ISR Organization Management Application	6
2.11	Collection Requirement Management (CRM) Application	6

### 3.3.2 Additional Requirements for Site Activations

- [132] Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.
- [SOWG-373] In addition to the regular support for deployment of every release to the production staging environment the Contractor shall for WP1.1 also provide support for up to 10 installations and site activations on actual servers in production.

[SOWG-374] The Contractor shall, if deemed required to achieve successful activation, provide the key personnel to be present in person at the installation and activation event.

[133] Note: The installation and activation to production is normally executed from Purchaser's facility in Mons-Belgium.

[SOWG-375] The Contractor shall during WP1.1 be responsible for corrective maintenance of software produced by the Contractor.

[SOWG-376] The Contractor shall factor in the cost of the site installation and activation support, and for corrective maintenance of Contractor's developed software, into the cost of the software deliverables as defined in the SSS. I.e. the Contractor shall not expect any additional compensation for this support.

### 3.4 WP1.2 New user interfaces (using mock backends) – Phase 2

#### 3.4.1 Deliverables

[134] Table 3-2 below show an extract of the SSS for WP 1.2 identifying the high-level CLIN numbers for the deliverables of the WP (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-2 WP 1.2 SSS high-level CLIN numbers and functionalities groupings

CLIN	Description	Delivery at increment number
3.6	BM JIPOE Application (using mock backend)	7
3.10	IRM Application (using mock backend)	7
3.11	CRM Application (using mock backend)	7
3.12	Collection Operations Management (COM) Application (using mock backend)	7

#### 3.4.2 Additional Requirements for Site Activations

[135] Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.

[136] In WP1.2 (Phase 2) the Contractor is not expected to deliver any new release to production as the work in this phase is to evolve the user interfaces against mock-backends.

[137] However, in case critical issues are identified in the software the Contractor delivered in WP1.1 requires new releases to production to fix the issue then the Contractor will have to support this.

[SOWG-377] The Contractor shall in Phase 2, when required provide installation and site activation support for any release to production that is required to address issues in the software delivered by the Contractor.

### 3.5 WP1.3 Full integration with new backend API – Phase 3

#### 3.5.1 Deliverables

[138] Table 3-3 below show an extract of the SSS for WP 1.2 identifying the high-level CLIN numbers for the deliverables of the WP sorted by Purchaser-expected delivery

increment (for further breakdown and details of deliverables, see the SSS spreadsheet).

Table 3-3 WP 1.3 SSS high-level CLIN numbers

CLIN	Description	Delivery at increment number
4.2	Products Management Application (new backend)	8
4.3	Battlespace Object (BSO) Management Application (new backend)	8
4.7	Search Application (new backend)	8
4.8	Analysis Application (new backend)	9
4.9	ISR Organization Management Application (new backend)	9
4.10	IRM Application (new backend)	9
4.11	CRM Application (new backend)	9
4.1	Dashboard Application (new backend)	10
4.6	BM JIPOE Application (new backend)	10
4.5	Intelligence Situation Application (new backend)	10
4.4	Targets Application (new implementation)	11
4.12	COM Application	11

### 3.5.2 Additional Requirements for Site Activations

- [139] Installation and activation of a release in the production environment will done by, or lead/ supervised by, the Purchaser with the support of the Contractor.
- [SOWG-378] In addition to the regular support for deployment of every release to the production staging environment the Contractor shall for WP1.3 also provide support for up to 15 installations and site activations on actual servers in production.
- [SOWG-379] The Contractor shall, if deemed required to achieve successful activation, provide the key personnel to be present in person at the installation and activation event.
- [140] Note: The installation and activation to production is normally executed from Purchaser’s facility in Mons-Belgium.
- [SOWG-380] The Contractor shall also during WP1.3 be responsible for corrective maintenance of software produced by the Contractor.
- [SOWG-381] The Contractor shall factor in the cost of the site installation and activation support, and for corrective maintenance of Contractor’s developed software, into the cost of the software deliverables as defined in the SSS. I.e. the Contractor shall not expect any additional compensation for this support.

### 3.6 WP 1.4 Optional 3<sup>rd</sup> and 4<sup>th</sup> Level Maintenance and Support

- [141] This optional Work Package identifies a 3<sup>rd</sup> and 4<sup>th</sup> Level Maintenance and Support deliverable (see section 2.3.3.1) that can be exercised within the Contract for delivery after the Warranty period expires.

- [SOWG-382] The Contractor shall provide one year of 3<sup>rd</sup> Level and 4<sup>th</sup> Level Maintenance and Support for the I2UA capability where this support includes:
- (1) Support to NCI Agency's 2<sup>nd</sup> Level Support process with identification of the root cause of the issue (e.g. by issue replication testing);
  - (2) Implement the software corrections as identified in (1);
  - (3) Test the corrections in accordance with the testing activities as defined in section 2.4.5.2.2;
  - (4) Support the IV&V testing in accordance with section 2.4.5.2.4;
  - (5) Support the UAT testing in accordance with section 2.4.5.2.5;
  - (6) Define a new PBL in the CMDB and create a Release Note in accordance with section 2.5.4.5;
  - (7) Support the Deliverable Acceptance Review in accordance with section 2.4.5.2.6;
  - (8) Support the Release Management in accordance with section 2.4.5.2.7.
- [SOWG-304] If the Purchaser activates the optional support package, the Contractor shall be fully compliant with section 2.3.7 Warranty Requirements and provide all the services described under aforementioned section without any additional cost.







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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 1.0

21/12/2020

N A T O U N C L A S S I F I E D



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**Document Revision History**

Date	Version	Changes
21 Dec 2020	1.0	IFB package release version





# 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

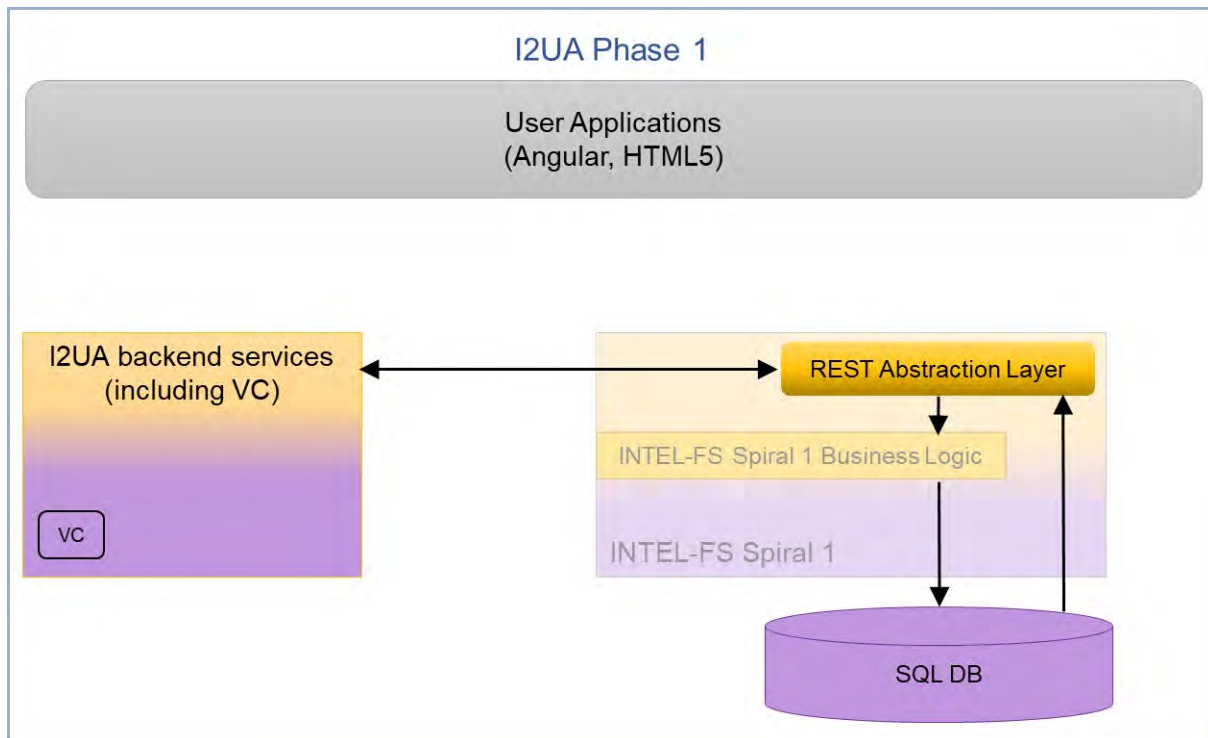
- [7] Within this SRS, general functional requirements applicable to most or all user applications are numbered as [GUA-number], application-specific functional requirements are numbered as [FUA-number], non-functional requirements (NFR) are numbered as [NFR-number], while narrative text is numbered 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-INTELF2, INTEL-FS SPIRAL 2 - Information Model
-------------	---

InformationModel]	Book II - Part V, NCI Agency
[INTEL-FS2-UserStories]	CO-14873-INTELF2, 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 <a href="http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part1-protocol/odata-v4.0-errata03-os-part1-protocol-complete.html">http://docs.oasis-open.org/odata/odata/v4.0/errata03/os/complete/part1-protocol/odata-v4.0-errata03-os-part1-protocol-complete.html</a>
[OWASP]	Open Web Application Security Project (OWASP), <a href="https://www.owasp.org/index.php/Main_Page">https://www.owasp.org/index.php/Main_Page</a>
[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, <a href="https://www.sonarqube.org/">https://www.sonarqube.org/</a>
[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 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

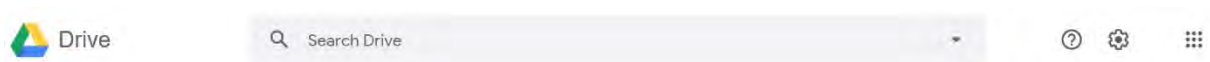
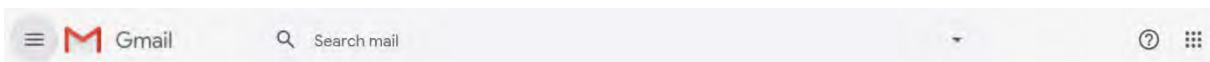


Figure 2-2 Example 2 of main menu bar - Gmail



[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 cursor 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](#)

[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 suppress 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](#)

## 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.

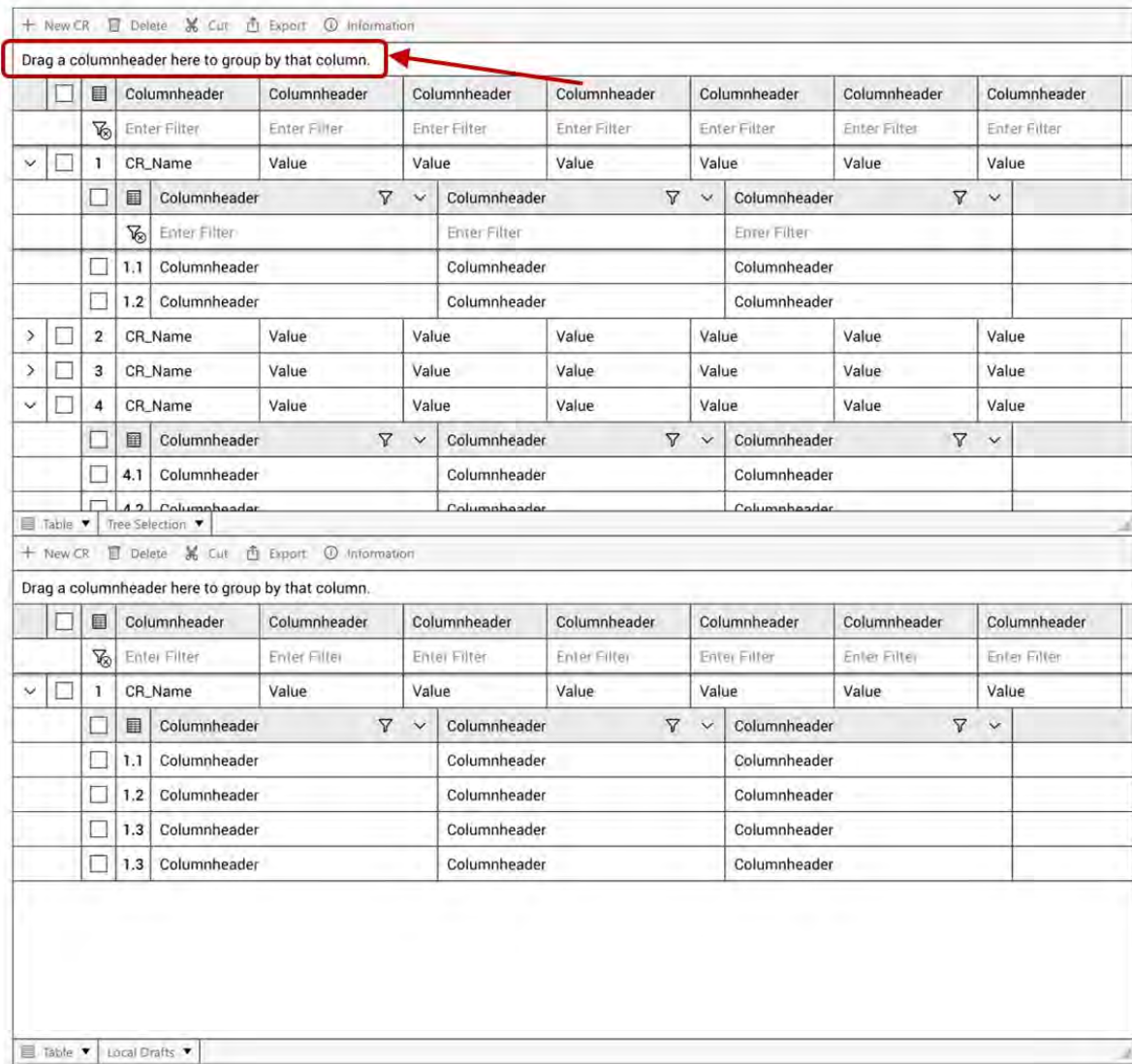
Verification: [Demonstration and Inspection](#)

[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 user cannot change a cell's 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 Gantt View.

Verification: [Demonstration](#)

[GUA-126] It shall be possible to hide and un-hide columns in the grid part of the Gantt 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](#)

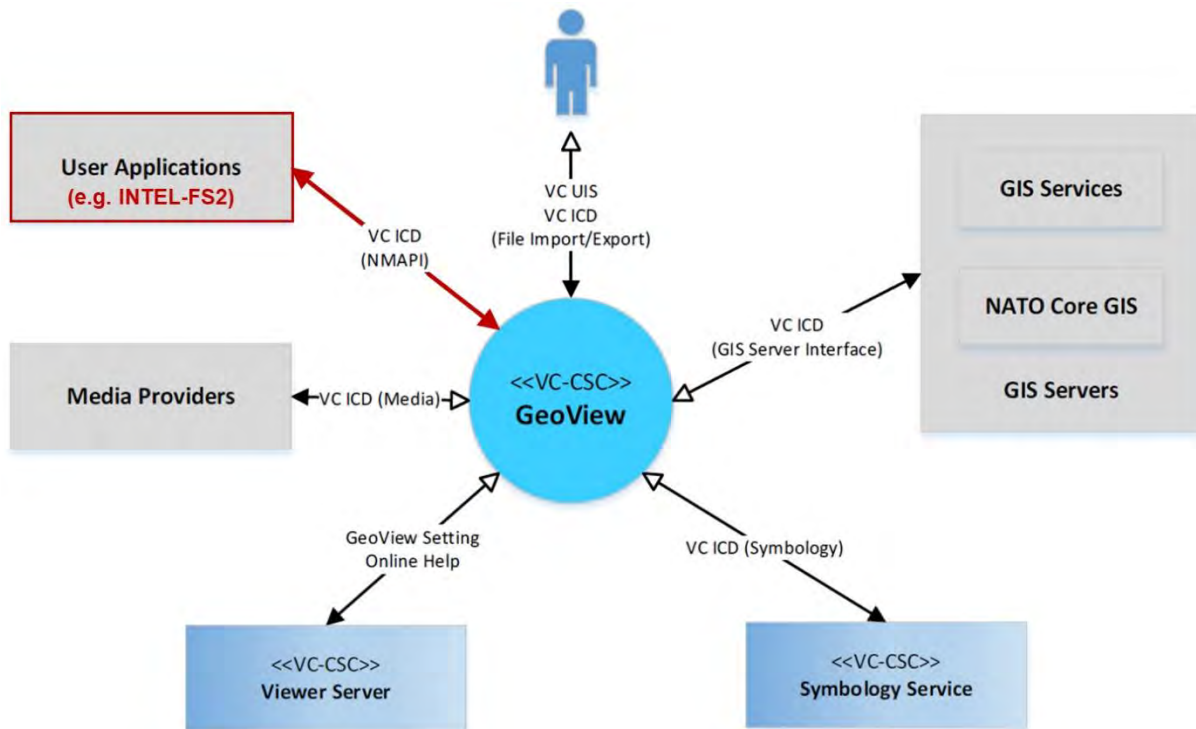
[GUA-128] It shall be possible to scroll horizontally and vertically in both the data grid part and the timeline part of the Gantt View.

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
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\* 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.feature.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.feature.plot map.feature.plot.batch map.feature.update
I2UA shall be able to draw icons, pictures, and geometric shapes on GeoView	map.feature.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.feature.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.feature.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.feature.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 R~~E~~STRIC~~T~~ED 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 R~~E~~STRIC~~T~~ED 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 R~~E~~STRIC~~T~~ED 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 cursor 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 IIEs, 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 RESTRICTED 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

The screenshot displays the Report Reader interface. At the top, there are tabs for Report 1, Report 2, Report 3, Report 4, and Report 5. Below the tabs, the main document area shows a document titled 'Report 1' with a 'Filename' field. The document content includes a 'Headline' section followed by two columns of Lorem Ipsum text. A large empty rectangular box is present below the first column of text. The right sidebar, titled 'Search List', shows a 'Sort by type' dropdown menu and a list of search results categorized by type: Persons (3) with 42 results, Places (5) with 19 results, Numbers (14) with 34 results, and Reoccurring Phrases (13) with 65 results. Individual search results are listed with icons and names, such as John Smith (16), Kate Parker (13), and Jacob Stevens (13).

**Report 1** × Report 2 Report 3 Report 4 Report 5

EntityName ▶ **Filename**

Created 2016-05-07 / 13:37 History

Updated 2017-04-07 / 12:15

Type PDF Search in Document

**Headline**

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet.

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua.

**Headline**

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr

**Headline**

Document

Search List

Sort by type

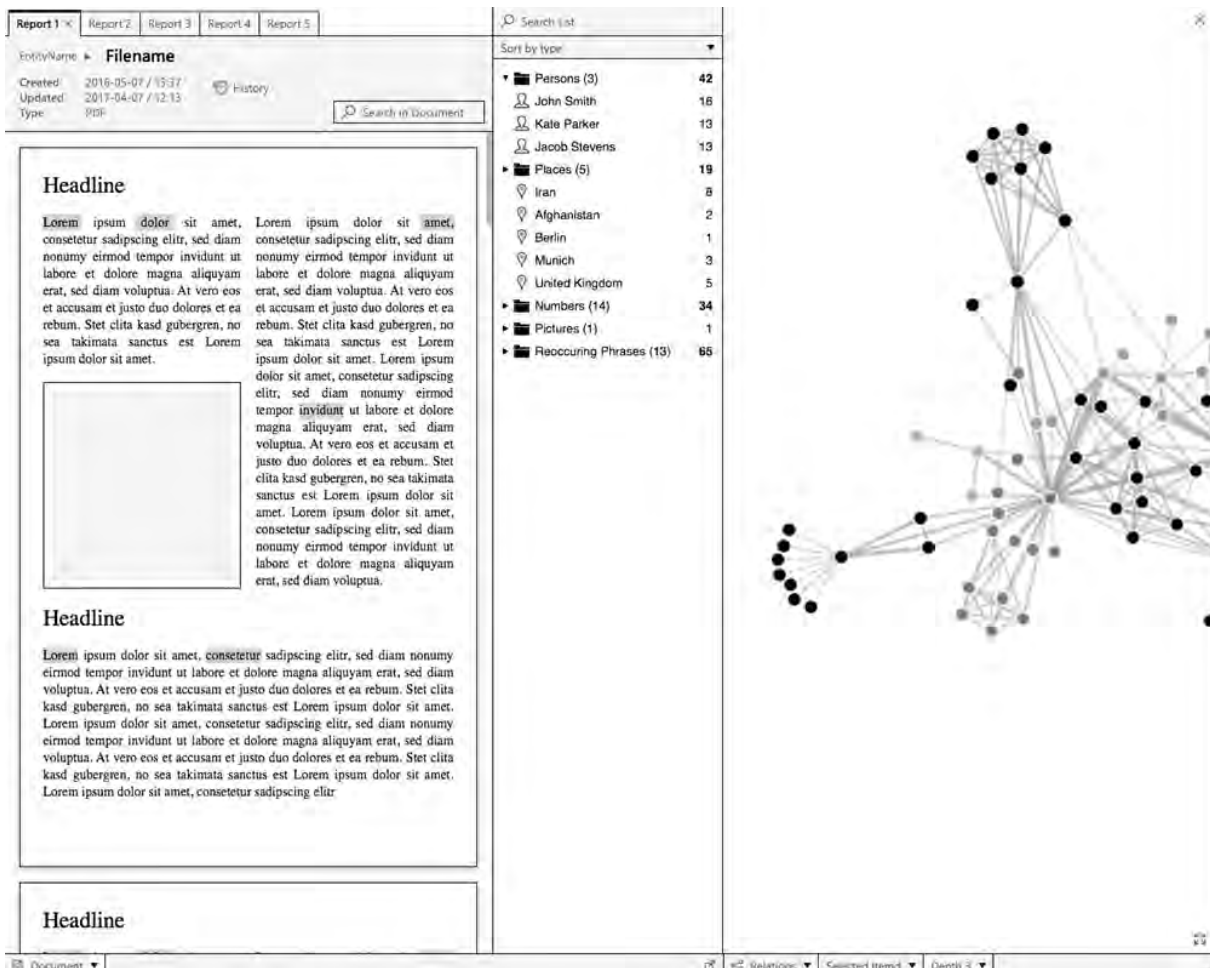
- Persons (3) 42
  - John Smith 16
  - Kate Parker 13
  - Jacob Stevens 13
- Places (5) 19
  - Iran 8
  - Afghanistan 2
  - Berlin 1
  - Munich 3
  - United Kingdom 5
- Numbers (14) 34
- Pictures (1) 1
- Reoccurring Phrases (13) 65

[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

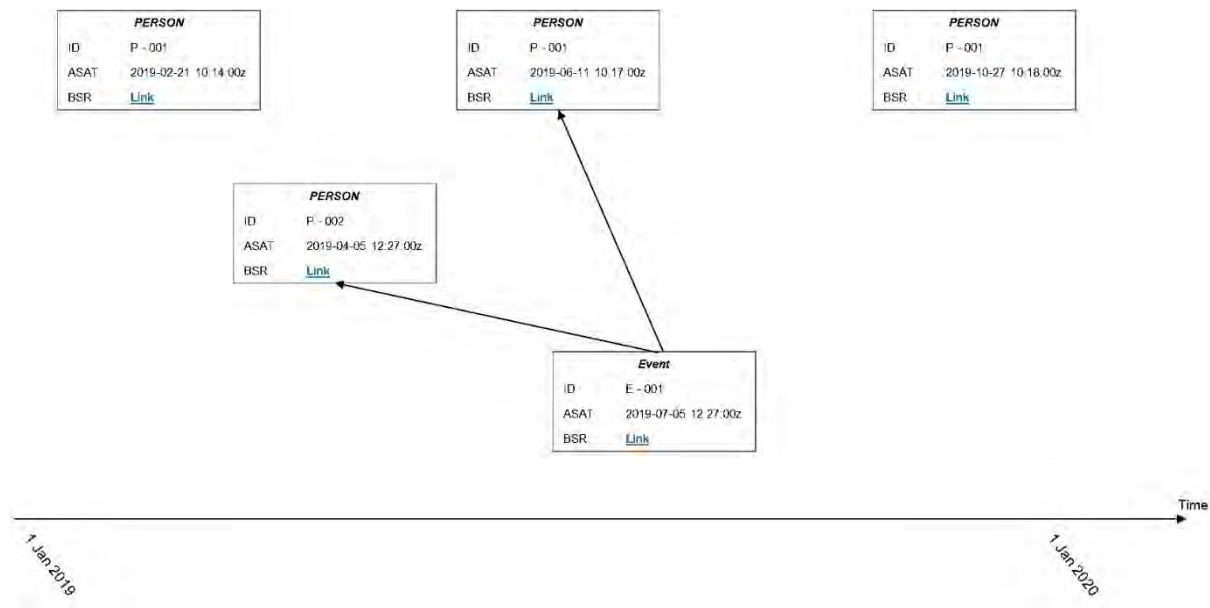
Est. Cost[€]: Contractor to provide cost estimate

[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

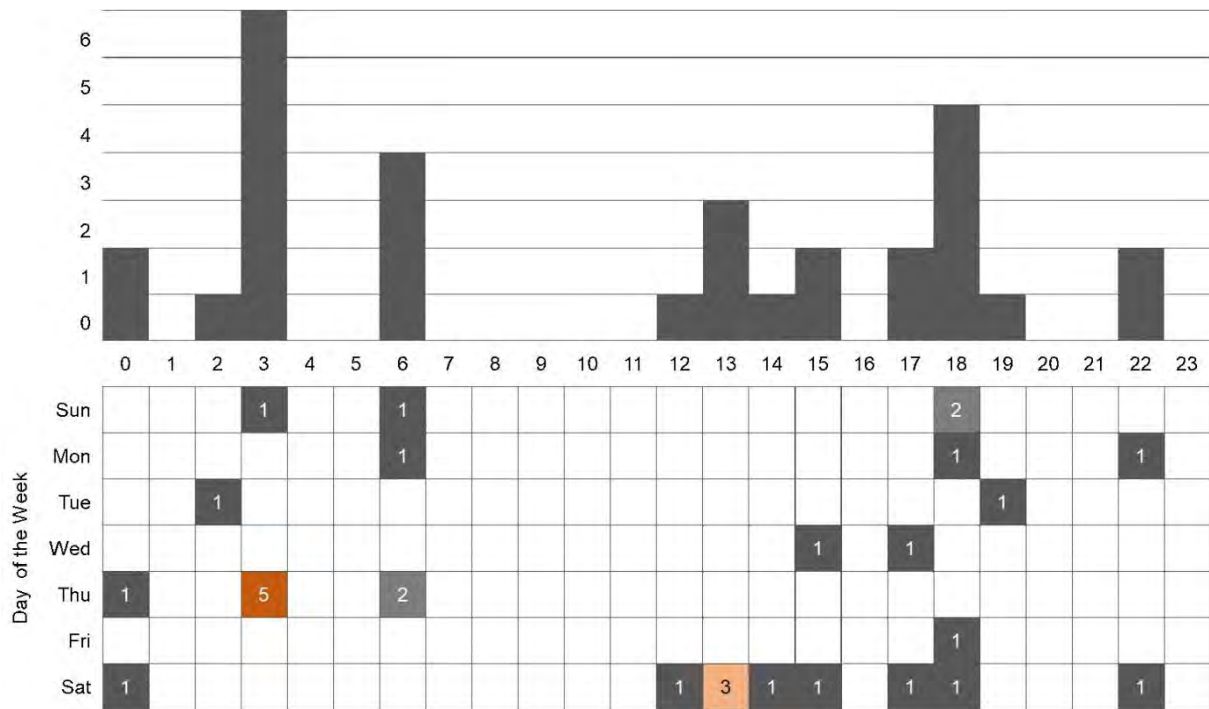
#### **4.1.8.8 Pattern of life (PoL) analysis functionalities**

[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

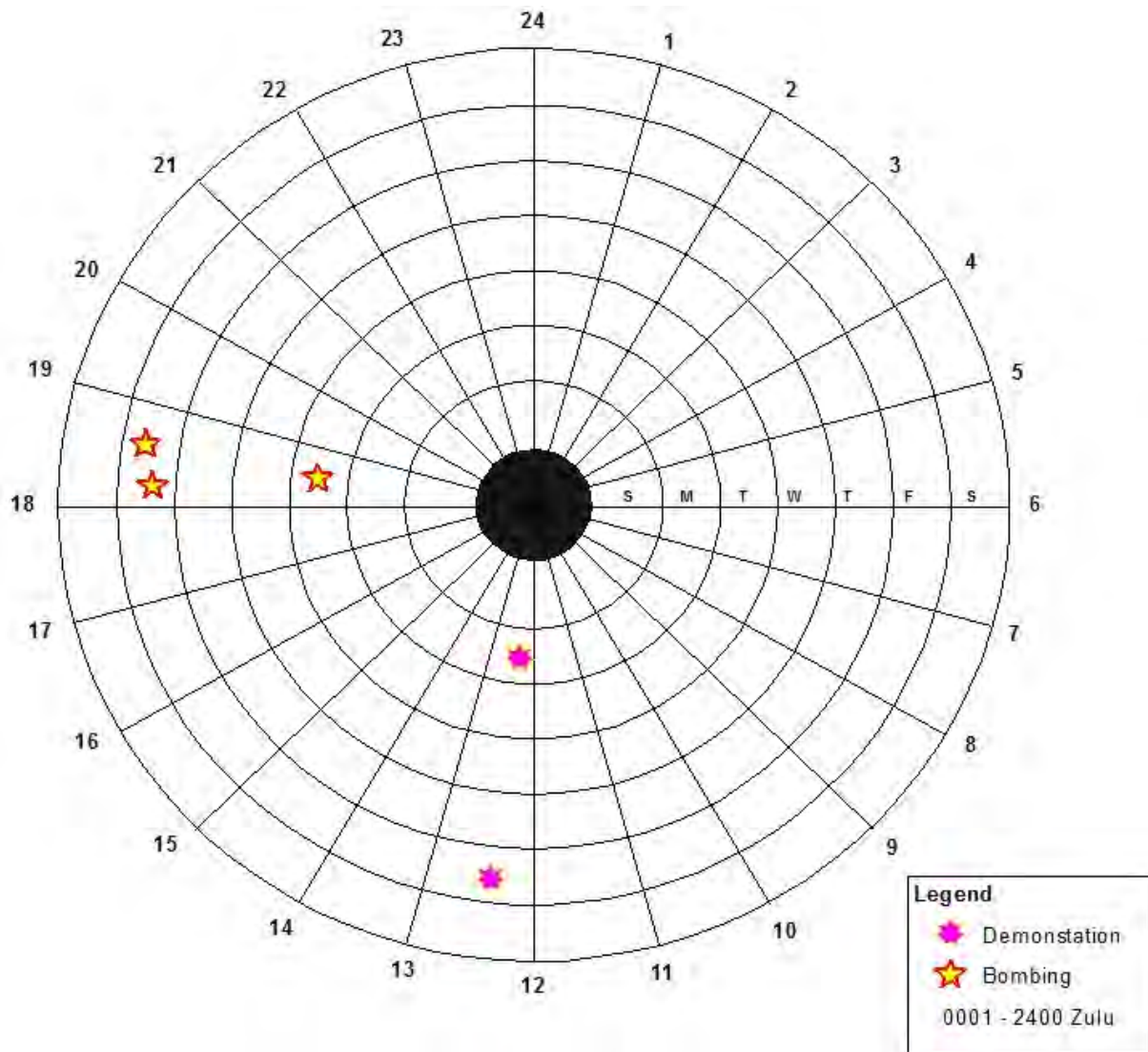


[FUA-187] It shall be possible to render/ plot temporal information in a Polar Coordinate System View as shown in example in the figure below.

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

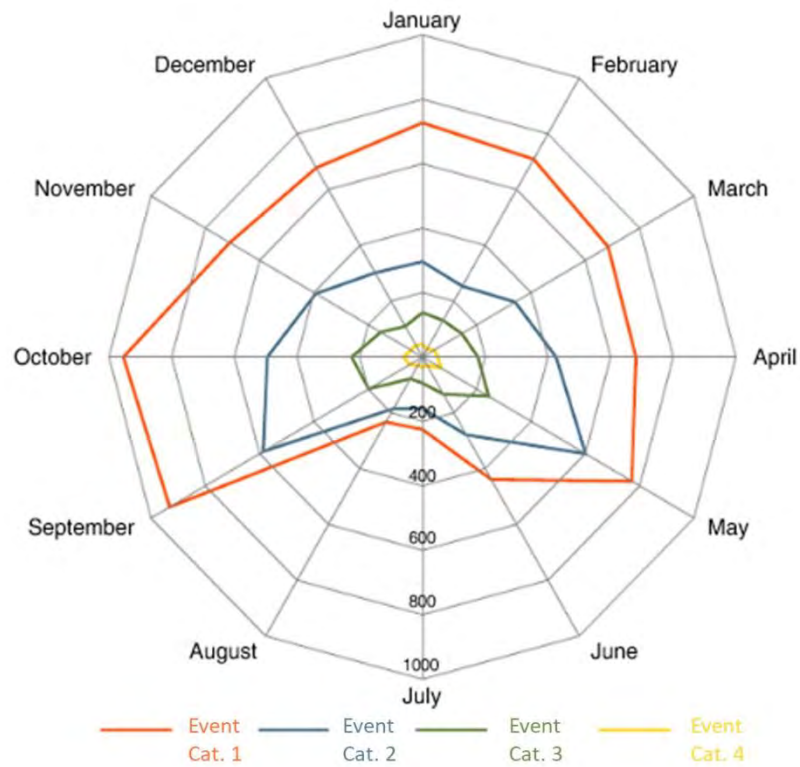
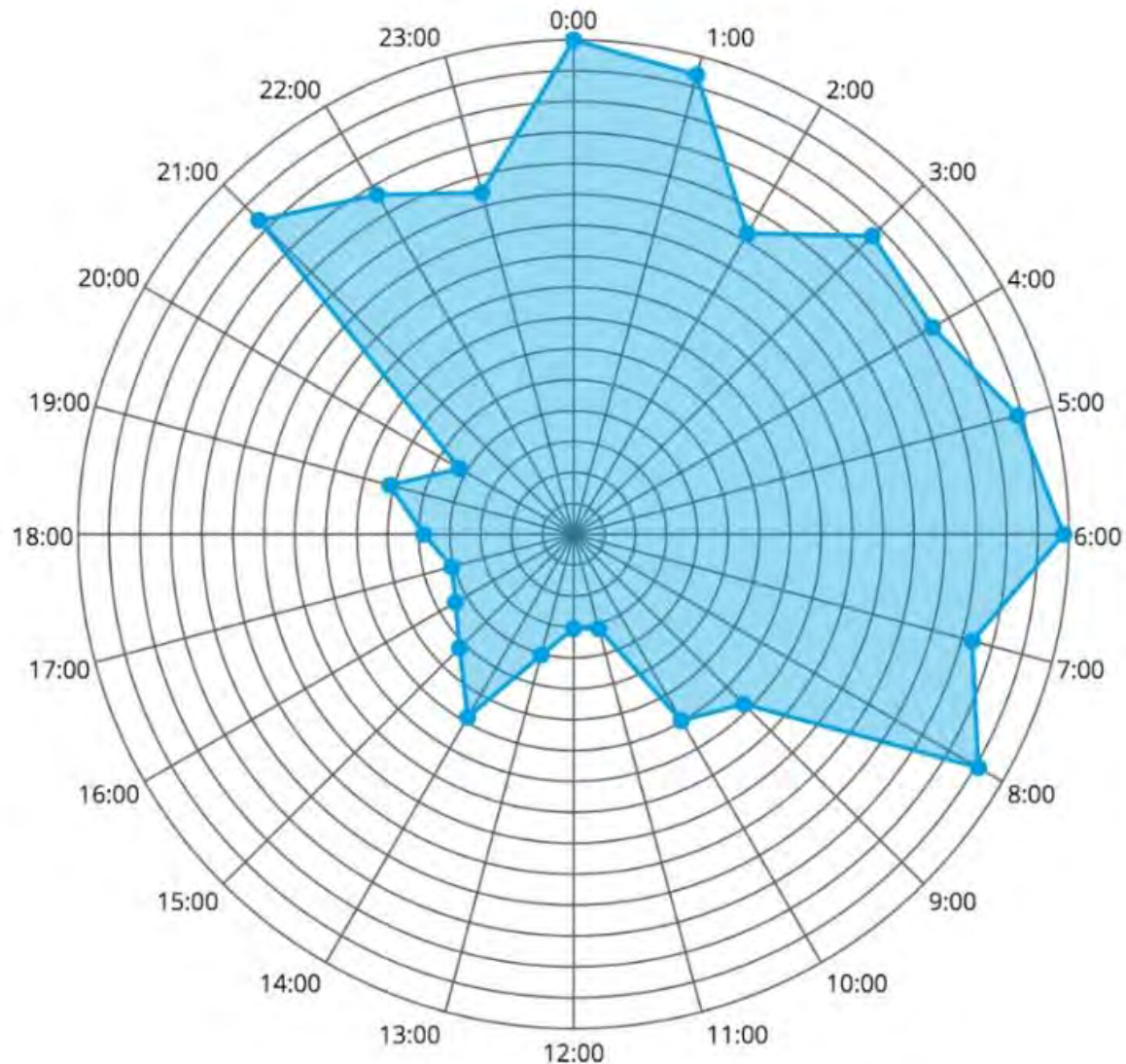


Figure 4-7 Another example of Radar Chart Visualisation of Temporal Data; this time with time-of-day on the circumference





[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