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

RFQ-CO-115182-DAVS

BOOK II

THE PROSPECTIVE CONTRACT

GENERAL INDEX

SIGNATURE SHEET

NCI Agency PURCHASE ORDER	
1. Original Number __ of	**2. PO Number : XXXXXXXX**
3. Contract Number: CO-115182-DAVS	**4. Effective date (EDC): SEE BLOCK 17**
5. Contractor: **Director**	**6. Purchaser:** The General Manager NATO Communications and Information Agency Boulevard Leopold III B-1110 Bruxelles Tel: +32(0) 6544 6103
7. CONTRACT SCOPE: This is a Firm Fixed Price contract for the provision of of the Discussion, Audio and Video Systems (DAVS) located in Joint Force Command Brunssum (JFCB), Netherlands. The project details design, delivery, installation, configuration, testing and handover to the Customer. A total of seven Discussion Systems (DS) and two (2) Audio Video Systems (AVS). The Contractor shall deliver the items specified in the Schedule of Supplies and Services in the manner and at the time and location specified in the terms of this Contract and the Statement of Work.	
8. TOTAL AMOUNT OF CONTRACT : Currency – Excluding VAT Firm Fixed Price	
9. PERIOD OF PERFORMANCE As stated in Schedule of Supplies and Services and Special Provisions	**10. DELIVERY SITE** As stated in Schedule of Supplies and Services and Special Provisions
11. CONTRACT This Contract consists of the following parts and named documents: a) Part I Schedule of Supplies and Services b) Part II Special Contract Provisions and Annexes c) Part III NCI Agency Basic Ordering Agreement General Provisions and Appendix 1, of the Basic Ordering Agreement NCIA/BOA/XXXXX XX Month 20xx, incorporated herein by reference. d) Part IV Statement of Work and Annexes e) Contractor's proposal dated XX Month 2020 and subsequent clarifications. f) In the event of any conflict or inconsistencies between or among any of the documents comprising this Contract, the order of priority specified in Clause 2 of Part II shall apply.	
12. Signature of Contractor	**13. Signature of Purchaser**
14. Name and Title of Signer	**15. Name and Title of Signer**
16. Date signed by the Contractor	**17. Date signed by the Purchaser**

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

RFQ-CO-115177-SEMARCIS

BOOK II

PART I

SCHEDULE OF SUPPLIES AND SERVICES

CLIN	Description	SOW Reference	Required Completion Date	Delivery Destination	Delivery Form	Unit of measure	Quantity	Unit Price	Total Firm Fixed Price
								Declare Currency =>	
1	**CLIN 1 - Project Management**								
1.1	Project Implementation Plan (PIP).	2.4.	EDC + 3 Weeks	NCI Agency	Electronic	Report	1	-	-
1.2	Project Status Report (PSR).	2.5.7.2.	One week before each PRM	NCI Agency	Electronic	Report	5	-	-
1.3	Project Review Meeting 1 (PRM), System Requirements Review Meeting.	2.5.7.1.1; 3.3.1.	EDC + 1 Weeks	NCI Agency	Services	Event	1	-	-
1.4	Project Review Meeting 2 (PRM), Critical Design Review Meeting.	2.5.7.1.2; 3.3.3.	EDC + 10 Weeks	NCI Agency	Services	Event	1	-	-
1.5	Project Review Meeting 3 (PRM), First Article Accceptance Tests Meeting.	2.5.7.1.3.	EDC + 30 Weeks	Contractor Premise	Services	Event	1	-	-
1.6	Project Review Meeting 4 (PRM), Preliminary System Acceptance Meeting	2.5.7.1.4; 4.8.2.	EDC + 40 Weeks	NCI Agency	Services	Event	1	-	-
1.7	Project Review Meeting 5 (PRM), Final System Acceptance Meeting.	2.5.7.1.5; 4.9	EDC + 44 Weeks	NCI Agency	Services	Event	1	-	-
1.8	Site Survey.	1.5.2.	EDC + 3 Weeks	JFC Brunssum, NL	Services	Event	1	-	-
1.9	Preliminary Design Review Meeting.	3.3.3.	EDC + 5 Weeks	NCI Agency	Electronic/online	Event	1	-	-
TOTAL PRICE CLIN 1									-
2	**CLIN 2 - System Requirements and Integration**								
2.1	System Design Specification	3.2. 3.2.4.	EDC + 3 Weeks	NCI Agency	Electronic	Report	1	-	-
2.2	Installation, integration an configuration of DAV systems.	1.2.2.2.	EDC + 35 Weeks	JFC Brunssum, NL	Services	Set of Activities	1	-	-
2.3	The DAV systems documentation.	7.3.1; 7.3.3	EDC + 37 Weeks	NCI Agency	Electronic	Set of documents	1	-	-
TOTAL PRICE CLIN 2									-
3	**CLIN 3 - Integrated Logistics Support**								
3.1	ILS, Support&Maintenance concept, LSA&RMA data, Logistics data, SWDL, CM data.	5.1 - 5.3.12; 5.5 - 5.5.3; 5.11 -5.11.2; 6.1.1 - 6.2.8.3	As per SoW	NCI Agency	Electronic and Service	Event	1	-	-
3.2	Supply Support, RSPL, RCIL, Consumables.	5.4 - 5.4.10	EDC + 10 Weeks (CDR)	NCI Agency	Electronic and Material	Event	1	-	-
3.3	System Inventory	5.6 - 5.6.3	2 weeks before shipment	NCI Agency	Electronic and hard copy	Document	1	-	-

3.4	Packing Handling Storage and Transportation (PHS&T) including delivery of DAV systems elements.	5.8 - 5.10.2; 5.12 - 5.13.3	EDC + 32 Weeks	JFC Brunssum, NL	Electronic and Material	Event	1	-	-
3.5	Warranty (PSA until FSA + 12 month).	5.14 - 5.14.26	FSA + 12 Months	JFC Brunssum, NL	Warranty Service	Event	1	-	-
TOTAL PRICE CLIN 3									-
4	**CLIN 4 DAV Systems**								
4.1	**JFCB JOC "Floor" Conference Room**	SRS Annex A 1.2.2							
4.1.1	Core equipment.	SRS Annex A 1.2.2.2; 1.2.2.3; 1.2.2.4; 1.2.2.5	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.2	Video Wall equipment.	SRS Annex A 1.2.2.6; 1.2.2.7; 1.2.2.8;	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.3	Operator desk equipment.	SRS Annex A 1.2.2.9; 1.2.2.10; 1.2.2.11; 1.2.2.12; 1.2.2.13	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.4	User desk equipment.	SRS Annex A 1.2.2.14; 1.2.2.15	EDC+32	JFC Brunssum, NL	hardware	Set	26	-	-
4.1.5	Lectern equipment.	SRS Annex A 1.2.2.16; 1.2.2.17; 1.2.2.18;	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.6	Videoconference equipment.	SRS Annex A 1.2.2.20; 1.2.2.21; 1.2.2.22	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.7	Listening room equipment.	SRS Annex A 1.2.2.23; 1.2.2.24	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.1.8	Miscellaneous equipment.	SRS Annex A 1.2.2.19; 1.2.2.25	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.2	**JFCB JOC Conference Room**	SRS Annex A 1.2.3							

4.2.1	Core equipment.	SRS Annex A 1.2.3.2; 1.2.3.3; 1.2.3.4; 1.2.3.5; 1.2.3.6	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.2.2	Operator desk equipment.	SRS Annex A 1.2.3.7; 1.2.3.8; 1.2.3.9; 1.2.3.10	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.2.3	Conference table equipment.	SRS Annex A 1.2.3.11	EDC+32	JFC Brunssum, NL	hardware	Set	18	-	-
4.2.4	Lectern equipment.	SRS Annex A 1.2.3.12; 1.2.3.13	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.2.5	Wall display equipment.	SRS Annex A 1.2.3.14; 1.2.3.15	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.2.6	Videoconference equipment.	SRS Annex A 1.2.3.16; 123.17; 1.2.3.18; 1.2.3.19	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.3	**JFCB "Brussels" Discussion Room**	SRS Annex A 1.3.2							
4.3.1	Core equipment.	SRS Annex A 1.3.2.2; 1.3.2.3	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.3.2	Operator desk equipment.	SRS Annex A 1.3.2.4	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.3.3	Conference table equipment.	SRS Annex A 1.3.2.5	EDC+32	JFC Brunssum, NL	hardware	Set	21	-	-
4.3.4	Translator Booth equipment.	SRS Annex A 1.3.2.6	EDC+32	JFC Brunssum, NL	hardware	Set	2	-	-
4.3.5	Lectern equipment.	SRS Annex A 1.3.2.7	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.3.6	Back Seater Equipment.	SRS Annex A 1.3.2.8	EDC+32	JFC Brunssum, NL	hardware	Set	20	-	-
4.3.7	Miscellaneous equipment.	SRS Annex A 1.3.2.8.2	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.4	**JFCB "London" Discussion Room**	SRS Annex A 1.3.3							
4.4.1	Core equipment.	SRS Annex A 1.3.3.2	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.4.2	Operator desk equipment.	SRS Annex A 1.3.3.3	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.4.3	Conference table equipment.	SRS Annex A 1.3.3.4	EDC+32	JFC Brunssum, NL	hardware	Set	13	-	-
4.4.4	Lectern equipment.	SRS Annex A 1.3.3.5	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-

4.5	**JFCB "Washington" Discussion Room**	SRS Annex A 1.3.4							
4.5.1	Core equipment.	SRS Annex A 1.3.4.2	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.5.2	Operator desk equipment.	SRS Annex A 1.3.4.3	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.5.3	Conference table equipment.	SRS Annex A 1.3.4.4	EDC+32	JFC Brunssum, NL	hardware	Set	13	-	-
4.5.4	Lectern equipment.	SRS Annex A 1.3.4.5	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.6	**JFCB "Amsterdam" Discussion Room**	SRS Annex A 1.3.5							
4.6.1	Core equipment.	SRS Annex A 1.3.5.2	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.6.2	Operator desk equipment.	SRS Annex A 1.3.5.3	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.6.3	Conference table equipment.	SRS Annex A 1.3.5.4	EDC+32	JFC Brunssum, NL	hardware	Set	2	-	-
4.6.4	Lectern equipment.	SRS Annex A 1.3.5.5	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.6.5	Miscellaneous equipment.	SRS Annex A 1.3.5.6	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.7	**JFCB "Berlin" Discussion Room**	SRS Annex A 1.3.6							
4.7.1	Core equipment.	SRS Annex A 1.3.6.2	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.7.2	Operator desk equipment.	SRS Annex A 1.3.6.3	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
4.7.3	Conference table equipment.	SRS Annex A 1.3.6.4	EDC+32	JFC Brunssum, NL	hardware	Set	9	-	-
4.7.4	Lectern equipment.	SRS Annex A 1.3.6.5	EDC+32	JFC Brunssum, NL	hardware	Set	1	-	-
TOTAL PRICE CLIN 4									-
5	**CLIN 5 - Training**								
5.1	Training Material.	5.7.4	EDC + 36 Weeks	NCI Agency	Electronic	Set of documents	1	-	-
5.2	Training Conduction.	5.7.10	EDC + 39 Weeks	JFC Brunssum, NL	On Site training	Event	1	-	-
TOTAL PRICE CLIN 5									-
6	**CLIN 6 - Testing and Acceptance**								
6.1	First Article Acceptance Test.	4.3.	EDC + 30 Weeks	Contractor Premise	Services	Event	1	-	-
6.2	System Acceptance Test.	4.4.	EDC + 38 Weeks	JFC Brunssum, NL	Services	Event	1	-	-
6.3	Test Plans and Reports.	4.2.5	2 weeks before tests	NCI Agency	Electronic	Set of documents	1	-	-
6.4	Provisional System Acceptance (PSA).	4.8.2.	EDC + 40 Weeks	NCI Agency	Services	Event	1	-	-
6.5	Final System Acceptance (FSA).	4.9.	EDC + 44 Weeks	NCI Agency	Services	Event	1	-	-
TOTAL PRICE CLIN 6									-
Total Firm Fixed Price- Base Contract									-

	OPTIONAL CLINS - Evaluated								
7	**CLIN 7 - Optional Provision of System Spares**								
7.1	Delivery of System spares as calculated per RSPL.	5.4.1; 5.4.4	option, upon request	JFC Brunssum, NL	Material, Set of Spares	Set of spares	1	-	-
TOTAL PRICE CLIN 7									-
Total Firm Fixed Price-Evaluated Options									-

	OPTIONAL CLINS - Non Evaluated								
8	**CLIN 8 - Optional Provision of discussion and audio video systems (DAVS)**								
8.1	**Ops Room**	SRS Annex B 1.1.2.	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.1	Core – AV Control	SRS Annex B 1.1.2.2	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.2	Core – AV Network	SRS Annex B 1.1.2.3	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.3	Core - Discussion System	SRS Annex B 1.1.2.4	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.4	Core – Audio	SRS Annex B 1.1.2.5	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.5	Core – Misc	SRS Annex B 1.1.2.6	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.6	Video Wall equipment	SRS Annex B 1.1.2.7	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.7	Video Wall – AVoIP	SRS Annex B 1.1.2.8	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.8	Video Wall – Misc	SRS Annex B 1.1.2.9	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.9	Operator Desk – Management Interface	SRS Annex B 1.1.2.10	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.10	Operator Desk – KVM	SRS Annex B 1.1.2.12	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.11	Operator Desk – AVoIP	SRS Annex B 1.1.2.13	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.12	Operator Desk – Discussion Unit	SRS Annex B 1.1.2.14	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.13	User Desk – KVM	SRS Annex B 1.1.2.15	option, Ulm, Germany	Ulm, Germany	Material	Set	20	-	-
8.1.14	User Desk – AVoIP	SRS Annex B 1.1.2.16	option, Ulm, Germany	Ulm, Germany	Material	Set	20	-	-
8.1.15	Tabletop Discussion Units – Delegate	SRS Annex B 1.1.2.17	option, Ulm, Germany	Ulm, Germany	Material	Set	20	-	-
8.1.15	Room - Audio	SRS Annex B 1.2	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.16	Videoconference – Full HD PTZ Cameras	SRS Annex B 1.2.1.2	option, Ulm, Germany	Ulm, Germany	Material	Set	3	-	-
8.1.17	Videoconference – Camera Routing	SRS Annex B 1.2.1.3	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.18	Videoconference – AVoIP	SRS Annex B 1.2.1.4	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
8.1.19	Misc – IPTV Integration	SRS Annex B 1.2.1.5	option, Ulm, Germany	Ulm, Germany	Material	Set	1	-	-
TOTAL PRICE CLIN 8									-

Total Firm Fixed Price- Non- Evaluated Options		-

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

RFQ-CO-115182-DAVS

BOOK II
PART II

CONTRACT SPECIAL PROVISIONS

CONTRACT SPECIAL PROVISIONS
INDEX OF CLAUSES

ARTICLE 1 SCOPE

1.1 The scope of this Contract is for the provision of the Discussion, Audio and Video Systems (DAVS) located in Joint Force Command Brunssum (JFCB), Netherlands. The project details design, delivery, installation, configuration, testing and handover to the Customer for a total of seven Discussion Systems (DS) and two (2) Audio Video Systems (AVS) in accordance to the Statement of Work (Part IV).

1.2 The Agreement and Acceptance of this Contract by the Parties neither implies an obligation on either part to extend the Contract beyond the specified scope or terms, nor to prohibit the Parties from mutually negotiating modifications thereto.

ARTICLE 2 ALTERATIONS, MODIFICATIONS AND DELETIONS OF THE BOA GENERAL AND SPECIAL PROVISIONS

Clause 2 – “Definitions” of BOA No. […] Special Provisions is revised and supplemented by ARTICLE 4 – “DEFINITIONS”.

Clause 7 – “Warranty” of BOA No. […] Special Provisions is revised and supplemented by ARTICLE 16 – “WARRANTY”.

Clause 8 – “Payments” of BOA No. […] Special Provisions is replaced by ARTICLE 14 – “INVOICES AND PAYMENT”.

Clause 3 – “Purchaser Furnished Property” of BOA No. […] General Provisions is revised and supplemented by ARTICLE 35 – “PURCHASER FURNISHED PROPERTY”.

Clause 5 – “Title and Risk of Loss” of BOA No. […] General Provisions is revised and supplemented by ARTICLE 13 – “TITLE AND RISK OF LOSS”.

Clause 7 – “Inspection, Acceptance and Rejection” of BOA No. […] General Provisions is revised and supplemented by ARTICLE 11 – “INSPECTION AND ACCEPTANCE” and ARTICLE 12 – “REVIEW AND ACCEPTANCE OF DOCUMENTATION”.

Clause 27 – “Security” of BOA No. […] General Provisions is revised and supplemented by ARTICLE 21 – “SECURITY”.

Clause 31 – “Rights in Technical Data” of BOA No. […] General Provisions is replaced by ARTICLE 23 – “RIGHTS IN TECHNICAL DATA AND COMPUTER SOFTWARE”.

ARTICLE 3 ORDER OF PRECEDENCE

3.1 In the event of any inconsistency in this Contract, the inconsistency shall be resolved by giving precedence in the following order:

a. The Signature sheet
b. Part I - The Schedule of Supplies and Services
c. Part II - The Contract Special Provisions
d. Part III – The Terms of the governing Basic Ordering Agreement

as specified in Block 11 on the signature sheet

e. Part IV – The Statement of Work

ARTICLE 4 DEFINITIONS

4.1 Clause 2 “Definitions” of BOA No. […] Special Provisions is revised and supplemented by the following:

4.2 “Article” shall mean “A provision of the Special Provisions of this Contract”.

4.3 “Contract” shall mean “The agreement concluded between the Purchaser and Contractor, duly signed by both parties. The Contract includes the documents referred to in Article 3 above of these Contract Special Provisions”.

4.4 “Contracting Authority” shall mean “The General Manager of the NCI Agency, the Director of Acquisition, the Chief of Contracts of the NCI Agency or the authorized representatives of the Chief of Contracts of the NCI Agency”.

4.5 “Contractor” shall mean “The person or legal entity from a Participating Country which has signed this Contract and is a Party thereto”.

4.6 “NCI Agency (NCIA)” shall mean “The NATO Communications and Information Agency. The NCIA is part of the NCIO. The General Manager of the Agency is authorized to enter into contracts on behalf of the NCI Organization”.

4.7 “NCI Organization (NCIO)” shall mean “The NATO Communications and Information Organization. The NCI Organization constitutes an integral part of the North Atlantic Treaty Organization (NATO). The NCI Organization is a legal personality from whence flows the authority of its agent, the NCI Agency, to enter into contracts”.

4.8 “Effective Date of Contract (EDC)” shall mean “The date upon which this Contract is deemed to start. Unless otherwise specified, a Contract enters into force on the date of the last signature of the Contract by the Parties”.

4.9 “Parties” shall mean “The Contracting Parties to this Contract, i.e. the Purchaser and the Contractor”.

4.10 “Purchaser” shall mean “The NCI Organization, as represented by the General Manager, NCIA Agency. The Purchaser is the legal entity who awards and administers the Contract on behalf of NATO and stands as one of the Contracting Parties”.

ARTICLE 5 DURATION OF CONTRACT

5.1 It is the Purchaser’s intention that the present Contract covers the totality of the requirements as covered by the Schedule of Supplies and Services and the Statement of Work with the exception of the Options (if any), unless those options are formally exercised and funded in accordance with the prescriptions of ARTICLE 7 “Additional Contract Tasks and Options”.

5.2 The work under the Contract shall commence on effective date of Contract shown on the signature page and be completed in accordance with the Schedule of Supplies and Services and Statement of Work.

ARTICLE 6 PRICE BASIS

6.1 This is a Firm Fixed Price Contract. Firm Fixed Prices are established for the supplies and services defined in Part I - Schedule of Supplies and Services.

6.2 The Purchaser assumes no liability for costs incurred by the Contractor in excess of the stated Firm Fixed Price except as provided under other provisions of this Contract.

6.3 The Total Contract price is inclusive of all expenses related to the performance of the present Contract.

6.4 The Total Contract price in this Contract is Delivered Duty Paid (INCOTERMS 2020).

ARTICLE 7 ADDITIONAL CONTRACT TASKS AND OPTIONS

7.1 The Purchaser may increase the quantity of supplies and services as set forth in any line item of Part I - Schedule of Supplies and Services at the prices stated therein any time during the period of performance of the Contract until end of Warranty. This right can be exercised multiple times for any of the line items, by increasing the firm fixed price of the Contract via a formal Contract Amendment, or by issuing a new contractual instrument. In this case the Contractor shall honour such right at the same rates and conditions as stated in Part I – Schedule of Supplies and Services.

7.2 If this right is exercised, delivery of the added items shall be to the same destination and optional site as specified in the basic Contract; unless otherwise specified on the written notice. If the Contract provides for multiple destinations, the Purchaser will specify to which destination(s) the additional quantities are to be shipped. If the Purchaser specifies a destination that is not part of the basic Contract requirements, the Parties will agree to an equitable adjustment as may be required to reflect any additional costs incurred by the Contractor in making such delivery.

7.3 In addition to the above, the Purchaser reserves the right to order any foreseeable or additional Contract tasks or deliverables, listed or not, either occasionally or at a further stage in the life of the project, which it deems necessary for the successful completion of the project. The additional tasks and/or deliverables shall be priced in using the “Summary Price” rates provided by the Contractor as part of its proposal and included in this Contract by reference.

7.4 Except as otherwise provided for in this Contract, Contractor’s price quotations for contract changes or modifications shall be provided at no cost to the Purchaser and shall have a minimum validity period of six (6) months from submission.

7.5 The Purchaser may, in writing, place an order for such additional tasks throughout the entire Contract period up until end of Warranty. Such an order may be placed within the framework of this Contract via the issuance of a Contract Amendment or be formulated via the issuance of a new contractual instrument.

7.6 If an option is exercised, the Contractor will have a minimum period of (30) days between notification and the required Performance Start Date (PSD). Any Contract option shall be exercised by written amendment to the Contract.

ARTICLE 8 PARTICIPATING COUNTRIES

8.1 The Contractor may issue subcontracts to firms and purchase from qualified vendors in any contributory NATO nations in the project, namely, (in alphabetical order):

ALBANIA, BELGIUM, BULGARIA, CANADA, CROATIA, CZECH REPUBLIC, DENMARK, ESTONIA, FRANCE, GERMANY, GREECE, HUNGARY, ICELAND, ITALY, LATVIA, LITHUANIA, LUXEMBOURG, NETHERLANDS, NORWAY, POLAND, PORTUGAL, ROMANIA, SLOVAKIA, SLOVENIA, SPAIN, TURKEY, UNITED KINGDOM, UNITED STATES OF AMERICA.

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

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

8.4 The Intellectual Property Rights for all software and documentation used by the Contractor in the performance of the Contract shall vest with firms from and within Participating Countries and no royalties or license fees for such software and documentation shall be paid by the Contractor to any source that does not reside within a Participating Country.

ARTICLE 9 COMPREHENSION OF CONTRACT AND SPECIFICATIONS

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

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

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

a. Based upon impossibility of performance, defective, inaccurate, impracticable, insufficient or invalid specifications, implied warranties of suitability of such specifications, or

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

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

ARTICLE 10 PLACE AND TERMS OF DELIVERY

10.1 Deliverables under this Contract shall be delivered DDP (Delivered Duty Paid) in accordance with the International Chamber of Commerce INCOTERMS 2020 to the destination(s) and at such times as set forth in the Schedule of Supplies and Services.

ARTICLE 11 INSPECTION AND ACCEPTANCE

11.1 Clause 7 “Inspection, Acceptance and Rejection” of BOA No. […] General Provisions is hereby supplemented with this Article:

11.2 The supplies and services to be provided by the Contractor’s personnel under this Contract shall conform to the highest professional and industry standards and practices. Inspection of the services provided will be made by the Purchaser’s Technical representatives or another authorised designee in accordance with the specifications in Part IV - Statement of Work. Services performed by the Contractor which do not conform to the highest professional and industry standards may result in the Purchaser requesting that such work be performed again at no increase in the price of the contract. Repeated instances of work performed which fails to meet the standards and practices may result in termination of the Contract for Default.

11.3 The Purchaser reserves the right to charge to the Contractor any additional cost incurred by the Purchaser for 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.

11.4 Under the terms of this Contract, Acceptance will be made in three (3) steps:

1. Upon Purchaser Acceptance of First Article Acceptance Test (FAST) as specified in Paragraph 4.3 of Part IV SOW.

2. Upon Provisional Site Acceptance (PSA) as specified in Paragraph 4.8.2 of Part IV SOW.

3. Upon successful Final System Acceptance (FSA) as per SoW 4.9; the Purchaser will take the Title and the Warranty will start.

11.5 Review and Acceptance of documentation is specified in below Article 12 of the Special Contract Provisions.

ARTICLE 12 REVIEW AND ACCEPTANCE OF DOCUMENTATION

12.1 Clause 7 “Inspection, Acceptance and Rejection” of BOA No. […] General Provisions is hereby supplemented with this Article.

12.2 Unless otherwise specified in the Statement of Work:

12.3 Upon delivery of the Draft Deliverable items, the Purchaser will have a period of two (2) weeks to review the items. 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 within the Scope of Work. When applicable, a presentation of the deliverable item including the Purchaser's comments will be made by the Contractor to the Purchaser, at a time which coincides with a progress meeting.

12.4 During the review, if the specific Item requires proposal of dates for delivery or reviews, the Purchaser will either accept or adjust the proposed dates.

12.5 Within two weeks after receipt of the Purchaser's comments (and associated progress meeting if appropriate), the Contractor shall incorporate changes, revisions and corrections required by the Purchaser and present the revised deliverable in Final Form to the Purchaser for inspection in accordance with the delivery dates specified in the Schedule or approved by the Purchaser.

12.6 The Contractor shall not have the right to ask for additional periods if the delivered draft is considered not satisfactory by the Purchaser and therefore requires many changes and/or corrections.

12.7 The Purchaser has the right to reject non-conforming deliverables. The Purchaser, in addition to any other rights or remedies provided by law, or under the provisions of this Contract, shall have the right to require the Contractor at no increase in Contract price, to correct or replace non-conforming work, and in accordance with a reasonable delivery schedule as may be agreed by the Purchaser and the Contractor following the receipt of the Purchaser's notice of defects or non-conformance.

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

ARTICLE 13 TITLE AND RISK OF LOSS

13.1 Clause 5 "Title and Risk of Loss" of BOA No. [...] General Provision is supplemented by the following:

13.2 Title to supplies and risk of loss or damage to supplies covered by this Contract shall pass to the Purchaser upon Final System Acceptance (FSA) as defined in the SOW.

ARTICLE 14 INVOICES AND PAYMENT

14.1 This Article replaces Clause 8 – "Payments" of BOA No. […] Special Provisions.

14.2 Following Purchaser acceptance, in writing, payment for supplies and services furnished shall be made in the currency specified in the Contract.

14.3 The term of the Contract may not be exceeded without prior approval of the Purchaser. In no case will the Purchaser make payment above the total of the corresponding CLINs.

14.4 Invoices in respect of any service and/or deliverable shall be prepared and submitted as specified hereafter and shall contain:

a) Contract number CO-115182-DAVS

b) Contract Amendment number (if any),

c) Purchase Order number PO […],

d) The identification of the performance rendered in terms of Contract Line Item Number (CLIN),

e) Bank account details for international wire transfers (SWIFT, BIC, IBAN).

14.5 The Contractor shall be entitled to submit invoices in accordance with the following payment events schedule:

No.	Payment Milestone	CLIN	Percentage of Total Contract CLIN Price	Delivery NLT (Not Later Than)
1	Purchaser Acceptance of delivered Project Implementation Plan (PIP)	CLIN 1.1	5 % of Total Contract Value	EDC+ 3 Weeks
2	Site Survey	CLIN 1.8	5% of Total Contract Value	EDC + 3 Weeks
3	Purchaser Acceptance of Installation, integration and configuration of DAVS	CLIN 2.2	10% Of Total Contract Value	EDC + 35 Weeks
4	DAV System	CLINs 4.1.1 – 4.7.4	Upon delivery and acceptance 15% of Total Contract Value	EDC +32 Weeks
5	Purchaser Acceptance of First Article Acceptance Test (FAAT)	CLIN 6.1	10% of Total Contract Value	EDC + 30 Weeks
6	Purchaser Acceptance of Provisional System Acceptance (PSA)	CLIN 6.4	35% of Total Contract Value	EDC+ 40 Weeks
7	Purchaser Acceptance of Final System Acceptance (FSA) including reports and documentation	CLIN 6.5	15% of Total Contract Value	EDC + 44 Weeks
8	End of warranty period	CLIN 3.5	5% of Total Contract Value	FSA + 12 Months

14.6 The invoice amount shall be exclusive of VAT and exclusive of all Taxes and Duties as per Clause 10 “Taxes and Duties” of the BOA No. […] General Provisions.

14.7 No payment shall be made with respect to undelivered supplies, works not performed, services not rendered and/or incorrectly submitted invoices.

14.8 No payment shall be made for additional items delivered that are not specified in the contractual document.

14.9 Payments for services and deliverables shall be made in the currency stated by the Contractor for the relevant Contract Line Item.

14.10 The Purchaser is released from paying any interest resulting from any reason whatsoever.

14.11 The invoice shall contain the following certificate:
"*I certify that the above invoice is true and correct, that the delivery of the above described items has been duly effected and/or that the above mentioned services have been rendered and the payment therefore has not been received.*"

14.12 The certificate shall be signed by a duly authorised company official on the designated original.

14.13 Invoices referencing "**CO-115182-DAVS/ PO […]**" shall be submitted in electronic format only to:

accountspayable@ncia.nato.int"

14.14 NCI Agency will make payment within 45 days of receipt by the NCI Agency of a properly prepared and documented invoice.

ARTICLE 15 SUPPLEMENTAL AGREEMENTS, DOCUMENTS AND PERMISSIONS

15.1 The Contractor has submitted all relevant draft supplemental agreement(s), documents and permissions prior to Contract award, the execution of which by the Purchaser is/are required by national law or regulation. If any supplemental agreements, documents and permissions are introduced after Contract award, and it is determined that the Contractor failed to disclose the requirement for the execution of such agreement from the Purchaser prior to Contract signature, the Purchaser may terminate this Contract for Default, in accordance with the Clause 19 "Termination for Default" of BOA No. […] General Provisions.

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

Type of Agreement	National Authority of Reference	Subject

ARTICLE 16 WARRANTY

ARTICLE 16 WARRANTY

16.1 Clause 7 “Warranty” of BOA No. […] Special Provisions is supplemented with the following:

16.2 The Contractor shall warrant that all equipment, documents, system design, production and implementation provided under this Contract and all installation work performed under this Contract conform to the requirements and is free of any defect in material, code or workmanship for a period starting at the date of PSA to the date of FSA plus 1 year (12 months). Until successful FSA, all equipment to be provided under this Contract shall be under the Contractor’s responsibility.

16.2.1 Under the warranty arrangements (from PSA), the Contractor shall provide reactive maintenance/support during Purchaser’s (CSU Brunssum) business hours (Mo – Fr, 08:00 – 17:00 NLD time zone) to the Purchaser based on a combination of:

16.2.1.1 Full access to live helpdesk (chat, video, phone call) for instructions, documentation, troubleshooting, help on support and maintenance, configuration issues, patching and fixing of any HW/SW problem/failure under purchaser responsibilities (see maintenance/support concept);

16.2.1.2 Intervention on-site, no later than Next Business Day (NBD) counted from the request for any critical issues related to the installation in the JOC “Floor” Conference Room and JOC Conference Room beyond the Purchaser’s responsibilities and/or capabilities including the provision of On-the-Job-Training (OJT)/instructions /documentation to purchaser personnel during the solution of the problem;

16.2.1.3 Intervention on-site, no later than three (3) Business Days counted from the request for any critical issues related to the installation in the other Meeting Rooms beyond the Purchaser’s responsibilities and/or capabilities including the provision of On-the-Job-Training(OJT)/instructions/documentation to purchaser personnel during the solution of the problem.

16.2.2 Under the warranty arrangements (from PSA), the Contractor shall provide continuous advice and pro-active Support/Maintenance to the Purchaser based e.g. on a combination of:

16.2.2.1 Full access (credentials) to the Knowledge Base (or similar DB) portal of the Contractor/Supplier relevant to the procured HW/SW/SW products by NCIA;

16.2.2.2 Periodic bulletins/information/notices/recommendations for the improvement of the settings/security of the procured HW/SW/FW by NCIA;

16.2.2.3 Active monitoring and both periodic and urgent notification of security alerts with temporary workarounds (including fixes and instructions) and follow-on release of security patches or new SW/FW releases;

16.2.2.4 Support for HW/SW/FW inventories management (CMDB and LBS management);

16.2.2.5 Support, through a Single Point of Contact (SPOC) for HW/SW/FW settings/improvements to increase Security and Performance of the delivered equipment.

16.2.3 All activities and issues arising before and during the warranty period shall be reported in the PRM minutes and related AIL or any other means as agreed with the Purchaser.

16.3 Notwithstanding inspection and acceptance by the Purchaser or its appointed agents of supplies furnished under the Contract or any provision of this Contract concerning the conclusiveness thereof, the Contractor warrants for the total duration of the above referred period and covering all items including:

a. all deliverables furnished under this Contract shall be free from defect and will conform with the specifications and all other requirements of this Contract; and,

b. the system will, under normal conditions, perform without errors which make it unusable; and

c. the preservation, packaging, packing and marking and the preparation for and method of, shipment of such supplies will conform to the requirements of this Contract.

16.4 The Purchaser will inform the Contractor in writing of any defect within seven calendar days after its discovery and the circumstances of its discovery. The Contractor shall respond to a defect notification within one working day, by engaging with the Purchaser’s personnel to identify the cause of the defect and to agree a resolution approach. The resolution of defects remains the Contractors responsibility within the warranty.

16.5 The Contractor shall stipulate the address to which the Purchaser shall deliver equipment and material returned to the Contractor in accordance with the provisions of this Article. Transportation and handling charges for items returned under warranty claim to the Contractor will be the responsibility of the Purchaser, as well as responsibility for such supplies, i.e. damage and loss that may occur during transportation under warranty.

16.6 The Contractor shall, at its option, repair, adjust or replace defective equipment and restore to the Purchaser equipment, which functions in accordance with the requirements of the Contract.

16.7 In the event of the Contractor’s failure to repair or replace failed equipment within the timeframes expressed in this Article, the Purchaser will have the right, at its discretion, and having given the Contractor due notice, to:

a. remedy, or have remedied, the defective or non-conforming supplies, in both cases at the Contractor's expenses;

b. equitably reduce the Contract price; and/or

c. terminate for default that portion of the Contract relating to the defective work.

16.8 Notwithstanding the provision of above paragraph 16.2, the warranty period shall be suspended for the length of time necessary to carry out repair or replacement.

16.9 This right will be exercised although other contractual obligations remain in force. In the event that it is later determined that such supplies were found not to be defective or non-conforming within the provision of this Article, an equitable adjustment will be made. Failure to reach such an equitable adjustment will be considered a dispute under the Contract and subject to resolution in accordance with the Clause 17 "Disputes and arbitration" of BOA No. […] General Provisions.

ARTICLE 17 CONTRACT ADMINISTRATION

17.1 The Purchaser reserves the right to re-assign this Contract to a representative(s) for administrative purposes, in whole or in part, provided that the Purchaser shall always be responsible for its obligations under the Contract and for actions or lack of actions of its assigned administrator. The Purchaser undertakes to advise the Contractor in writing whenever this right is to be exercised.

17.2 All notices and communications between the Contractor and the Purchaser shall be written and conducted in the English language. Contract modifications shall only be valid when received in writing from the General Manager, NCI Agency, and/or the NCI Agency Contracting Authority.

17.3 Formal letters and communications shall subsequently be personally delivered or sent by mail, registered mail, courier or other delivery service, to the official Points of Contact quoted in this Contract. Facsimile and e-mail may be used to provide an advance copy of a formal letter or notice which shall subsequently be delivered through the formal communication means.

17.4 Informal notices and informal communications may be exchanged by all communication means, including telephone and e-mail. All informal communication must be confirmed by a formal letter or other formal communication to be contractually binding.

17.5 All notices and communications shall be effective on receipt.

Official Points of Contact:

Purchaser	Contractor
NCI Agency ACQ Directorate Building 302 Annex, Room 121 7010 SHAPE Belgium	[…]

For contractual matters: Attn: Ms. Eva Benson Title: Contracting Officer Tel: +32 6544-6103 E-mail: eva.benson@ncia.nato.int	For contractual matters: […] Attn: Title: Tel: Fax: E-mail:
For technical/project management matters: Attn: Wlodzimierz Damaziak Title: Project Manager Tel: +32 6544-1309 E-mail: Wlodzimierz.Damaziak@ncia.nato.int	For technical/project management matters: Attn: Title: Tel: Fax: E-mail:

ARTICLE 18 SUB-CONTRACTORS

18.1 The Contractor shall place and be responsible for the administration and performance of all sub-contracts including terms and conditions which it deems necessary to meet the requirements of this Contract in full.

18.2 The Contractor shall not place sub-contracts outside the Participating Countries unless the prior authorization of the Purchaser has been obtained. Such authorization will not be granted when the sub-contract involves the carrying out of classified work.

ARTICLE 19 CONTRACTOR COTS RESPONSIBILITY

19.1 The Contractor shall monitor changes and/or upgrades to commercial off the shelf (COTS) software or hardware to be utilized under subject Contract.

19.2 For COTS items which are or could be impacted by obsolescence issues, as changes in technology occur, the Contractor will propose substitution of new products/items for inclusion in this Contract. The proposed items should provide at least equivalent performance and/or lower life-cycle support costs, or enhanced performance without a price or cost increase.

19.3 The Contractor will provide evidence with respect to price and performance of the equipment being proposed as well as data proving an improvement in performance and/or a reduction in price and/or life-cycle support costs. If necessary for evaluation by the Purchaser, the Contractor shall provide a demonstration of the proposed items. Should the Purchaser decide that the proposed item(s) should be included in the Contract, an equitable price adjustment will be negotiated and the proposed item(s) shall be added to the Contract by bilateral modification under the authority of this Article.

19.4 The Contractor shall notify the Purchaser of any proposed changes in the commercial off the shelf software or hardware to be utilized. Such notification shall provide an assessment of the changes and the impact to any other items to be delivered under this Contract.

ARTICLE 20 LIQUIDATED DAMAGES

20.1 If the Contractor fails to:

a) successfully meet the required performance dates as defined in the Schedule of Supplies and Services, or any extension thereof, or

b) deliver and obtain acceptance of the Deliverables or to acceptably perform the services as specified in the Schedule of Supplies and Services to this Contract,

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 requirements of 20.1.a and 20.1.b, fixed and agreed liquidated damages of 0.1% (one tenth of one per cent) per day of the total payment amount for each Payment Event as scheduled in the Article 14 “Invoices and Payments” of the Contract Special Provisions.

20.2 In addition, the Purchaser may terminate this Contract in whole or in part as provided in Clause 19 “Termination for Default” of BOA No. […] General Provisions. In the event of such a termination, the Contractor shall be liable for Liquidated Damages accruing to the date of termination, as well as the excess costs stated in the referred clause.

20.3 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 “Termination for Default” of the BOA General Provisions. In such event, subject to the provisions of the Disputes and Arbitration Clause, the Purchaser shall ascertain the facts and extent of the delay and shall extend the time for performance of the Contract when in its judgment the findings of fact justify an extension.

20.4 Liquidated damages shall be payable to the Purchaser from the first day of delinquency in delivery and shall accrue at the rate specified in paragraphs above to a maximum of Fifteen Percent (15%) of the total payment amount for each Payment Event as scheduled in Article 14. Cumulative assessed Liquidated Damages will not exceed a total of Ten Percent (10%) of the total value of the Contract.

20.5 The amount of Liquidated Damages due by the Contractor shall be recovered by the Purchaser in the following order of priority:

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

b. By proceeding against any surety or deducting from the Performance Guarantee if any.

c. By reclaiming such damages through appropriate legal remedies.

ARTICLE 21 SECURITY

21.1 This Article supplements Clause 27 “Security” of BOA No. […] General Provisions.

21.2 The Contractor is responsible, in accordance with NATO and National Security regulations, for the proper handling, storage and control of any classified documents and information as may be furnished to the Contractor in relation to the performance of the present Contract.

21.3 The security classification of this Contract is “NATO UNCLASSIFIED”.

21.4 Contractor's personnel visiting or working at Purchaser's facilities in connection with this Contract shall hold a confirmed NATO SECRET security clearance valid for the duration of the Contract at the Effective Date of Contract (EDC). This requirement applies to all sub-Contracts issued by the Contractor for the effort under this prime Contract.

21.5 It is the responsibility of the Contractor to ensure that its personnel obtain the required security clearances and transmit this information to the Purchaser and to the sites to be visited at least 3 weeks before personnel deployment that the site may perform the appropriate administration.

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

21.7 The Contractor bears full responsibility and liability under the Contract for delays arising from the failure of the Contractor to adhere to the security requirements.

21.8 If during the performance of the Contract, Contractor's personnel need to be escorted because of non-availability of the security clearance required by the Site, the Contractor shall pay to the Purchaser a compensatory fee of 500 Euro per day of escort that may be deducted by the Purchaser univocally and at its sole discretion from any invoice submitted and relevant to the performance under this Contract.

21.9 All NATO CLASSIFIED material entrusted to the Contractor shall be handled and safeguarded in accordance applicable security regulations.

21.10 In the absence of valid security clearances for the Contractor's personnel during the performance of the Contract, the Purchaser reserves the right to terminate the Contract for Default as per the "Termination for Default" Clause of the BOA General Provisions.

ARTICLE 22 KEY PERSONNEL

22.1 The key personnel proposed by the Contractor in its Project Management Plan and that satisfy the personnel requirements laid down in the SOW are considered to be key to the performance of this Contract and may not be replaced by the Contractor with substitute personnel without the prior written approval of the Purchaser.

22.2 If any options are exercised, the Key Personnel provisions will apply to the option period from the effective date of the Contract.

22.3 The following personnel are considered to be Key Personnel for successful contract performance and are subject to the provisions of this Article as set forth in the following paragraphs:

Key Personnel	**Name**	**Function within organisation**
Project Manager		
Technical Lead		

22.4 Under the terms of this Article, Key Personnel may not be voluntarily diverted by the Contractor to perform work outside the Contract. In cases where the Contractor has no control over the individual's non-availability (e.g., resignation, sickness, incapacity, etc.), the Contractor shall notify the Purchaser of a change of key personnel within 10 days of the date of knowledge of the prospective vacancy and offer a substitute with equivalent qualifications with no additional costs for the Purchaser.

22.5 Contractor personnel proposed in substitution of previously employed Contractor Key Personnel shall be interviewed and approved by Purchaser Project Manager before substitution acceptance is granted in writing by the Purchaser contracting Authority.

22.6 In the event of a substitution of any key personnel listed in paragraph 22.3 above and prior to commencement of performance, the Contractor shall provide a CV for the personnel proposed. The CV shall clearly stipulate:

- Full details of professional and educational background;
- Evidence that the personnel is qualified in pertinent contract related areas per the SOW.

22.7 The Contractor shall take all reasonable steps to avoid changes to Key Personnel assigned to this project except where changes are unavoidable or are of a temporary nature. Any replacement personnel shall be of a similar grade, standard and experience as the individual to be substituted.

22.8 Furthermore, even after acceptance of a Contractor's staff member on the basis of his/her CV and/or interview, the Purchaser reserves the right to reject the Contractor's staff member, if the individual is not meeting the required level of competence. The Purchaser will inform the Contractor, in writing in cases where such a decision is taken and the Contractor shall propose and make another staff member available within ten working days after the written notification. The Purchaser shall have no obligation to justify the grounds of its decision and its acceptance of staff members shall in no way relieve the Contractor of its responsibility to achieve the contractual and technical requirements of this Contract nor imply any responsibility to the Purchaser.

22.9 After acceptance in writing by the Purchaser of a substitution of staff, based on a CV and/or interview, paragraph shall be applicable again, if necessary.

22.10 The Purchaser may at any time require the Contractor immediately to cease to employ the above named Key Personnel under the present Contract if, in the opinion of the Purchaser, his/her employment is undesirable. The Contractor shall replace any such employee in accordance with paragraph 22.5 and 22.6 above.

22.11 In those cases where, in the judgment of the Purchaser, the inability of the Contractor to provide a suitable replacement in accordance with the terms of this Article may potentially endanger the progress under the Contract, the Purchaser shall have the right to terminate the Contract in accordance with the terms of the General Provisions Clause entitled "Termination for Default".

22.12 Any change of status or reorganization of the Contractor's practice, or any change in the responsibility for the execution of the Contract shall be reported to the Purchaser immediately when the change or reorganization is promulgated.

22.13 The Contractor's Key Personnel required to interface directly with the Purchaser's counterparts, shall have the capability to readily communicate (oral and written fluency) in English and to provide, if requested official documents destined for distribution during the course of the Contract in English.

22.14 The Purchaser may, for just cause, require the Contractor to remove its employee. Notice for removal will be given to the Contractor by the Purchaser in writing and will state the cause justifying the removal. The notice will either demand substitution for the individual involved and/or contain a notice for default and the remedies to be sought by the Purchaser.

ARTICLE 23 RIGHTS IN TECHNICAL DATA AND COMPUTER SOFTWARE

23.1 Clause 31 – "Rights in Technical Data" of BOA No. […] General Provisions is replaced by the following:

23.1.1 Subject to the rights of third parties, all rights in the results of work undertaken by or on behalf of the Purchaser for the purposes of this Contract, including any technical data specifications, report, drawings, computer software data, computer programs, computer databases, computer software, documentation including software documentation, design data, specifications, instructions, test procedures, training material produced or acquired in the course of such work and, in particular, all rights, including copyright therein, shall vest in and be the sole and exclusive property of the Purchaser.

ARTICLE 24 INTELLECTUAL PROPERTY RIGHT INDEMNITIES AND ROYALTIES

24.1 The Contractor shall assume all liability and indemnify the Purchaser, its officers, agents and employees against liability, including costs for the infringement of any patents or copyright in force in any countries arising out of the manufacture, services performed or delivery of supplies, or out of the use or disposal by or for the account of the Purchaser of such supplies. The Contractor shall be responsible for obtaining any patent or copyright licenses necessary for the performance of this Contract and for making all other arrangements required to indemnify the Purchaser from any liability for patent or copyright infringement in said countries. The Contractor shall exclude from its prices any royalty pertaining to patents which in accordance with agreements reached between NATO countries may be utilized free of charge by member nations of NATO and by NATO organization.

24.2 The Contractor shall report in writing to the Purchaser during the performance of this Contract:

- The royalties excluded from its price for patent utilised under the agreements mentioned in the previous paragraph;

– The amount of royalties paid or to be paid by the Contractor directly to others in performance of this Contract.

24.3 Any use of Contractor Background IPR (identified at Annex A to Contract Special Provisions) 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. 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.

24.4 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. Subcontractor Background IPR used for the purpose of carrying out the Work pursuant to the Contract shall be identified at Annex B to Contract Special Provisions.

ARTICLE 25 INDEMNITY

25.1 The Contractor will indemnify and hold harmless NATO, its servants or agents, against any liability, loss or damage arising out of or in connection of the Deliverables and Services under this Contract, including the provisions set out in Article 24 "Intellectual Property Right Indemnities and Royalties" of the Contract Special Provisions.

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

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

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

ARTICLE 26 TECHNICAL DIRECTION

26.1 At each site of efforts, the Purchaser may assign Technical Representatives who will monitor work in progress and provide Contractor personnel with instruction and guidance (within the general scope of work) in performance of their duties and

working schedule. The Technical Representatives do not have the authority to change the terms of the Contract or to increase the overall cost, duration or level of effort of the Contract. The Technical Representatives do have the authority, within the general scope of work, to provide direction to the Contractor personnel in performance of their duties.

26.2 In case the Contractor believes that any technical direction received from the Technical Representative constitutes a change to the terms, conditions and/or specifications of the Contract, it shall immediately inform in writing the Purchaser Contracting Authority, who will either confirm or revoke such direction within two weeks after notification by the Contractor. If such direction is confirmed as a change, this change will be formalized by written amendment to the Contract pursuant to Clause 12 “Changes” of BOA No. […] General Provisions.

26.3 Failure of the Contractor to notify the Purchaser Contracting Authority of direction constituting change of the Contract will result in a waiver of any claims pursuant to such change.

ARTICLE 27 CARE AND DILIGENCE OF PROPERTY

27.1 The Contractor shall use reasonable care to avoid damaging buildings, walls, equipment and vegetation (such as trees, shrubs and grass) on the work site. If the Contractor damages any such buildings, walls, equipment or vegetation on the work site, it shall repair the damage as directed by the Purchaser and at no expenses to the Purchaser. If it fails or refuses to make such repair or replacement, the Contractor shall be liable for the cost thereof, which may be deducted from the Contract price.

27.2 The Purchaser shall exercise due care and diligence for Contractor's furnished equipment, tools and materials on site premises. The Purchaser will not assume any liability except for gross negligence and willful misconduct on the part of the Purchaser’s personnel or agents.

27.3 The Contractor shall, at all times, keep the site area, including storage areas used by the Contractor, free from accumulations of waste. On completion of all work the Contractor is to leave the site area and its surroundings in a clean and neat condition.

ARTICLE 28 INDEPENDENT CONTRACTOR

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

ARTICLE 29 APPLICABLE REGULATIONS

29.1 The Contractor shall be responsible for obtaining permits or licenses to comply with national codes, laws and regulations or local rules and practices in the country of performance under this Contract.

29.2 The Contractor shall take any necessary measure to protect the life and health of persons working or visiting the work area occupied by him. These measures include compliance with the country of performance's safety provisions.

29.3 In the performance of all work under this Contract, it shall be the Contractor's responsibility to ascertain and comply with all applicable NATO security regulations as implemented by the local Headquarters' Security Officer.

ARTICLE 30 AUDITING AND ACCOUNTING

30.1 The Contractor's accounting and auditing procedures under this Contract shall be in compliance with the applicable Contractor National standards governing national defense contracts.

30.2 The invoicing and payment procedures for the amount payable to the Contractor shall be in accordance with the prescription of Article 14 “Invoices and Payment” of the Contract Special Provisions.

30.3 In the event of this Contract being terminated in accordance with Clause 20 "Termination for Convenience of the Purchaser" of BOA No. […] General Provisions, the Contractor shall provide within ninety (90) days of the formal date of termination a detailed statement of all costs incurred since the initiation of the programme, together with the statement of all outstanding commitments for which the Contractor is legally liable.

ARTICLE 31 RESPONSIBILITY OF THE CONTRACTOR TO INFORM EMPLOYEES OF WORK ENVIRONMENT

30.1 The Contractor shall inform its employees under this Contract of the terms of the Contract and the conditions of the working environment.

30.2 Specifically, Contractor personnel shall be made aware of all risks associated with the performance under this Contract, the conditions of site in which the performance is to take place and living conditions while performing within the boundaries of the Contract.

30.3 The selection of adequate personnel shall remain sole responsibility of the Contractor.

ARTICLE 32 PERFORMANCE GUARANTEE

32.1 As a guarantee of performance under the Contract, the Contractor shall deposit with the Purchaser within ten (10) calendar days from the Effective Date of Contract, a bank guarantee to the value of ten per cent (10%) of the total Contract Price.

32.2 Such guarantee – the validity of this shall not elapse before the expiration of the warranty period as specified in Article 14.1 – shall be made payable to the Purchaser and may be delivered in the form of:

a) A certified cheque;
b) An irrevocable letter of credit; or
c) A bank guarantee such as a performance bond or promissory note.

32.3 The terms of the guarantee shall allow for payment to 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.

32.4 Certified cheques issued to fulfil the requirements of the 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.

32.5 The irrevocable letter of credit, performance bond or promissory note shall be subject to Belgian Law and financial practices and shall be issued by a Belgian bank or a Belgian affiliate of a non-Belgian bank licensed to operate in Belgium unless otherwise authorized by the Purchaser.

32.6 The Contractor shall request in writing relief from the performance guarantee upon expiration of the warranty period specified at Article 14.1 or such other period as may be specified in the Contract and, where appropriate, such relief will be granted by the Purchaser.

32.7 The Contractor shall be responsible, as a result of duly authorized adjustment in the total Contract price and/or period of performance by the Purchaser, for obtaining a commensurate extension and increase of the performance guarantee, the value of which shall not be less than ten per cent (10%) of the Contract Price (including all amendments), and for depositing such guarantee with the Purchaser within ten (10) calendar days from the effective date of the aforesaid duly authorized adjustment.

32.8 The failure of the Contractor to deposit such performance guarantee with the purchaser within the specified time frame, or any extension thereto granted by the Purchaser's Contracting Authority will constitute material breach of the Contract and shall be subject to Clause 39 "Termination for Default" of the Contract General Provisions.

32.9 The rights and remedies provided to the Purchaser under this Article are in addition to any other rights and remedies provided by law or under this Contract. The certificate described in this Article at 32.3 above shall not be regarded as a Termination for Default and this Clause is in addition to and separate from Clause 39 "Termination for Default" of the Contract General Provisions.

ARTICLE 33 TRANSPORTATION OF EQUIPMENT

33.1 All supplies covered under this Contract shall be transported to final destination at the responsibility of the Contractor. The Purchaser shall not be liable for any storage, damage, accessorial or any other charges involved in such transporting of supplies.

33.2 Items shipped under Warranty for repair or otherwise from Brunsumm (NL) or the NCI Agency to the Contractor shall be the responsibility of the Purchaser.

33.3 Transportation of repaired/replaced items shall be the responsibility of the Contractor. These items shall be delivered and installed at final destination.

ARTICLE 34 ASSIGNMENT

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.

ARTICLE 35 PURCHASER FURNISHED PROPERTY/EQUIPMENT

35.1 This Article revises and supplements Clause 3 – “Purchaser Furnished Property” of BOA No. […] General Provisions.

35.2 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 12 “Changes” of BOA No. […] General Provisions.

35.3 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, authorize 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 12 “Changes” of BOA No. […] General Provisions.

35.4 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.

35.5 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.

35.6 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.

35.7 The inventory shall note whether:

a) The property was consumed or incorporated in fabrication of final deliverable(s);
b) The property was otherwise destroyed;
c) The property remains in possession of the Contractor;
d) The property was previously returned.

35.8 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 authorized 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.

35.9 The Contractor shall not modify any Purchaser Furnished Property unless specifically authorized by the Purchaser or directed by the terms of the Contract.
35.10 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.

ANNEX A: CONTRACTOR BACKGROUND IPR

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

ITEM	DESCRIPTION

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

The Background IPR stated above complies with the terms specified in Article 24 of Contract Special Provisions.

ANNEX B: LIST OF SUBCONTRACTOR IPR

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

ITEM	DESCRIPTION

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

The Subcontractor IPR stated above complies with the terms specified in Article 24 of Contract Special Provisions.

ANNEX C: NCI AGENCY NON-DISCLOSURE DECLARATION

We, the undersigned.....(Company) duly represented by ..... (hereinafter “Contractor”) do hereby certify that we shall ensure that the following conditions be accepted and observed by all (Contractor) employees working under **CO-115182-DAVS**

_Date Full name (in block capitals) Signature

==========

TO BE SIGNED BY THE CONTRACTOR’S EMPLOYEES WORKING IN THE NATO'S PREMISES UPON COMMENCEMENT OF THEIR WORK.

I UNDERSTAND:

That I must preserve the security of all classified /commercial-in-confidence Information which comes to my knowledge as a result of this contract with NATO and that I undertake to comply with all relevant security regulations.

That I must not divulge to any unauthorised person, any classified/commercial-in confidence information gained by me as a result of my contract with NATO, unless prior permission for such disclosure has been granted by the General Manager of the NCI Agency or by his designated representative.

That I must not, without the approval of the General Manager of the NCI Agency, publish (in any document, article, book, CD, video, film, play, or other form) any classified /commercial-in-confidence information which I have acquired in the course of my work under **CO-115182-DAVS**.

That, at the end of contract and after performance of all required tasks, I must surrender any official document or material made or acquired by me in the course of my work under **CO-115182-DAVS** save such as I have been duly authorised to retain.

That the provisions of the above Declaration apply not only during the period of work under **CO-115182-DAVS**, but also after my contract has ceased and that I am liable to prosecution if either by intent or negligence I allow classified/commercial-in-confidence information to pass into unauthorised hands.

That by accepting the position of Support Contractor for NATO corresponding to the tasks and duties described in the present Contract, I will be considered as a Key personnel as specified in Contract Special Provision Article 22.

That I commit to fulfil my obligations for the period of performance mentioned in the Schedule of Supplies and Services (including the optional periods) unless major events beyond my reasonable control happen.

That shall I decide for personal interest to leave the position, I will do my best effort to fulfil my obligations until the Company that is currently employing me has provided NATO with an acceptable suitable substitute in accordance with Special Provision – Article 22.

That I solemnly undertake to exercise in all loyalty, discretion and conscience the functions entrusted to me and to discharge these functions with the interests of NATO and the Host Nation only in view. I undertake not to seek or accept instructions in regard to the performance of my duties from any government, company or from any authority other than that of NCI Agency or the Host Nation.

That within the next two weeks I shall acquaint myself with Host Nation security regulations and security operating instructions.

Date	Full name (in block capitals)	Signature

ANNEX D: PERFORMANCE GUARANTEE STANDBY LETTER OF CREDIT

Standby Letter of Credit Number: _____

Issue Date: _____

Initial Expiry Date: _____

Final Expiry Date: _____

Beneficiary: NATO Communications and Information Agency
(NCI Agency) or its legal successor,
Financial Management Unit
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 _____. 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.

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

BOOK II

PART III

BOA GENERAL PROVISIONS

PLEASE VIEW YOUR FIRMS BOA AGREEMENT WITH NCIA FOR THE GENERAL PROVISIONS

NATO Communications and Information Agency

Discussion and Audio Visual Systems (DAVS)

RFQ-CO-115182-DAVS
Statement of Work
Part IV

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Contents

SECTION 1 INTRODUCTION

1.1. Purpose

1.1.1. The purpose of this Statement of Work (SoW) is to define the requirements for the replacement of Discussion, Audio and Video Systems (DAVS) located in Joint Force Command Brunssum (JFCB), Netherlands (NLD).

1.1.2. The current systems are past life cycle and replacement parts have been exhausted whereas the new systems will replace the existing ones while preserving their capability.

1.1.3. This SOW, while intended as an outline of the minimum requirement and the general concept shall be supplemented by the Contractor to ensure the finished system is completed meeting the listed requirements of the SoW and shall be capable of fulfilling the function in accordance with the requirements of this SoW.

1.2. Scope

1.2.1. The scope of the project is to design, delivery, installation, configuration, testing and hand over to the Customer the seven (7) Discussion Systems (DS) and two (2) Audio Video Systems (AVS) and integrate them with the existing infrastructure and Purchaser Furnished Equipment (PFE).

1.2.1.1. The DS are due to replace the existing ones in five (5) meeting rooms and two (2) conference rooms;

1.2.1.2. The AVS are due to replace the existing ones in two (2) conference rooms.

1.2.2. The scope of the project is addressed through main requirements:

1.2.2.1. Project Management;

1.2.2.2. Design, delivery, installation, configuration and integration of DAVS;

1.2.2.3. Testing and Acceptance;

1.2.2.4. Integrated Logistic Support.

1.2.3. These requirements are set out in detail in the sections and annex A of this SoW.

1.3. Discussion Systems

1.3.1. The new DS shall consist of the logical blocks specified at System Requirements Specification (SRS), Annex A.

1.3.2. The components of DS shall be installed, configured, tested and integrated (including the PFE and infrastructure) in the following meeting and conference rooms located in Brunssum (Netherlands), JFCB facilities:

1.3.2.1. Joint Operation Centre (JOC) “Floor” Conference Room;

1.3.2.2. JOC Conference Room;

1.3.2.3. Brussels Meeting Room;

1.3.2.4. Amsterdam Meeting Room;

1.3.2.5. London Meeting Room;

1.3.2.6. Washington Meeting Room;

1.3.2.7. Berlin Meeting Room.

1.3.3. The components of DS shall meet the requirements and/or be equal to the parameters defined in the SRS, Annex A.

1.4. Audio Video Systems

1.4.1. The new AVS shall consist of the logical blocks presented at SRS, Annex A.

1.4.2. The components of AV systems shall be installed, configured, tested and integrated (including the PFE and infrastructure) in the following conference rooms located in JFCB facilities:

1.4.2.1. JOC Floor Conference Room;

1.4.2.2. JOC Conference Room.

1.4.3. The components of AV systems shall meet the requirements and/or be equal to the parameters defined in the SRS, Annex A.

1.5. Site Implementation

1.5.1. General

1.5.1.1. The Contractor shall install, activate, and provide the related initial operational support for the delivered DS and AVS equipment.

1.5.1.2. The Contractor shall perform the following activities required to achieve a Site Implementation:

1.5.1.2.1. Survey the site to determine necessary planning, installation, preparation, and support arrangements;

1.5.1.2.2. Prepare the Site and/or ensure timely preparation of the Site when performed by the Purchaser;

1.5.1.2.3. Ship all required equipment to the site;

1.5.1.2.4. Unpack and install the equipment in Purchaser provided facilities;

1.5.1.2.5. Integrate the shipped equipment and the PFE in the Discussion and Audio Video systems;

1.5.1.2.6. Activate the site system(s) for preliminary testing;

1.5.1.2.7. Conduct System Acceptance Test according to requirements specified at 3.4 including inventory check with the Purchaser and a representative of the site;

1.5.1.2.8. Conduct initial on-site training for users and system support staff;

1.5.1.2.9. Provide all required site documentation, manuals, and training aids.

1.5.2. Site Survey

1.5.2.1. The Contractor shall assure himself prior to the Contractor's shipment and installation that the site will accommodate the equipment and installation design, and meet the Purchaser's requirements and approval.

1.5.2.2. The Contractor shall perform the site survey for the site including the refine of inventory of the PFE. The site survey shall be performed three (3) weeks following the Effective Date of Contract (EDC).

1.5.2.3. The Contractor shall include expected date of the Sites Survey within the Project Master Schedule and shall provide the necessary details for site access to the Purchaser at least two (2) weeks in advance of the visit. The Contractor shall provide an agenda, a questionnaire, as well as the list of participants with name, passport number, the copy of security clearances and other data which would be required by JFCB.

1.5.2.4. The Contractor should be aware that the possessing of laptops, mobile phones, etc. during the site survey conduction is prohibited.

1.5.2.5. After award, where possible, the Purchaser will make readily available any existing site information, drawings, wiring assignments and referenced documents that may be useful to the Contractor, with the understanding that the Contractor must update and change this information as well as adding any other information required to fulfil his obligations under this Contract.

1.5.2.6. Following completion of any Site Survey, the Contractor shall develop a Site Survey Report which shall include findings of the Site Survey as well as a Site replacement, installation and configuration plan including, but not limited to:

1.5.2.6.1. A description of the tasks to be performed for the site implementation including required site civil works.

1.5.2.6.2. Thefloor plan layouts, cable routing, power requirements, configuration,wiring assignments and any required material based on the site survey outcome;

1.5.2.6.3. A planning and scheduling of site preparation and Discussion and Audio Video systems replacement, integration and installation activities, and the list of Site Points of Contacts (POCs) and their associated contact data;

1.5.2.6.4. The site survey report shall be submitted to the Purchaser as the part of PIP

1.5.3. Equipment Delivery

1.5.3.1. The Contractor shall package, preserve, ship, transport, document, deliver and handover equipment to the site as specified at 3.4.

1.5.4. Site Installation

1.5.4.1. The Contractor shall replace, integrate and install the new Discussion and Audio Video systems and integrate them with the PFE and infrastructure.

1.5.4.2. During installation, the Contractor shall coordinate and agree the interruption of services with the Purchaser.

1.5.4.3. All cabling. shall allow for easy access to the label, have sufficient slack to prevent undue stress, and provide sufficient access for maintenance. The cables shall be properly supported and secured to avoid undue stress on the connectors.

1.5.5. Site Activation and site handover

1.5.5.1. The Contractor shall replace, install, integrate and activate Discussion and Audio Video systems.

1.5.5.2. Following the complete site activation, the Contractor shall proceed with the Systems Acceptance Tests to ensure that the site is ready for operational use.

1.5.5.3. As part of the Systems Acceptance Tests, the Contractor shall proceed with a physical hardware and software inventory check with the Purchaser and a representative of the site Property Accounting officer. The inventory will be checked, annotated and signed by all the parties.

1.5.6. The Contractor shall provide an Installation and Integration Plan (IIP) which will explain the effort and methodology for the integration all of the replaced and upgraded equipment required to deliver fully operational DS and AVS.

1.5.6.1. IIP shall as a minimum include the following activities and deliveries:

1.5.6.2. A Proof of Concept section which provides the brief information how replaced and upgraded equipment is installed and fully integrated with the current infrastructure;

1.5.6.3. Replacement, installation, configuration plan for the equipment provided by the Contractor;

1.5.6.4. Configuration and integration of PFE as described in 3.4 and 1.2;

1.5.6.5. The IIP shall be to the Purchaser as the part of the Project Implementation Plan.

1.6. Related Effort and Services (RES)

1.6.1. The Contractor shall provide, where and as necessary as part of this contract, all additional Related Effort and Services (RES) required to deliver a fully operational Discussion and Audio Video Systems.

1.6.2. These Related Effort and Services shall as a minimum include the following activities and deliveries:

1.6.2.1. Replacement, installation, configuration and integration of the PFE as described in paragraph 3.4;

1.6.2.2. Provision and installation of all ancillaries such as but not limited to: extended cables, wiring, IP trunking, power strip, Main and Intermediate Distribution Frame wiring (MDF and IDF), which are required to install and connect the provided Discussion and Audio Video systems hardware;

1.6.2.3. Provision and physical installation of equipment (labelled cables, equipment closed cabinet with adjustable shelves).

1.7. Security Requirements

1.7.1. The DAV systems provided by the Contract will transport Audio and Video feeds classified up to NATO Secret.

1.7.2. The AV control systems have to meet the requirement defined at Annex 1 to the reference 8.2.1.4.

1.7.3. KVM switches delivered by the Contract shall be presented in the NATO Information Assurance Product Catalogue (NIAPC).

1.7.4. The Contractor shall be aware that, due to NATO security constraints all failed hard disks/drives can only be repaired or replaced on-site and cannot be removed and/or returned to the Contractor for repair. Defect magnetic and electronic media storage devices/ (i.e. Compact Discs (CD), Disk Array, diskettes, hard drives, USB memory devices) will therefore be destroyed on-site by the Purchaser. Defective magnetic and electronic media shall therefore be replaced by the Original Equipment Manufacturer at no extra cost to the Purchaser.

1.7.5. The COTS LAN network elements (switches) provided by the Contract shall to be TEMPEST level C compliant according to 8.2.1.34.

1.7.5.1. The Contractor shall conduct TEMPEST tests for all network switches provided by the Contract.

1.7.5.2. The tests shall be performed by a NATO authorized TEMPEST Vendor.

1.7.5.3. The Contractor shall provide the Certificates of Conformity which confirm that the tested switches are TEMPEST level C compliant.

SECTION 2 PROJECT MANAGEMENT

2.1. Introduction

2.1.1. This section outlines the Project Management area of the DAVS replacement contract.

2.2. The Purchaser's Project Team

2.2.1. The Contracting Officer will act as the Purchaser's representative and will be the primary interface between the Contractor and Purchaser from the Effective Date of Contract (EDC).

2.2.2. The Purchaser PM will be supported by specialists in certain areas who may, be delegated to act on the PM's behalf in their area of expertise.

2.2.3. All changes to the Contract will be made through the Purchaser's Contracting Officer only.

2.3. Contractor Project Team

2.3.1. The Contractor shall provide all necessary suitably qualified manpower and resources to conduct and support the project and shall as a minimum include:

2.3.1.1. Project Manager: The Contractor shall designate a suitably qualified Project Manager (PM), who will direct and co-ordinate the activities of the Contractor's project team. The Contractor's PM shall be the primary contact for the Purchaser's PM and shall conduct all project meetings.

2.3.1.2. Technical Lead: The Contractor shall designate a suitably qualified Technical Lead for the project. The Technical Lead shall lead the analysis, design, development, integration, testing and follow-on enhancement efforts of the Contractor.

2.3.1.3. The Contractor Project Manager and Technical Lead shall liaise with the Project Manager and Technical Lead appointed by the Purchaser. The Contractor shall provide a Curriculum Vitae (CV) or résumé reflecting their experience that meets the following requirements:

Serial	Requirement
1	A University Degree in Information Technology, Computer Science or other relevant Scientific subject.
2	At least 4 years of experience as a Project Manager or Technical Lead for an effort of similar scope, duration, complexity and cost, including the application of a formal project management methodology such as PRINCE2 or PMI's PMP

3	Experience with implementation of secure infrastructures for defense, government or financial organizations.
4	Working experience in a multinational environment or working experience with a multinational company or military organization on similar projects
5	To be in possession of a valid Security Clearance Certificate to the level of NATO Secret

2.3.2. Contractor personnel who will require access to JFCB site or to NATO SECRET information during performance of the Contract shall obtain and maintain personal security clearances to the level of “NATO SECRET”. It is the responsibility of the Contractor to ensure that personal security clearances are forwarded to the sites to be visited in sufficient time to be processed. The Purchaser will not be held liable should Contractor work be delayed due to improper or untimely processing by the Contractor of personnel security matters. The Purchaser reserves the right to refuse entry to Purchaser sites to any Contractor personnel who lacks the proper security documentation or has failed to forward such documentation to the site in a timely manner.

2.3.3. Requests to visit/work at NATO sites or field locations by Contractor personnel including formal tests and deliveries shall be sent to the Purchaser at least two (2) weeks in advance. The Purchaser’s will assist the Contractor in obtaining permission for such visits / works.

2.3.4. As part of the monitoring and control function, the Contractor shall inform the Purchaser at all times of potential problems and schedule risks.

2.4. Project Implementation Plan (PIP)

2.4.1. The Contractor shall provide a Project Implementation Plan (PIP), which shall describe how the Contractor will implement the Project.

2.4.2. The PIP shall be provided to the Purchaser for review and acceptance within one (1) week after Effective Date of Contract (EDC). The PIP will be reviewed by the Purchaser and comments submitted to the Contractor no later than five (5) working days after receipt. The final version of PIP shall be submitted to the purchaser within 3 weeks after EDC

2.4.3. The approval of the PIP 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 this SoW.

2.4.4. The PIP shall be kept up to date throughout the project, and shall be subject of review at each Project Review Meeting (PRM), until and including Provisional System Acceptance (PSA).

2.4.5. The PIP shall include the sections listed and described here below:

2.4.5.1. Project Overview, which shall provide an executive summary overview of the offered DAVS capability. The Project Overview shall also summarise the main features of each of the sections of the Technical Proposal and shall indicate in broad detail how the Project will be executed during the full lifetime of the Project.

2.4.5.2. Project Management Plan that clearly describes the implementation of the project. The management part of the PIP shall define in detail how the Contractor intends to manage this project from Effective Date of Contract (EDC) to completion of the services. This chapter shall include, but may not be limited to, the following aspects:

2.4.5.2.1. A description of the management structure of the Contractor's Project Team, indicating its relationships within the company structure.

2.4.5.2.2. A list of personnel assigned to the Contractor's Project Team Organisation and the related information appropriate to this project (i.e. education, experience to include previous experience in NATO or national military projects, security clearance.

2.4.5.2.3. The Contractor's approach and organization/personnel involved in the Site implementation;

2.4.5.2.4. Specifics of any third party involvement giving description, details and relationship to the Contractor. This Chapter shall also provide details of proposed sub-contracting, if any.

2.4.5.2.5. The plan shall describe how the Contractor will implement project / contract administration, including details of the controls that will be applied to supervise Sub-Contractor performance. The plan shall also specify the details of proposed liaison with the Purchaser and Sub-Contractors, with provision for regular progress review meetings and periodic progress and performance reporting. Full details of project administration structure shall be included.

2.4.5.2.6. A Communications Plan that shall explain to communications paths and POCs for each of the relevant aspects of the Project.

2.4.5.3. The Site Survey Report. The report shall be developed to meet the requirements presented at 1.5.2.6.

2.4.5.4. An installation and integration plan. The plan shall be developed to meet the requirements presented at 1.5.6.

2.4.5.5. The Project Master Schedule (PMS) that shall contain all contract events and milestones for the Project. The PMS shall be traceable to performance and delivery requirements of this SOW. The PMS shall present all contractual deliverables, their delivery dates, and the tasks associated with them.

2.4.5.5.1. The PMS shall depict the sequence, duration, and relationship among PWBS, task orders, work packages and work items, including internal QA events.

2.4.5.5.2. The PMS shall identify the start and finish dates, duration, predecessors, successors, and resource requirements for each work item.

2.4.5.5.3. The PMS shall take into consideration NATO's official holidays and potentially limited availability of the NATO staff during operations and/or exercises.

2.4.5.6. Risk Management: The Contractor shall establish a risk management program and perform risk management throughout the period of performance of this Contract. As part of this, the Contractor shall establish and maintain a Risk Log for the project.

2.4.5.6.1. In the Risk Log, the Contractor shall identify any management, technical, schedule, and cost risks.

2.4.5.6.2. The Contractor shall rate each risk as High, Medium, or Low, based on its probability of occurrence and its impact on cost, schedule, and quality.

2.4.5.6.3. The Contractor shall identify for each risk the measures being taken to mitigate any risk rated as high on any factor.

2.4.5.6.4. The Contractor shall ensure that an up to date Risk Log is available throughout the contracted period. The Contractor shall include in the Project Highlight Report a chart that lists all active risks rated high on any factor and note any significant forecasted changes in these risks.

2.4.5.6.5. The Contractor shall update and brief the Risk Log at all Project Review Meetings.

2.4.5.7. Manpower Assurance.

2.4.5.7.1. This section of the PIP shall outline the approach taken to ensure that the Contractor personnel will be available to meet the performance and delivery requirements.

2.4.5.8. Quality Assurance Plan

2.4.5.8.1. The Quality Assurance Plan shall describe and outline the Contractor's Quality Assurance Organization and Quality Assurance/Quality Control System and shall meet the requirements defined in Section 6 of this SOW.

2.4.5.9. Test and Acceptance Plan

2.4.5.9.1. The Contractor shall provide and update the Test and Acceptance Plan (TAP) covering all tests activities in this Contract, outlining the tests and supporting tasks to meet the requirements of this SOW.

2.4.5.9.2. The TAP shall include a Requirements Traceability Matrix (RTM).

2.4.5.9.3. The TAP shall identify the Contractor's proposed test organization to address all the requirements of SOW and its relationship with the Contractor's Project Management Office (PMO) and QA functions.

2.4.5.9.4. The TAP shall provide a flow diagram that shows the overall sequence of tests to be executed at JFCB / Contractor's premises, and Contractor equipment and personnel involved in each test, and the relationship of test events to project milestones.

2.4.5.9.5. The TAP shall identify the support to be provided by the Purchaser in terms of manpower, services and material, including Purchaser witnessing and approval activities.

2.4.5.9.6. The TAP shall identify the entry and exit criteria proposed by the Contractor for each test session.

2.4.5.9.7. The TAP shall identify the test documentation associated with each test, including the scenario, procedures, test data, test results, and test reports.

2.5. Project Meetings

2.5.1. General

2.5.2. Except where otherwise stated in the Contract, the following provisions shall apply to all meetings to be held under the Contract.

2.5.3. The Contractor shall take meeting minutes, submit them within five (5) working days of the meeting in draft version to the Purchaser for approval.

2.5.4. The minutes shall document the topics, problems, discussions and all decisions made and include copies of the current Action Item List (AIL), Project Master Schedule and Risk analysis/assessment.

2.5.5. The participants shall not regard these minutes as a mechanism to change the terms, conditions or specifications of the Contract, or as a vehicle to alter the design or configuration of equipment or systems. Any such changes shall only be made by agreement, amendment or by authorised mechanisms as set forth in the Contract.

2.5.6. Any documentation, even in draft format, that may be useful to the Purchaser in preparing for meetings and ensuring efficient discussions during the meetings shall be provided to the Purchaser no later than ten (10) working days before the meeting.

2.5.7. Project Review Meetings.

2.5.7.1. The Contractor shall coordinate and hold the following Project Review Meetings (PRM) with the Purchaser:

2.5.7.1.1. PRM 1 includes Systems Requirements Review Meeting;

2.5.7.1.2. PRM 2 includes Critical Design Review (CDR) meeting;

2.5.7.1.3. PRM 3 includes the First Article Acceptance Tests (FAAT);

2.5.7.1.4. PRM 4 includes Preliminary System Acceptance (PSA) meeting;

2.5.7.1.5. PRM 5 includes Final System Acceptance (FSA) meeting;

2.5.7.1.6. Preliminary Design Review Meeting (PDR) organises by using electronic/on line means by the Purchaser approved secure platform such as Skype.

2.5.7.2. One week before each PRM the Contractor shall provide a Project Status Report (PSR), with the status of all on-going tasks, the status of the Contract deliverables, and identifying any changes to the design of DAVS, Risk Log and Issue Log.

2.5.7.3. Problems shall be identified and discussed with the Purchaser Project Manager promptly, and shall not be held over until the next PRM. Problems should not remain undisclosed in between meetings.

2.5.7.4. The location of PRMs shall be at the Purchasers premises in Brussels (BE), Mons (BE) or JFCB (NL) and when possible, it shall be scheduled with other project meetings. When deemed necessary by the Purchaser the PRM shall be held in an alternate location.

2.5.7.5. In addition to the scope and requirements for Critical Design Review as described at Section 3, the Contractor shall provide the following, if applicable, at all design reviews:

2.5.7.5.1. Changes to PMS;

2.5.7.5.2. Risk assessment and proposed changes, and update of the Risk Log and Issue Logs, steps to mitigate any risks identified in the Risk Log.

2.5.8. Other meetings:

2.5.8.1. The Purchaser shall host all other meetings unless there is a specifically agreed need to review material, witness technical demonstrations or testing, or perform any other activity outside of the Purchaser’s premises, as part of the meeting.

2.5.8.2. Upon approval by the Purchaser’s PM, the Contractor shall schedule, organise, and conduct such meetings.

SECTION 3 DAVS SYSTEMS DESIGN AND INTEGRATION

3.1. General

3.1.1. The Contractor shall meet the specification for the DAVS set forth in the SRS – Annex A to this SoW.

3.1.2. The DAVS capability shall consist of Commercial Off-The-Shelf (COTS) products and [1]Purchaser Furnished Equipment (PFE).

3.2. System Design Specification (SDS)

3.2.1. The Contractor shall establish and maintain the DAVS capability System Design Specification (SDS). The initial SDS shall be delivered one (1) week after EDC.

3.2.2. The System Design Specification (SDS) shall include the following information:

3.2.2.1. Physical design demonstrating meeting the requirements of the SRS (SoW-Annex A);

3.2.2.2. Manufacturer datasheets of all equipment, demonstrating compliance with the requirements of the SRS (SoW-Annex A).

3.2.2.3. The duration of the review period of the SDS by the Purchaser will be two (2) weeks, i.e. will be finished by three (3) weeks after EDC.

3.2.3. Purchaser review and acceptance of the SDS does not imply the Purchaser acceptance of the DAVS capability design. It remains the sole responsibility of the Contractor to prove the design through the regime of testing set forth in the Contract. It will be the sole responsibility of the Contractor in the event that the system proves deficient in meeting the Contractual requirements.

3.2.4. The Contractor shall update the SDS and TAP, in order to reflect changes, if any, and present it to the Purchaser two weeks (2) in advance of each of the following major milestones:

3.2.4.1. Preliminary Design Review.

3.2.4.2. Critical Design Review.

3.2.4.3. FAAT and SAT testing.

3.2.4.4. The Final System Acceptance.

3.3. System Requirements Review (SRR)

3.3.1. The Contractor shall conduct the System Requirements Review Meeting with the Purchaser one (1) weeks after EDC.

[1] The Contractor is not responsible for decommissioning of the existing Discussion and Audio Video Systems excluding the adaptation of existing lecterns.

3.3.2. During the System Requirements Review, the Contractor shall cover the following topics:

3.3.2.1. System Design, as presented in the System Design Specification (SDS), including any change request, or off-specification;

3.3.2.2. Project Management topics.

3.3.3. Preliminary Design Review (PDR)

3.3.3.1. The Contractor shall conduct a Preliminary Design Review (PDR) five (5) weeks after the EDC.

3.3.3.2. During the PDR the contractor shall cover the following topics:

3.3.3.2.1. Updated SDS, after incorporation the Purchaser comments;

3.3.3.2.2. Preliminary Bill of Materials (BOM) for the main elements;

3.3.3.2.3. Updated PIP.

3.3.4. Critical Design Review (CDR)

3.3.4.1. The Contractor shall conduct a Critical Design Review (CDR) ten (10) weeks after the EDC.

3.3.4.1.1. During the CDR the contractor shall cover the following topics:

3.3.4.1.2. Analytical verification documentation of all the design elements subjected to this verification as per the Requirement Traceability Matrix (RTM).

3.3.4.1.3. Final design of all functional areas.

3.3.4.1.4. Final Bill of Materials (BOM).

3.3.4.1.5. Updated PIP.

3.3.4.2. The above documentation shall be delivered two (2) weeks prior to the CDR Meeting as stated in the SRS. Updated documentation as per the results of the review shall be delivered to the Purchaser from the Contractor no later than two (2) weeks after the meeting to consider the review finalized.

3.4. Purchaser Furnished Equipment (PFE)

3.4.1. The Contractor shall integrate the PFE with the new DAV systems (the PFE is presented in SRS, Annex A.

3.4.2. The PFE shall be presented to the Contractor during the site survey.

3.4.3. The PFE will be made available to the Contractor at their point of location installation during the site integration period.

3.4.4. The PFE shall be made available at a mutually agreed time, consistent with the implementation schedule.

3.4.5. The Contractor shall coordinate the integration of all PFE and correct any limitations of hardware or software that may arise including the interface board, electrical and mechanical aspects.

SECTION 4 TESTING AND ACCEPTANCE

4.1. Testing Approach

4.1.1. The Purchaser requires a set of testing activities to verify the DAVS capabilities compliance with the requirements of SoW and the SRS – Annex A to this SoW.

4.1.2. The Contractor shall have the overall responsibility for meeting the DAVS capability testing requirements and conducting all related activities. This includes the development of all test documentation required under this Contract, the conduct of all testing, and the evaluation and documentation of the tests results.

4.1.3. The testing comprises:

4.1.3.1. The First Article Acceptance Test (FAAT);

4.1.3.2. The System Acceptance Test.

4.2. Tests Requirements

4.2.1. General Tests Requirements

4.2.1.1. All deliverables to include hardware, software and firmware supplied by the Contractor under this contract and integrated PFE and infrastructure shall be tested to meet the requirements of this contract.

4.2.1.2. The following principal tests shall be performed to achieve this objective:

4.2.1.2.1. The First Article Acceptance Test (FAAT).

4.2.1.2.2. System Acceptance Test (SAT).

4.2.2. During the testing the Contractor shall prove compliance through any combination of the following as directed by the Purchaser:

4.2.2.1. Testing.

4.2.2.2. Showing Certificates of Compliance and/ or equipment specifications.

4.2.2.3. The Purchaser has the right to observe FAAT and SAT testing, and to have the Contractor perform additional selected testing tasks, to confirm compliance.

4.2.3. As the supporting documentation for each test session, the Contractor shall develop Test Plans and Reports.

4.2.4. The Contractor should be aware that the possessing of laptops, mobile phones, etc. during the tests conduction might be prohibited and the hard copies of the test plans, test procedures and test log books might be required.

4.2.5. All test plans must be accepted and authorized by the Purchaser two (2) weeks prior the test conduction

4.3. First Article Acceptance Test (FAAT)

4.3.1. During the FAAT the Contractor shall prove that the design of the DAVS capability meets the defined in SOW requirements in the following areas:

4.3.1.1. Functional requirements;

4.3.1.2. Performance requirements;

4.3.1.3. Configuration requirements;

4.3.1.4. Security requirements;

4.3.1.5. Equipment Miscellaneous Requirements.

4.3.2. The Contractor shall conduct FAAT at Contrator’s premises.

4.3.3. The Contractor shall provide a First Article Acceptance Test Plan describing all the activities necessary to complete the entire test programme as outlined below.

4.3.4. During these tests the Contractor shall test and demonstrate, to the Purchaser, the chosen elements of the DAV systems as agreed with the Purchaser.

4.3.5. The Purchaser has the right to include deficiencies in the FAAT Test Report, also if outside the scope of the areas as defined in 4.1 or not part of the FAAT Test Plan.

4.3.6. After the FAAT results, Contractor must find solutions to restore deficiencies and failures.

4.4. System Acceptance Test (SAT)

4.4.1. The Contractor shall be responsible for preparing and conducting the System Acceptance Tests (SAT) which shall demonstrate that Final Operational Capability part of the delivered system and equipment meet all the end-to-end functional services and performance requirements as specified in this SoW. The Purchaser and/or his designated representative will witness the tests in JFCB.

4.4.2. SAT demonstrating full integration of the Site into the DAVS and demonstrating full end-end service delivery shall be conducted by the Contractor in accordance with the approved Procedure. The Purchaser and/or his designated representative will witness the tests on site and/or remotely supervise the execution at NCIA and JFCB.

4.4.3. The Contractor shall provide a System Acceptance Test Plan describing all the activities necessary to complete the entire test programme as outlined below. The plan shall also indicate the stages at which tests will be performed.

4.4.4. The Purchaser has the right to include deficiencies in the SAT Test Report, also if outside the scope of the areas as defined in 4.1 or not part of the SAT Test Plan.

4.5. Test Plans

4.5.1. The Test Plan shall document how Contractor plans to verify that DAVS capability meets the SoW and the SRS – Annex A requirements.

4.5.2. For each SRS – Annex A requirement to be tested the Contractor shall provide a Test Procedure with the following information:

4.5.2.1. Its objective, by clearly identifying the SRS, Annex A requirement intended to be demonstrated by the test procedure.

4.5.2.2. The DAVS elements and facilities and test equipment involved.

4.5.2.3. Any conditions which shall be satisfied prior to application of the test.

4.5.2.4. The test setup.

4.5.2.5. The data to be collected.

4.5.2.6. The sequence of testing steps in the procedure, to a level of detail that enables full understanding by the Purchaser of the purpose and effect of each test step.

4.5.2.7. The expected outcome.

4.5.2.8. The means of measurement or assessment for the test.

4.5.3. The results of each test called for in the Test Plan shall be recorded in test results sheets incorporated in the relevant test procedure.

4.5.4. Each test will only be declared ‘passed’ if the entirety of the expected results were obtained when running the test.

4.5.5. The Purchaser will review all the Contractor’s Test Plans for correctness, completeness, and acceptance.

4.6. Test Failures

4.6.1. Should a failure occur during testing, a failure report shall be raised by the Contractor and a preliminary investigation shall be immediately carried out in order to classify the failure as one of the following:

4.6.1.1. Class “A”: there is evidence that the cause was an external or transient condition;

4.6.1.2. Class “B”: there is mutual agreement that the cause was an inherent design or manufacturing deficiency in the unit under test; or

4.6.1.3. Class “C”: When the specific nature of the cause cannot be immediately determined and a more detailed investigation is required before a conclusion can be drawn.

4.6.2. The Contractor shall be responsible for all costs related to the rectification of deficiencies or failures and subsequent re-testing caused by the design or production of the deliverables identified during the verification and/or testing cycles. The Contractor shall be responsible for any travel, subsistence and other incidental expenses incurred by the Purchaser as a result of the requirement for the re-performance of tests necessitated by test failures.

4.6.3. After remedial action has been taken by the Contractor, the test may be resumed at the step during which the deficiency or failure was identified, however, the Purchaser shall have the right to require that re-testing includes all of the tests related to the verification of that particular specification requirement.

4.6.4. The Contractor shall seek the Purchaser's agreement of a mutually suitable time when testing shall be resumed, subsequent to the Purchaser having accepted the contents of a formal submission by the Contractor providing full details describing the cause of the failure and the recommended remedial actions to be taken.

4.7. Test Reports

4.7.1. The Contractor shall document the FAAT and SAT Test results in a Test Report. The Test Report cover sheet shall clearly show whether the testing passed, failed, or was not run, and for what reasons.

4.7.2. The Test Report shall include:

4.7.2.1. Test procedures

4.7.2.2. Test result for each test procedure (Pass, Fail, Not run)

4.7.2.3. Test summary, indicating which test procedures resulted in Fail or Not Run.

4.7.2.4. Any observations made by the Purchaser’s representatives

4.7.2.5. Comments

4.7.2.6. Contractor representative signature

4.7.3. On completion of the FAAT and SAT Tests, the Contractor shall forward the Test Reports to the Purchaser for review and approval. Purchaser approval of both Test Reports is a condition for PSA as defined in 4.8.

4.8. System Acceptance

4.8.1. General System Acceptance Requirements

The following Acceptance Milestones shall be performed to achieve the System Acceptance:

a. Provisional System Acceptance (PSA).
b. Final System Acceptance (FSA).

4.8.2. Provisional System Acceptance (PSA)

4.8.2.1. In order to request PSA of the DAVS the Contractor shall have completed the following actions:

4.8.2.1.1. Successful completion of FAAT and SAT testing, including approval by the Purchaser of the associated Test Reports;

4.8.2.1.2. The delivery of all required documentation;

4.8.2.1.3. The delivery of all software keys and passwords;

4.8.2.1.4. A deliverables inventory has been provided which details all the deliverables to be supplied under the terms of the contract;

4.8.2.1.5. Updated the DAVS design documents have been supplied to accurately reflect the “As Built” configuration and verification of accuracy of the Documentation has taken place;

4.8.2.1.6. An updated version of the CDRL;

4.8.2.1.7. The delivery of all required special tools and test equipment, all spares and consumable items;

4.8.2.1.8. Certificates of Conformity (CoC) have been supplied that the equipment conforms to the contractual standards and applicable manufacturing standards;

4.8.2.1.9. The Training Courses and delivery of all training materials.

4.8.2.1.10. Deliverables inventory has been provided which details all the deliverables to be supplied under the terms of the contract;

4.8.2.2. The Purchaser will evaluate whether to accept delivery of the DAVS units depending on the type and nature of any identified deficiencies during FAAT and SAT testing.

4.8.2.3. At such time as the Contractor has completed the prerequisites defined above, he shall notify the Purchaser in writing that the systems are offered for PSA.

4.8.2.4. This notification shall be accompanied by the PSA Report for the systems being offered.

4.8.2.5. The process of PSA review starts with the delivery of the PSA Report.

4.8.2.6. The PSA Reports submitted to the Purchaser for PSA and shall include the following information:

4.8.2.6.1. Status of each individual equipment, sub-systems i.e. installation, integration, notification, operation;

4.8.2.6.2. Complete test reports, for each of the all testing and acceptance events leading to PSA;

4.8.2.6.3. Reliability Maintainability and Availability (RMA) Analysis Report;

4.8.2.6.4. Status of inventory;

4.8.2.6.5. Status of documentation relevant to the acceptance e.g. as-built drawings, handbooks, quality assurance reports;

4.8.2.6.6. Status of codification action;

4.8.2.6.7. Status of training package;

4.8.2.6.8. The Deficiency Log, listing all the open deficiencies, and describing the resolution strategies and target dates, as agreed with the Purchaser.

4.8.2.7. PSA will be granted in writing from the Purchaser and the effective date of PSA shall be specified in this formal acceptance document.

4.8.2.8. The PSA meeting will take place at the Purchaser's premises.

4.9. Final System Acceptance (FSA)

4.9.1. The conditions for Final System Acceptance (FSA) are that all equipment and services as detailed in the Schedule of Supplies and Services have been delivered and all deficiencies noted at the Provisional Systems Acceptance (PSA) tests have been cleared by the Contractor to the satisfaction of the Purchaser.

4.9.2. To achieve FSA, the Contractor shall demonstrate the following:

4.9.2.1. The Contractor has met all of the PSA milestone requirements to be implemented under this contract;

4.9.2.2. The Contractor has executed all milestones and all implementation activities in accordance with this document to be implemented under this contract;

4.9.2.3. The Contractor has delivered a complete and updated set of documents;

4.9.2.4. The Contractor has executed all agreed test cases, and all tests shall have a status "PASS";

4.9.2.5. All the identified deficiencies are either fixed or waived by the Purchaser;

4.9.2.6. All training sessions have been conducted to the satisfaction of the Purchaser's staff participating in the sessions;

4.9.2.7. The Contractor has delivered all deliverables, and conduct all activities, as specified in this contract;

4.9.2.8. The Contractor shall close to the satisfaction of the Purchaser all outstanding issues, failures, and deficiencies;

4.9.3. The Contractor shall update the training material as required, based on the Training Evaluation Report.

4.9.4. A FSA meeting will be conveyed and chaired by the Purchaser when he considers that the deliverables are ready for Final Acceptance.

4.9.5. The achievement of the FSA is subject to the Purchaser approval.

4.9.6. The FSA Report shall include the following documentation:

4.9.6.1. FSA Meeting Agenda;

4.9.6.2. FSA Observations sheet;

4.9.6.3. Final System Inventories;

4.9.6.4. Final Quality Assurance Log;

4.9.6.5. Final Configuration Status Accounting (CSA) Reports;

4.9.7. The FSA meeting will take place at the Purchaser’s premises.

SECTION 5 INTEGRATED LOGISTICS SUPPORT

5.1. Introduction

5.1.1. This section details all Integrated Logistics Support (ILS) requirements of this project covering all the Through-Life Supportability requirements for the DAV JOC capability.

5.1.2. The activities described in this section shall be performed in JFCB and include installations/integration and testing activities prior to PSA (Provisional System Acceptance) is granted.

5.1.3. After PSA has been achieved, FSA will be granted once all major and minor deficiencies for the activities required have been solved.

5.1.4. The NCI Agency will verify that the activities, deliveries, analyses and documentation delivered by the Contractor(s) are integrated, coherent and consistent with the contractual requirements and do not degrade the current operational availability of the Systems and of the Services.

5.1.5. The Contractor shall be fully responsible for the delivery of the required processes, procedures and resources (skills, tools, spares and consumables if applicable) for the implementation of the requirements and full restoration of the systems and services affected by the activities required by this contract.

5.2. Maintenance and Support Concept

5.2.1. The Maintenance and Support definitions applicable to the project are defined and detailed in paragraph 10.2.

5.2.2. The Contractor shall design/deliver the system/elements and the Support/Maintenance documentation, instructions, and resources (e.g. skills, spares, tools, if procured) in order to allow the Purchaser starting from Provisional System Acceptance (PSA):

5.2.2.1. to fully operate the Systems;

5.2.2.2. to perform HL1/2 and SL1/2 Maintenance;

5.2.2.3. to perform Support Level 3 activities (as outlined in 10.2).

5.2.3. The Contractor shall be fully responsible, in accordance with the above defined Maintenance Concept, to deliver all the resources (e.g. spares, repairs, training, documentation, tools, test equipment, if procured), analyses, studies required to sustain the delivered System and meet the performance and functional requirements defined in this SoW until the end of the warranty.

5.2.4. All activities on-sites beyond NATO capabilities/skills (as per maintenance concept and Contractor delivered training and documentation) required to restore the System from a critical failure shall be carried out by the Contractor using dedicated on-site interventions and shall be resolved no later than the on-site

intervention time, stated in 5.14.24., following the receipt of the Purchaser's request. The Contractor shall ensure the availability of the required materials and tools (HW/SW).

5.3. Logistic Support Analysis (LSA) and Reliability, Maintainability and Availability (RMA)

5.3.1. The Contractor shall develop and document a detailed Logistic Support Analysis in accordance with the ASD S3000L Specification.

5.3.2. The Contractor shall propose to the Purchaser a tailoring of the S3000L Specification, in order to define as a minimum the following elements in accordance with the Maintenance and Support levels defined in Paragraph 10.2 and the maintenance concept defined in paragraph 5.2:

5.3.2.1. Full Logistic Breakdown Structure (LBS);

5.3.2.2. Level of Repair Analysis identifying the maintenance level of each individual element of the LBS, both for Preventative and Corrective Maintenance;

5.3.2.3. Full and detailed range of Preventative Maintenance and Corrective Maintenance tasks (including troubleshooting) and relevant durations, periodicities, resources (skills/trades, tools, materials), Safety data/procedures.

5.3.3. The tailoring of the S3000L specification, the minimum dataset and the formats of the data/deliverables shall be agreed not later than the CDR Meeting.

5.3.4. The DAV Systems in the JOCs are considered as a critical System. Therefore, the design of the DAV Systems shall support a system restore Target of four (4) hours (maximum).

5.3.5. The ILS activities shall, as a minimum, generate the data, structures and deliverables required by this SoW, subject to Configuration Management as defined in paragraph Section 6 and under the Quality constraints defined in 6.3.

5.3.6. The Contractor shall define and design the Maintenance tasks and resources associated to the new/modified/upgraded equipment in order to allow 95% of the failures to be recovered at Organizational Level (HL1/2 and SL1/2) by Purchaser personnel.

5.3.7. The Contractor shall be responsible, from PSA up to the end of the Warranty period for HL3/4 and SL3/4 activities for the provision of HL1/2 repairs/spares (if procured) and for the provision of remote and onsite technical assistance beyond the scope and capabilities of Organizational Level Maintenance.

5.3.8. The Organization Level maintenance shall be executed on site and include Preventative Maintenance, Corrective Maintenance and related troubleshooting activities which shall be reflected in the training, training material and Operation and Maintenance (O&M) manuals that the Contractor shall provide.

5.3.9. The Contractor shall provide the following data/elements for the HW (including FW) and SW delivered as part of this project, in conformance with the latest applicable Product baseline (PBL, see Section 6):

5.3.9.1. Detailed hierarchical Logistics Breakdown Structure (LBS) down to the Maintenance Significant Item (MSI);

5.3.9.2. MSIs category (Line Replaceable Unit – LRU, Insurance Item – II, Attaching Part – AP, Technical and/or non-Technical consumable, Next Higher Assembly – NHA, not-MSI);

5.3.9.3. Full Configuration Management data (identification of Configuration Items – CIs, type of CI, relationships, dependencies) in accordance with STANAG 4427 Ed.3 (see Section 6);

5.3.9.4. Maintenance Level (preventative, corrective, troubleshooting) associated to each individual item identified in the LBS;

5.3.9.5. MTBF (Mean Time Between Failure) for each HW element down to MSI level and relevant calculation method (predicted, allocated, field data, specification);

5.3.9.6. MTTR (Mean Time to Repair) for each HW element down to MSI;

5.3.9.7. Preventative Maintenance periodicities and durations (Mean Time Between Preventative maintenance – MTBP and Mean Time To Preventive – MTTP as per guidelines given by MIL-HDBK-338B);

5.3.9.8. Skills/Trades required;

5.3.9.9. Population at each MSI level and QEI (Quantity per End Item);

5.3.9.10. Safety instructions.

5.3.10. The Contractor's provided data/items Measures of Performance (MoP) (e.g. systems reliability, maintainability and availability data) shall be equal or better than those associated to the items to be replaced/upgraded/updated and shall drive the Contractor's selection of the new HW and SW in order to reduce the Life Cycle Cost of the new equipment and ensure that the Purchaser Service Level Agreement (SLA) can be met.

5.3.11. The Contractor shall provide Operational and Maintenance Instructions, training and manuals to enable the Purchaser to Support the System up to Support Level 3 and maintain it up to HL1/2-SL1/2 as per Maintenance/Support concept defined in paragraph 5.2.

5.3.12. All LSA and RMA data shall be provided both as raw MS Excel tables, fully consistent with the LBS and the relevant product baseline (PBL).

5.4. Supply Support

5.4.1. The appointed Contractor shall calculate the required spares parts (LRUs, Insurance Items), technical and non-technical consumables and provide the

Purchaser with a priced Recommended Spare Parts List (RSPL) and Recommended Consumables Item List (RCIL) together with the design documentation at the applicable milestone.

5.4.2. The proposed spare parts and consumables shall be coherent and consistent with the O&M concept defined in paragraph 10.2, paragraph 5.2 and with the procedures reported in the Maintenance and Operation Manuals and Training Material.

5.4.3. The Contractor shall calculate the quantity of spare parts, to be held at site, sufficient to be able to replace any mission critical MSI failing at that site during a 90 days Closed-Door-Operation (CDO) period after PSA.

5.4.4. As an option and if exercised, the Contractor shall provide the required spares parts (LRUs, Insurance Items) to the site No Later Than (NLT) PSA.

5.4.5. The consumables to be held at site shall be provided both for technical and non-technical consumables (if any) in sufficient quantities to allow each site 90 days Closed-Door-Operation (CDO) at any time starting at PSA.

5.4.6. At PSA, the consumables and spare parts (if procured) shall be transferred (title) to the Purchaser.

5.4.7. After PSA, re-supply of technical consumables and repair/replenishment of spares (if procured) shall be the responsibility and cost of the Contractor as per Warranty arrangements (paragraph 5.14).

5.4.8. After PSA, re-supply of non-technical consumables (if any) shall be the responsibility of the Purchaser.

5.4.9. The Contractor shall describe his proposed spares and consumables models and analysis techniques at DRA and shall provide the following data for each list of Spare Parts (RSPL) and Consumables (RCIL), for the installation site, including (but not limited to):

- Part Number;
- NCAGE (NATO Commercial and Government Entity code);
- NCAGE Data (name, address, Point of Contact – POC);
- Description/nomenclature;
- MSI type;
- MTBF (for Spare parts – LRUs and Insurance Items only);
- Consumption Rate (for consumables);
- Quantity per End Item;
- Recommended quantity;
- Unit Price;
- Price Unit Of Measure (UOM);
- Minimum Order Quantity (MOQ);
- Turn-Around-Time (TAT) or Lead Time (LT).

5.4.10. In accordance with the warranty section (paragraph 5.14), the repairs or replacement items of all faulty items on site shall be under the responsibility and cost of the Contractor.

5.4.11. Technical Documentation and Data

5.4.11.1. In addition to the documentation/data listed and detailed in other sections of this SOW, the Contractor shall deliver (details for content in the following paragraphs):

5.4.11.1.1. Logistic Data;

5.4.11.1.2. System Inventory.

5.5. Logistic Data

5.5.1. The Contractor shall deliver the Logistic and Configuration Data requested in paragraph 5.3 and Section 6 (CM) in accordance with the S3000L format and in paragraph 5.4 in accordance with S2000M format.

5.5.2. The Contractor shall agree with the Purchaser, not later than the DRA a tailoring of the above mentioned specifications, the mandatory fields and the format of the data.

5.5.3. The Contractor is fully responsible of the data, their validity, correctness and overall quality and shall update the information any time major changes are required (e.g. implementation of an ECP affecting the data, amendment of incorrect numbers, improvements due to field data, escalations).

5.6. System Inventory

5.6.1. The Contractor shall provide the Purchaser with a System inventory at least ten (10) working days before supplies delivery.

5.6.2. The system inventory shall be site specific and shall include all the items furnished under the project as follows:

5.6.2.1. All items (both Commercial Off The shelf – COTS and developmental Items - DIs, both HW and SW) down to MSI level, hierarchically structured and conforming the LBS and Product baseline (PBL);

5.6.2.2. All interconnecting equipment/elements, either special-to-type or standard, required to install, integrate or operate the System delivered in the frame of the project;

5.6.2.3. All special-to-type and standard tools and test equipment (both HW and SW), required to operate and maintain the delivered System and conforming with the procedures reported in the Maintenance and Support manuals and in the training;

5.6.2.4. All spare parts (if procured);

5.6.2.5. All documentation (manuals, training material/handbooks, as built drawings, plans, data records) required to support the system;

5.6.2.6. All the Software (see paragraph 5.11).

5.6.3. A template covering HW Inventory data requirements will be provided by the Purchaser following contract award.

5.7. Training

5.7.1. Following any customization, modification, change, deletion or addition to the Systems implemented in the frame of this project by the appointed Contractor, the Contractor shall provide a suitable training package (e.g. training instructions, guidebooks, video/audio material, drawings and procedures) to complement and complete the existing Sustainment Training Material.

5.7.2. The Training Package shall support a "Train the Trainer" session to be delivered by the Contractor. Training dates are to be agreed with the Purchaser.

5.7.3. The formats and templates for the training data and material, if any, shall be agreed by the Contractor and the Purchaser at least eight (8) weeks before the PSA date if not agreed otherwise.

5.7.4. The training and the training data and material shall be delivered to the PM and the ILS Officer in electronic format not later than four (4) weeks before the expected training for NCIA review and acceptance before training start.

5.7.5. The "Train-the-Trainer" session shall cover all Maintenance, Operation and Support aspects in accordance with the Maintenance and Support Concept defined in paragraph 5.2.

5.7.6. The Contractor shall propose the training duration based on a maximum number of twelve (12) trainees for the Train-the-Trainer session, where six (6) trainees (CSU) will require training sufficient to test, troubleshoot, maintain, operate and support the equipment including software in scope of this project. Six (6) trainees (JFCB) will require mainly operator training with limited maintenance and support knowledge.

5.7.7. The Contractor shall be fully responsible for the quality, content, completeness and correctness of the training material and shall implement the modifications, corrections and improvements required by NCIA to achieve acceptance and deliver the training accordingly.

5.7.8. The training and training material shall be delivered in English language and the Instructor shall be proficient and certified in English language (STANAG 6001 level 4333 at least) or equivalent.

5.7.9. After training conduction, a training evaluation report shall be submitted to the Purchaser.

5.7.10. The Train-the-Trainer training session shall be performed and completed by the Contractor on the fully tested equipment in the site and accepted by the NCIA before PSA is granted.

5.8. Packaging, Handling, Storage and Transportation (PHST)

5.8.1. The Contractor shall be fully responsible for the Packaging, Handling, Storage and Transportation of the equipment to and at the destination site including the movement to the place of installation.

5.8.2. The Contractor shall define the best method for the Packaging, fulfilling as a minimum the requirements of STANAG 4280 "NATO Levels of Packaging", NATO packaging level 4.

5.8.3. The Contractor shall ship all required supplies to the installation site specified within the Schedule of Supply and Services (SSS).

5.8.4. The Contractor shall be fully responsible for the decision and the selection of the proper packaging, marking and transportation means (air, sea, land), making proper considerations about and including (but not limited to) vibrations, shocks, management of Electrostatic Discharge (ESD) sensitive devices, altitude/pressure, temperature and humidity limits not to be exceeded during the PHST activities.

5.8.5. The Contractor shall unpack and install the supplies in Purchaser provided facilities.

5.8.6. Any malfunction/failure at destination, assessed at incoming inspection, inventory or testing level shall be full responsibility of the Contractor.

5.8.7. In such circumstances, the Contractor shall immediately notify the provider of the defect and the estimated time to correct the defect.

5.8.8. Within ten (10) working days, the Contractor shall follow up the initial notification with a confirmed time to correct the defect.

5.8.9. PHST costs including insurances, security, Customs duties (if any), manufacturing/ adaptations and/or purchase of commercial or special boxes/packages/containers for PHST activities (e.g. including interfaces for pulling, lifting, handling) and the rent/purchase/lease/use of any tool and facility (crane, forklift, box, container, storage area) including Safety arrangements, aids and instructions for Contractor personnel, shall be under the sole responsibility and cost of the Contractor.

5.8.10. The Contractor shall coordinate with the NCIA and with the local authorities the access to the sites and the proper Safety and Security procedures to be put in place for the PHST activities, for installation, integration and testing (if applicable).

5.9. 302 Forms

5.9.1. The Contractor shall be responsible for the timely request of Customs Forms 302 which are required for duty free import/export of supplies between certain countries. Following receipt of the request by the Purchaser, normally a maximum of five working days are required for the issue of the form. The purchaser will

provide a template detailing the required information for completion of the forms and the ILS PoC to address the requests.

5.9.2. These forms shall be originals and can therefore not be faxed but have to be mailed or sent by mail/express courier.

5.9.3. In case that an express courier has to be used to ensure that the form is available in time before shipment, the Contractor shall create an account with a Contractor's designated freight forwarder (e.g. DHL, FEDEX) that the Purchaser can use for this purpose.

5.9.4. If a country refuses to accept the Form 302 and requires the payment of customs duties, the Contractor shall pay these customs duties and the Purchaser shall reimburse the Contractor at actual cost against presentation of pertaining documents. Should such an event occur, the Contractor shall immediately inform the Purchaser by the fastest means available and before paying, obtain from the Customs officer a written statement establishing that his Country refuses to accept the Form 302.

5.9.5. Forwarding agents shall be informed of the availability of Form 302 and how this form is utilised to avoid the payment of customs duties. This Form 302 shall be added to the shipping documents to be provided to the carrier.

5.10. Physical Labelling

5.10.1. For HW assets down to LRU level, the Purchaser will provide labels with the NATO coding schema compliant with STANAG 4329 and AAP-44.

5.10.2. Cables shall be labelled by the Contractor at their termination points indicating both ends and connection points. Labelling scheme shall be in line with the Purchasers labelling guidance and reflected in related technical design and technical documentation.

5.11. Software Delivery

5.11.1. The Contractor shall provide a detailed Software Distribution List (SWDL), which details comprehensively all Computer Software Identification Number (CSCI) and associated software, firmware or feature/performance licenses provided under this Contract.

5.11.2. The SWDL shall include, the following data/elements:

- Computer SW Configuration Item (CSCI) identification number;
- Nomenclature;
- Version number;
- License key (if applicable);
- License renewal date (if applicable);
- Warranty expiration date;
- Date of distribution;
- Distribution location (geographically);
- Distribution target (server);

- Hosting Platform (e.g. O/S, version) of the SW/HW under license;
- License Expiry date (next);
- Renewal periodicity (e.g. 3m, 6m, 1y);
- License media (e.g. HW Key, Dongle, SW key, simple key);
- EOL/EOS (End of Life/End of Support);
- Alternative version (if any);
- Minimum Order Quantity (MOQ) for renewal (if different from Qty=1);
- Price per license (and eventually discounts by quantity).

5.12. Packing Lists

5.12.1. The Contractor shall establish the packing lists in such a way as to permit easy identification of the items to be delivered to destinations.

5.12.2. These packing lists shall accompany the shipment.

5.12.3. Each individual container/box from a consignment shall have one packing list in weather-proof envelope affixed to the outside of each container/box which indicates exactly what is contained inside. One copy shall also be put inside each container/box.

5.12.4. All deliveries shall be notified by the Contractor through the issuance of a Notice of Shipment to the Purchaser's PM and ILS PoC, at least ten (10) working days in advance of each delivery.

5.12.5. The Contractor shall await for the Confirmation from the Purchaser of the availability of the destination site before shipment of the equipment takes place.

5.12.6. The Notice of Shipment shall be accompanied by a packing list.

5.12.7. The Packing list shall include the following data:

- the Purchaser's Contract Number;
- the NCI Agency project number;
- names and addresses of the Contractor and the Purchaser;
- names and addresses of the Carrier, Consignor and Consignee (if different from Contractor or Purchaser);
- final destination address and POC;
- method of shipment for each item shipped;
- CLIN number as per the SSS (Schedule of Supply and Services/bidding sheet);
- nomenclature;
- part number;
- NCAGE (coherent with the part number);
- serial number (if applicable);
- quantity;
- for each box, pallet and container:
- box/pallet/container/crate/transit case identification number;
- number of boxes/pallets/containers/crates/transit cases;
- weight (metric);
- dimensions (metric).

5.12.8. Each individual box/pallet/container shall have one packing list in weather-proof envelope affixed to the outside of each box/pallet/container, which indicates exactly what is contained inside.

5.12.9. One copy of the same packing list shall also be put inside each box/pallet/container or package.

5.13. Notice of Shipment

5.13.1. Where this section applies, ten (10) working days before each shipment of supplies, the Contractor shall provide the Purchaser with a Notice of Shipment comprising the following details:

- Shipment Date;
- Purchaser Contract Number;
- Schedule number;
- Consignor's and Consignee's name and address;
- Number of Packages/Containers;
- Gross weight;
- Final/Partial Shipment;
- Mode of Shipment (e.g. road);
- Number of 302 Forms used.

5.13.2. The Contractor shall ship all required software, documentation, and installation or testing tools to the locations designated by the Purchaser.

5.13.3. The Contractor shall be responsible for resolving any loss incurred in shipping.

5.14. Warranty

5.14.1. At PSA, the Purchaser will take title of the equipment and will perform the Operation, Maintenance and Support Activities defined in the Maintenance Concept (paragraph 5.2).

5.14.2. The warranty period shall start at PSA and shall complete after (12) months from FSA, except for extensions due to any Contractor induced delays.

5.14.3. All activities required to keep the Site operational beyond the responsibilities of the Purchaser, as per Maintenance Concept, including the provision of materials/repairs/tools, shall be under the responsibility of the Contractor until the end of Warranty.

5.14.4. The warranty shall cover the installation and integration activities, workmanship, adaptations, changes, analyses, documentation, software, firmware, licences and the equipment specifically provided by the Contractor for the purposes of the current Project and shall exclude all other equipment provided as PFE or NFE.

5.14.5. In the warranty period, the Purchaser will inform the Contractor of any defect on HW, SW, documentation and Labour through the issuance of Warranty Claims that the Contractor shall take in charge and solve in accordance with the given timelines.

5.14.6. The Contractor shall warrant that all equipment and software delivered and all installation work performed under this Contract conform to the requirements and are free of any defect in material, code or workmanship during the warranty period.

5.14.7. Before PSA and prior to warranty start, the activities, equipment, artefacts (including COTS HW/SW) and documentation shall remain under full responsibility of the Contractor and shall be delivered to the Purchaser, free of major[2] deficiencies.

5.14.8. The Contractor shall manage and correct all major deficiencies as class I changes in accordance with the requirements defined in Section 6.

5.14.9. The Contractor shall manage and correct all minor deficiencies as class II changes in accordance with the requirements defined in Section 6.

5.14.10. The Contractor shall warrant that all equipment and software delivered under the Contract are genuine and free of any malicious components, firmware and software to ensure overall security of the System and its supply chain.

5.14.11. The Contractor shall warrant that documentation and training provided in the scope of the project reflects the system delivered.

5.14.12. If the documentation does not sufficiently reflect the product, the Contractor shall provide the updated documentation within two (2) weeks upon the Purchaser's request.

5.14.13. In case of failures of NFE/PFE items due to the execution of this project or failures of Contractor delivered items, the Contractor shall repair/replace the faulty items, at its own expenses and under its responsibility, with the highest priority allocated and shall be responsible to return the item to the destination site.

5.14.14. The repairs/replenishments under warranty condition shall be at no cost for the Purchaser.

5.14.15. If spares will be procured through this contract, the replenishment/repairs of all HW items (delivered as part of the project) failing in the timeframe between PSA and the end of warranty (except Purchaser induced failures) phase shall occur in times not exceeding the Lead Times and/or Turn-Around Times declared by the Contractor in paragraph 5.4.9

5.14.16. Technical Consumables expended between PSA and the end of the warranty period shall be replenished by the Contractor throughout the warranty period.

[2] [Definition] Major deficiencies are any malfunction, error, anomaly, deviation etc. preventing the System(s), workmanship and documentation to meet the original contract performance, safety, security and interoperability requirements, including RAMT KPIs and Services Levels. Minor deficiencies are all deviations not classified as major.

5.14.17. If the updated/upgraded systems/services are unserviceable for a period of time, during the implementation of this Project, due to Contractor induced failures (conditions above apply), the warranty period shall be extended accordingly for the amount of time the system has been unserviceable without any cost to be incurred by the Purchaser.

5.14.18. Shipment/Transportation of unserviceable items to the Contractor for repair/ replacement and the return to sender is the responsibility and cost of the Contractor.

5.14.19. Return of unserviceable equipment to Contractor facility for warranty repair/replacement shall be directly to the Contractor's facility at the address which shall be indicated by the Contractor ILS Manager.

5.14.20. If the Contractor becomes aware at any time before PSA and during warranty that a defect exists in any supplies or services or documentation, the Contractor shall promptly correct the defect.

5.14.21. The Contractor shall provide Software patches and SW/HW/FW upgrades, if applicable, whenever a specific issue is reported by the Purchaser until the expiration of the warranty, at no additional cost for the Purchaser.

5.14.22. The Contractor shall provide Technical Assistance to the Purchaser or his representatives until the end of the warranty. Technical assistance information details shall be provided at CDR. Technical Assistance shall be provided from assistance centres located strictly within NATO countries boundaries and by staff who are nationalised citizens of NATO member nations.

5.14.23. The Technical Assistance shall provide 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.

5.14.24. Under the warranty arrangements (from PSA), the Contractor shall provide reactive maintenance/support during Purchaser’s (CSU Brunssum) business hours (Mo – Fr, 08:00 – 17:00 NLD time zone) to the Purchaser based on a combination of:

5.14.24.1. Full access to live helpdesk (chat, video, phone call) for instructions, documentation, troubleshooting, help on support and maintenance, configuration issues, patching and fixing of any HW/SW problem/failure under purchaser responsibilities (see maintenance/support concept);

5.14.24.2. Intervention on-site, no later than Next Business Day (NBD) counted from the request for any critical issues related to the installation in the JOC “Floor” Conference Room and JOC Conference Room beyond the Purchaser’s responsibilities and/or capabilities including the provision of On-the-Job-Training (OJT)/instructions /documentation to purchaser personnel during the solution of the problem;

5.14.24.3. Intervention on-site, no later than three (3) Business Days counted from the request for any critical issues related to the installation in the other Meeting Rooms beyond the Purchaser's responsibilities and/or capabilities including the provision of On-the-Job-Training (OJT)/instructions/documentation to purchaser personnel during the solution of the problem.

5.14.25. Under the warranty arrangements (from PSA), the Contractor shall provide continuous advice and pro-active Support/Maintenance to the Purchaser based e.g. on a combination of:

5.14.25.1. Full access (credentials) to the Knowledge Base (or similar DB) portal of the Contractor/Supplier relevant to the procured HW/SW/SW products by NCIA;

5.14.25.2. Periodic bulletins/information/notices/recommendations for the improvement of the settings/security of the procured HW/SW/FW by NCIA;

5.14.25.3. Active monitoring and both periodic and urgent notification of security alerts with temporary workarounds (including fixes and instructions) and follow-on release of security patches or new SW/FW releases;

5.14.25.4. Support for HW/SW/FW inventories management (CMDB and LBS management);

5.14.25.5. Support, through a Single Point of Contact (SPOC) for HW/SW/FW settings/improvements to increase Security and Performance of the delivered equipment.

5.14.26. All activities and issues arising before and during the warranty period shall be reported in the PRM minutes and related AIL or any other means as agreed with the Purchaser.

SECTION 6 CONFIGURATION MANAGEMENT (CM) and QUALITY ASSURANCE (QA)

6.1. General

6.1.1. The Contractor shall be responsible for establishing and maintaining an effective Configuration Management (CM) organisation to implement the CM programme and manage the CM functions (configuration identification and documentation, configuration control, configuration status accounting, configuration audits.)

6.1.2. The Contractor shall establish and maintain the CM policies, processes and practices in conformance with STANAG 4427 Ed. 3 and underpinning ACMPs (ACMP-2000, ACMP-2009, ACMP-2100) and ISO 10007:2017.

6.1.3. The Contractor shall implement the CM activities for any HW, SW, FW, customization and document provided, used or defined in the frame of the project and shall integrate the COTS elements-data in order to implement a unique CM framework.

6.2. Baselines

6.2.1. The Contractor shall define the CI trees (Baselines), hierarchically structured, clearly defining each node/leaf as CI, HWCI, CSCI, HWP (Hardware Parts) or CSC (Computer SW Component) in accordance with the guidelines provided in the above defined ACMPs and ISO.

6.2.2. The Contractor shall define and deliver, as a minimum the following Baselines:

6.2.3. Allocated Baseline (@ CDR: it starts to be developed at the beginning of the design phase; it is established and “frozen” at the end of the design phase (also known as “as-designed” baseline);

6.2.4. Product Baseline (@ Installation/Integration/Test): It starts to be developed at the beginning of the production phase. It is established and “frozen” at the end of the production phase.

6.2.5. All the baselines shall be developed, maintained and fully documented in the Contractor’s PLM (Product Lifecycle Management) tool.

6.2.6. For each Baseline and relevant modifications (in accordance with the Change Request/Engineering Change Proposal/Engineering Change Order - CM CR/ECP/ECO - processes) the Contractor shall export the baselines in the form of CMDBs, covering as a minimum the following relationships:

6.2.6.1. Contract functional/non-functional requirements to Functional elements of the FBL (the FBL shall not be delivered but shall be defined and maintained by the Contractor);

6.2.6.2. Functional Elements of the FBL to Major CIs of the ABL;

6.2.6.3. Major CIs of the ABL to Full CIs (CIs, HWCIs, CSCIs, HWPs, CSCs) tree (PBL);

6.2.6.4. Major CIs of the PBL to Services/Sub-Services delivered by the System (mapping of CIs vs Services and vice versa);

6.2.7. The Contractor shall define the structure and templates of the different baselines in order to provide views, from the FBL to the PBL, with incremental content.

6.2.8. Each element of the PBL shall include as minimum (but not be limited to) the following pieces of information (in accordance with the type of item):

6.2.8.1. Position in the structure (hierarchical level or indenture code):

- Physical location (Reference Designator or similar positional code) coherent with the As-Built Drawings and manuals;
- Type of Configuration Item (CI, HWCI, CSCI, HWP, CSC);
- Type of MSI, coherent with the LBS;
- Item identifiers (Part Number – P/N, Cage Code, Nomenclature, revision/issue, release);
- Asset Data (Price UOM, MOQ, start of warranty/license validity);
- Inventory Data (Serial Number - S/N or License number if applicable);
- CI documentation:
- For HWCIs/HWPs: specifications, datasheet, Certificates of Conformity (CoC), Declaration of Conformity (DoC), Items Setting Documents (ISD – how to configure HW/SW/FW);
- For HWCIs/CIs: interconnection diagrams, interface specifications/control documents, Test procedures, Test records, integration data, customization/setting procedures;
- For CSCIs/CSCs: SW Release Notes (SRN), SW test data records, SW metrics (type of language, Line of Code, number of function points), SW Source Code (if specifically generated or modified/adapted/customised in the frame of the project), SW Installation files, SW Version Description Documents (VDDs), SW installation/customization procedures, SW settings, SW operating manual.

6.2.8.2. Alternative (P/N, Cage Code, Nomenclature, revision/issue, release);

6.2.8.3. NATO Stock Number (NSN).

6.3. Quality Assurance/Control (QA/QC)

6.3.1. General

6.3.1.1. The Contractor shall include a Quality Assurance Plan as part of the Project Implementation Plan (PIP) describing how the Contractor proposes to meet the Quality Assurance and control requirements as described in this Section.

6.3.2. Quality Assurance and Audits Control System

6.3.2.1. The Purchaser in this contract applies the NATO Standardisation Agreement, STANAG 4107 Ed. 9 “Mutual Acceptance of Government Quality Assurance” which the Contractor shall herewith accept and agree to.

6.3.2.2. The Contractor shall be ISO 9001 or AQAP 2110 certified and shall fulfil the general requirement of STANAG 4107 Ed. 9.

6.4. Contractor Quality Assurance and Control

6.4.1. The Contractor’s QA/QC System relevant to performance under this contract shall be subject to review and surveillance by the Purchasers QA representative.

6.4.2. The Contractor shall include in orders placed with his Sub-Contractor(s) and Supplier(s), the QA/QC requirements necessary to ensure the supplies and services covered by the Sub-contract(s) and/or Purchase Orders conform to the requirements of the prime contract.

6.5. Responsibilities of the Contractor and the NQAR

6.5.1. The Purchaser may delegate the Quality Assurance to the appropriate Government Quality Assurance Authority (GQAA) in accordance with STANAG 4107.

6.5.2. The GQAA, when accepting the STANAG 4107 Request for GQAA Services, appoints his QA Representative(s) (QAR).

6.5.3. The Purchaser, through their own Quality Assurance, however, will retain the overall supervisory and liaison authority concerning all QA/QC matters, and for this purpose will use their own QA Personnel.

6.5.4. The term “National QAR” (NQAR) shall apply to any of the Purchaser appointed QARs, whether nominated by the GQAA or by Purchaser QA.

6.5.5. During the entire contract implementation, the NQAR(s) within their own rights, defined in the contract applicable AQAPs, shall assure the Contractor’s and Sub-Contractor’s compliance with all contractual requirements.

6.6. Certificates of Conformity

6.6.1. When satisfied that the products and/or services provided by the Contractor are in conformance with the terms of this contract, a Certificate of Conformity (CoC) will be delivered.

6.6.2. The preparation of the CoC(s) shall be the responsibility of the Contractor.

6.6.3. The Contractor shall supply a Certificate of Conformity (CoC) for all equipment provided under this contract for all quantities contained in each contract line item. Two (2) copies of the CoC(s) shall be submitted to the Purchaser.

SECTION 7 DOCUMENTATION REQUIREMENTS

7.1. General

7.1.1. This section addresses the documentation requirements of the project. The purpose of these requirements is to ensure that the Contractor develops and provides high quality, comprehensive documentation, manuals, and as-built drawings that will enable the Purchaser to operate and maintain the system at all assigned levels of support. All project documentation shall be compliant with the requirements identified in the SoW below.

7.2. Format criteria

7.2.1. All the documentation to be provided under this Contract shall be written in English (preferably United Kingdom Standard).

7.2.2. Any COTS documentation shall be delivered in PDF format.

7.2.3. Non-COTS documentation shall neither be marked with corporate logos nor contain warnings limiting the rights to use or reproduction.

7.2.4. 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 (including the training documentation) provided under this contract for his internal use.

7.2.5. All contractual documentation (e.g., change proposals, invoices) shall be delivered in electronically unless specified otherwise by the Purchaser Contractor Officer. The Purchaser reserves the right to request printed versions of any project documentation.

7.2.6. The Contractor shall submit documentation, intended for review by the Purchaser, with each modification identified through the change tracking feature or otherwise marked in the revision table.

7.2.7. The Contractor shall submit all final and accepted versions of documentation deliverables in electronic format, as PDF (OCR), accompanied with a Microsoft Office version for editing purposes.

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

7.2.8.1. 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);

7.2.8.2. No document shall use Headings below level 6 (i.e. 1.1.1.2.3.1 Heading Text);

7.2.8.3. 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);

7.2.8.4. Any graphic material generated under this Contract, shall not use font sizes smaller than Arial 8 (or equivalent size if another font type(s) is (are) selected).

7.2.9. 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.

7.2.10. 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 except COTS equipment documentation.

7.2.11. Every page shall include a header and footer indicating the highest classification of content on that page using the following labels: NATO R*STRICT*D (sensitive information identifying e.g. a named location or security assessment), or NATO UNCLASSIFIED.

7.2.12. All electronic copies shall be delivered in a format which is best suited for review and maintenance by the Purchaser (e.g., Project Master Schedule in MS Project format, Project Progress Reports in MS Word). In general the following guidelines shall be used: Microsoft Word shall be used for generating text document; Microsoft Excel shall be used for tabular or matrix data; Microsoft Visio shall be used for drawings; Microsoft Project shall be used for schedule; and Microsoft PowerPoint shall be used for briefings. The rest of deliverables will be furnished as electronic copy of the agreed tools/media used.

7.2.13. All documentation; such as: COTS documentation, manuals, drawings and training materials shall be provided in English.

7.2.14. The convention for numbers appearing in textual documents shall be a comma to be the thousands separator and a period to be the decimal separator (e.g., 1,365,276.24).

7.2.15. The convention for dates appearing in free text (e.g., quoting dates of meetings) shall be day-month-year and not month-day-year.

7.2.16. 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.

7.2.17. 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.

7.2.18. All documents shall contain a preface, containing details of related documents and information on how to navigate the document.

7.2.19. Where documents contain many complex specialized or strongly domain oriented terminologies these shall be defined in a glossary.

7.2.20. The Contractor shall remain responsible for updating the documentation that is affected by the changes in the system requirements, design, or support arrangements throughout the project.

7.3. Documentation Review

7.3.1. The Contractor shall provide a first draft (version 0.1) of each deliverable for Purchaser review by the date presented at SSS.

7.3.2. The Purchaser will provide comments, corrections, and suggested changes to the Contractor within two weeks of receipt.

7.3.3. The first draft shall be substantially complete and correct, and delivered in accordance with the delivery dates specified at SSS.

7.3.4. The Purchaser reserves the right to return without review a document that has significant deficiencies.

7.3.5. The Contractor shall not rely on the Purchaser review to fill in deficiencies or obtain missing Purchaser information.

7.3.6. The Contractor shall resubmit the document as a revised version incorporating the Purchaser's comments within two (2) weeks after receipt.

7.3.7. The Contractor shall provide the final version of documents with the dates specified in SSS.

7.3.8. If the document is included as part of the Product Baseline, the Contractor shall remain responsible for updating the document to reflect changes in the system requirements, design, or support arrangements.

7.4. System Documentation

7.4.1. The System Documentation, to be supplied shall include:

- Operation and Maintenance Manuals;
- Original Equipment Manufacturer’s (OEM) Manuals;
- As-Built Drawings;
- Training Documentation;
- Test Procedures & Test Reports.

7.4.2. Operation & Maintenance (O&M) Manuals

7.4.2.1. The Operation & Maintenance Manual shall describe:

- The complete system by the explanation of functional blocks including an illustrated parts breakdown. In-depth specifications and lower level repair and maintenance of sub-assemblies and major system components are expected to be addressed by the Original Equipment Manufacturers’ (OEM) Manuals;
- The operation and maintenance tasks for all the different users, standard trouble shooting, tests and repair procedures;

- The operational performance, services and the means of control, diagnostics and measurements for the operators;
- All software features, menus and supporting graphics.

7.4.2.2. The Operation and Maintenance Manuals shall contain:

- A Preface including a summary description, major features and restrictions, a table of contents and a list of illustrations, drawings, and acronyms;
- A System Block diagram with general description of all the important functional and performance parameters of the constituent assemblies,
- Equipment Descriptions indicating whether there is an Original Equipment Manufacturer (OEM) manual that has been delivered with the system documentation. For all equipment which does not have an OEM Manual, the Contractor shall provide detailed specifications for the equipment, including drawings and diagrams as well as instructions for replacing/repairing the equipment;
- Installation and Commissioning Instructions describing the electrical, mechanical and setting information and step-by-step instructions necessary for mounting and de-mounting the major assemblies, subassemblies, and components;
- Operating Instructions including the basic operating procedures, interpretation of alarm and warning and associated immediate action instructions, emergency procedures and back-up systems;
- Routine and preventive Maintenance tasks necessary to ensure continuous and satisfactory performance of the equipment. This information shall be based upon scheduled maintenance periodicity as applicable, typically either daily, weekly, monthly, bi-annually, annually or otherwise;
- Fault finding techniques containing a description of the faults most likely to occur, with the related symptoms, comprehensive procedures for fault tracing and any special servicing instructions;
- Drawings, illustrations, photographs, circuit diagrams.

7.4.3. Where Original Equipment Manufacturer Manuals do not exist, or are inadequate in detail, component Drawings & Schematic Diagrams shall be delivered by the Contractor.

7.4.4. The scale of all drawings shall be quoted, where applicable.

7.4.5. The Operation and Maintenance Manuals shall be provided as an electronic copy printable in DIN A4 format.

7.4.6. OEM Manuals

7.4.6.1. For all equipment and assemblies which the Contractor obtains from other manufacturers/vendors, the Contractor shall provide the Original Equipment Manufacturer's Manual. These Manuals should provide the detailed information necessary to disassemble and assemble the units down to the lowest replaceable unit level of maintenance and provide the necessary drawings/schematics, specifications, wiring diagrams, to allow to trouble shoot and fully understand the design and operation of the particular equipment.

7.4.6.2. OEM manuals are to supplement the Operation and Maintenance Manuals and thus are expected to be referenced in the latter as a way of providing the specific detail on the particular equipment.

7.4.7. As-built drawings

7.4.7.1. At the completion of each installation the Contractor shall deliver as-built drawings to the purchaser.

7.4.7.2. The as-built drawings shall provide full details of how all of the major assemblies of the supplied equipment have been physically installed and mechanically/electrically integrated.

7.4.7.3. As-built drawings shall be self-explanatory and independent of any other document. The as-built drawings should - as a minimum - indicate:

- Full dimensioned details of how all the major assemblies of the supplied equipment are physically installed and mechanically and/or electrically integrated;
- Location plan with complete details of all connection;
- Physical details of all cable racking and cable numbers;
- The functions of all inter-connecting cables, colour code and their function;
- Configuration parameters and networking information;
- Details covering all wiring termination points including wire numbers and colour coding, if applicable;
- Ancillary equipment details to include, as appropriate, connection points and termination points.

7.4.7.4. The number and scale of each drawing (where applicable) shall be clearly indicated, in addition to the issue number of each drawing.

7.4.7.5. The Contractor shall provide the As-built Drawings in electronic form and with file formats compatible with MS Visio (2016).

7.4.7.6. A copy of all the ABDs shall also be provided in PDF.

7.4.8. Training Documentation

7.4.8.1. Training documentation shall be produced and delivered in accordance with the requirements specified in paragraph 5.7 of this SoW.

7.4.9. Test Procedures & Test Reports

7.4.9.1. Test Procedures & Test Reports shall be produced and delivered in accordance with the requirements specified in 3.4 of this SoW.

7.4.10. Contract Document Requirements List (CDRL)

7.4.10.1. The Contractor shall update, maintain and provide to the Purchaser a Contract Document Requirements List (CDRL) as part of the Project Status Report. The CDRL shall contain the status of all documentation to be provided under the Contract: Title, reference, quantity and status (i.e. draft, approved, revision level). A final version of the CDRL shall be delivered to the Purchaser prior to Final System Acceptance.

7.4.10.2. The Contractor shall also maintain version control of all documentation submitted throughout the Project life cycle.

7.5. Delivery of Documentation

7.5.1. The Contractor shall deliver the documents listed in the SoW and shall remain responsible for producing any required changes to the documentation during the warranty period. These shall always be in the form of change pages; pen and ink corrections shall not be acceptable.

7.5.2. The Contractor shall be the responsible authority for the issue, control, and distribution of amendments to delivered documentation in the format provided for the associated equipment or system until expiration of the warranty period.

SECTION 8 OPTIONAL SITES

8.1 During the Period of Performance, the Purchaser shall have the right to exercise the Option in the Schedule of Supplies and Services (SSS) and/or the SOW at any time.

8.2 NCI Agency reserves the right to modify the services stated above during the life of this contract in order to ensure that additional sites needing installation and integration of the DAVS system are properly satisfied within the scope of this contract. Minor operational changes to the agreed service levels, times, and locations may be directed by the Purchaser for the same or similar equipment needs and services. Such changes shall be made via amendment to the Contractor by the Contracting Officer.

8.3 The contractor must have the flexibility to adjust the working patterns, within the scope if the option is exercised incorporating additional sites, subject to a notice period of 30 days.

SECTION 9 APPLICABLE DOCUMENTS

9.1. General information

9.1.1. Reference documents outline procedures and standards related to NATO. They shall be used by the Contractor to support its activity, where applicable.

9.1.2. Throughout this section, a wide range of reference documents are indicated, such as NATO Standardisation Agreements (STANAG). As each such reference may exist in multiple versions, the following list indicates the applicable versions of all references used herein. Each reference is indicated by document number, edition, document title, date and classification.

9.2. Reference documents:

9.2.1.1. [AAP-6] (2009) dated 28 April 2009, NATO Glossary of Terms and Definitions (English and French), 01 April 2008,

9.2.1.2. [AAP-15] (2010) dated 25 January 2010, NATO Glossary of Abbreviations used in NATO Documents and Publications, Feb 08,

9.2.1.3. [AC/322-D(2004)0022(INV)], Guidance for Consistent Marking of NATO Information in C3 Systems, 16 Mar 04,

9.2.1.4. [ACC/322-D/0048-Rev3] Controls Systems Technical and Implementation Directive for CIS Security, NATO UNCLASSIFIED,

9.2.1.5. [STANAG 4728] System Life Cycle Management (SLCM),

9.2.1.6. [ISO/IEC 15288] System and software engineering – System life cycle processes,

9.2.1.7. [AAP-48] NATO System Life Cycle Stages and Processes,

9.2.1.8. [ALP-10] NATO Guidance on Integrated Logistics Support for Multinational Armament Programmes,

9.2.1.9. [ASD SX000i] International Guide for the use of the S-Series Integrated Logistic Support (ILS) Specifications,

9.2.1.10. [ASD S3000L] International Procedure Specification for Logistic Support Analysis LSA,

9.2.1.11. [MIL-STD-1629A] Procedures for performing a Failure Mode, effects and Criticality Analysis,

9.2.1.12. [STANAG 4329] Standard NATO Bar Code Symbologies – AAP-44(A),

9.2.1.13. [AAP-44] NATO Standard Bar Code Handbook,

9.2.1.14. [IEC 15288] Systems and Software Engineering – System Life Cycle Process,

9.2.1.15. [IEC 12207] – Software Life Cycle Process,

9.2.1.16. [STANAG 4427] Configuration Management in System Life Cycle Management,

9.2.1.17. [ACMP-2000] Edition A Policy on Configuration Management,

9.2.1.18. [ACMP-2009] Edition A Guidance on Configuration Management,

9.2.1.19. [ACMP-2100] Edition A Configuration Management Contractual Requirements,

9.2.1.20. [ISO 10007] Quality Management System – Guidelines for Configuration Management,

9.2.1.21. [STANAG 4107] Mutual acceptance of Government Quality Assurance and usage of the Allied Quality Assurance Publications (AQAP),

9.2.1.22. [AQAP 2070] NATO Mutual Government Quality Assurance (GQA) Process,

9.2.1.23. [AQAP 2110] NATO Quality Assurance Requirements for Design, Development and Production,

9.2.1.24. [AQAP-2131] NATO Quality Assurance Requirements for Final Inspection and Test,

9.2.1.25. [AQAP 2310] NATO Quality Management System Requirements for Aviation, Space and Defence Suppliers,

9.2.1.26. [AQAP 2210] NATO Supplementary Software Quality Assurance Requirements to AQAP 2110,

9.2.1.27. [AQAP 2105] NATO Requirements for Quality Plans,

9.2.1.28. [AQAP 2000] NATO Policy on an Integrated Systems Approach to Quality through the Life Cycle",

9.2.1.29. [AQAP 2009] NATO Guidance on the Use of the AQAP 2000 Series,

9.2.1.30. [ISO 9000] Quality Management Systems — Fundamentals and Vocabulary,

9.2.1.31. [IEC 60050] International Electrotechnical Vocabulary,

9.2.1.32. [IEC 15288] Systems and Software Engineering – System Life Cycle Process,

9.2.1.33. [IEC 12207] Software Life Cycle Process,

9.2.1.34. SDIP 27/2, NATO TEMPEST Requirements and Evaluation Procedures, dated March 2016, NATO CONFIDENTIAL,

9.2.1.35. [IEC 61603-7] Transmission systems of audio and/or video and related signals using infra-red radiation. Digital audio signals for conference and similar applications,

9.2.1.36. [IEC 60914] Conference Systems. Electrical and Audio Requirements.

SECTION 10 LISTS OF ACRONYMS AND DEFINITIONS

10.1. List of acronyms

ABD	As-Built Drawing
ABL	Allocated Baseline
ACMP	Allied Configuration Management Publication
AP	Attaching Part
AQAP	Allied Quality Assurance Publication
CDO	Closed Door Operation
CDR	Critical Design Review
CDRL	Contract Document Requirement List
CI	Configuration Item
CIS	Communication and Information Systems
CLIN	Contract Line Item Number
CLS	Contractor Logistic Support
CM	Configuration Management

CM	Configuration Management
CMDB	Configuration Management Data Base
CoC	Certificate of Conformance
CoC	Certificate of Conformity
COTS	Commercial Off-the-Shelf
COTS	Commercial Over The Shelf
CR	Change Request
CSC	Computer Software Component
CSCI	Computer Software Configuration Item
CSU	CIS Support Unit
DB	Database
DDP	Delivery Duty Paid (Incoterms)
DoC	Declaration of Conformity
ECO	Engineering Change Order
ECP	Engineering Change Proposal
ECP	Engineering Change Proposal
EDC	Effective Date of Contract
ESD	Electrostatic Discharge
FAT	Factory Acceptance Test
FBL	Functional Baseline
FSA	Final System Acceptance
FW	Firmware
GQAA	Government Quality Assurance Authority
HL	Hardware Level (Maintenance Level)
HQ	Headquarters
HVAC	Heating, ventilation, and air conditioning
HW	Hardware
HWCI	Hardware Configuration Item
HWP	Hardware Parts
IFB	Invitation for Bid
II	Insurance Item

ILS	Integrated Logistics Support
ILSP	Integrated Logistics Support Plan
IOC	Initial Operational Capability
IP	Internet Protocol / Ingress Protection
ISD	Item Setting Documents
IV&V	Independent Verification and Validation
JFCB	Joint Force Command Brunssum
LBS	Logistics Breakdown Structure
LRU	Line Replaceable Unit
LSA	Logistics Support Analysis
LT	Lead Time
Mil STD	Military Standard
MoP	Measures of Performance
MOQ	Minimum Order Quantity
MSI	Maintenance Significant Item
MTBF	Mean-Time Between Failures
MTBP	Mean Time Between Preventative Maintenance
MTTP	Mean Time to Preventative Maintenance
MTTR	Mean Time To Repair
NATO	North Atlantic Treaty Organisation
NBD	Next Business Day
NCAGE	NATO Commercial and Government Entity code
NCIA	NATO Communication and Information Agency
NFE	National Furnished Equipment
NHA	Next Higher Assembly
NLT	No Later Than
NQAR	National Quality Assurance Representative
NR	NATO R.E.S.T.R.I.C.T.E.D (classification)
NS	NATO S.E.C.R.E.T. (classification)
NSN	NATO Stock Number
NSPA	NATO Supply and Procurement Agency

NU	NATO UNCLASSIFIED (classification)
O&M	Operation and Maintenance
PBL	Product Baseline
PBS	Product Breakdown Structure
PCA	Physical Configuration Audit
PDF	Portable Document Format
PDR	Preliminary Design Review
PFE	Purchaser Furnished Equipment
PFE	Purchaser Furnished Equipment
PHST	Packing, Handling, Storage, Transportation
PIP	Project Implementation Plan
PLM	Product Lifecycle Management
PM	Project Manager
PMO	Project Management Office
PMP	Project Management Plan
PMS	Project Master Schedule
PoC	Point of Contact
PRM	Project Review Meeting
PSA	Provisional System Acceptance
QA	Quality Assurance
QA	Quality Assurance
QAC	Quality Assurance -and Control
QACS	Quality Assurance -and Control System
QAR	Quality Assurance Representative
QC	Quality Control
QEI	Quantity per End Item
RCIL	Recommended Consumables Item List
RIL	Recommended Items List
RMA	Reliability, Maintainability, Availability
RSPL	Recommended Spare Parts List
RTTL	Recommended Tools and Test Equipment List

SAT	System Acceptance Test
SHAPE	Supreme Headquarters Allied Powers Europe
SL	Software Level (Maintenance Level)
SLA	Service Level Agreement
SOW	Statement of Work
SOW	Statement of Work
SPOC	Single Point of Contact
SRN	Software Release Note
SRR	System Requirements Review
SRS	System Requirements Specification
SSP	Site Survey Plan
SSR	Site Survey Report
SSS	Schedule of Supply and Services
SSS	Schedule of Supplies and Services
STANAG	Standardization Agreement
SW	Software
SWDL	Software Distribution List
TAT	Turn-Around-Time
TP	Test Plan
UPS	Uninterrupted Power Supply
VDD	Version Description Document
WBS	Work Breakdown Structure

10.2. List of definitions

10.2.1. Scope

10.2.1.1. This section specifies the Maintenance Levels, the Support levels and the relevant activities to be carried on by the involved actors.

10.2.1.2. The SOW specifies who is responsible for what, at the various Maintenance/Support levels from PSA to the End of Warranty.

10.2.1.3. Before PSA the responsibility of any maintenance/support activity is and remains with the Contractor.

10.2.2. Maintenance Concept

10.2.2.1. A Maintenance Concept is a definition of the maintenance objectives, line of maintenance, indenture levels, maintenance levels, maintenance support and their interrelationships.

10.2.2.2. A Maintenance Concept is applied both for hardware and software and produces maintenance tasks that will be performed on site, at civil or military maintenance facilities, at industry (OEM, Contractor) maintenance facilities. The Maintenance concept identifies who-does-what-at-what-level in accordance with the Maintenance levels and definitions defined below. The main SOW identifies clearly what is the Maintenance concept for the project(s).

10.2.3. Maintenance Levels (line of maintenance)

10.2.3.1. A Maintenance level is the position in an organization where specified levels of maintenance are to be carried out. The line of maintenance is characterized by the skill level of the personnel, the facilities and tools provided, the location.

10.2.3.2. There are four (4) Maintenance Levels to ensure the highest possible availability of the Product:

10.2.3.2.1. Level 1: implies a fast and easy exchange of Maintenance Significan Items (MSIs, see B.4.2) performed on the Product by organizational personnel when a malfunction occurs;

10.2.3.2.2. Level 2: implies exchange of MSIs and/or the replacement of modules, performed on the Product by organizational personnel when a malfunction occurs;

10.2.3.2.3. Level 3: implies the repair of subassemblies, modules and MSIs after their replacement at maintenance Level 1 and Level 2. Testing on test-benches or integration tests can be included. This maintenance level can be performed either on product (e.g. on-site) or at specific repair shops/facilities;

10.2.3.2.4. Level 4: all repairs and overhaul activities beyond Level 1 to Level 3 capabilities must be ensured (e.g.: repair of subassemblies, modules and LRUs after their replacement at maintenance Level 1 to Level 3; major modifications to improve the design and/or operational activities will be prepared and, if necessary, embodied at this level).

10.2.4. Hardware Maintenance and Hardware Change

10.2.4.1. The hardware maintenance is:

10.2.4.1.1. Corrective:

10.2.4.1.1.1. Deferred: maintenance carried out to perform a Remove & Replace action of a faulty item not affecting system operation. It is done in a time slot that does not further impact the Operational Availability (e.g. during a schedules maintenance downtime period) or on “live” equipment if this is possible (e.g. when active redundancy or hot stand-by are implemented).

10.2.4.1.1.2. Run-to-failure: maintenance carried out to perform a Remove & Replace action of a faulty item affecting system operation (critical failure). The action is done as soon as all the resources (skills, tools and spares) are available to minimise the System downtime.

10.2.4.1.2. Preventative:

10.2.4.1.2.1. On-condition: maintenance carried out to mitigate degradation and reduce the probability of failure after analysis of system conditions through defined indicators assessed on a periodic basis.

10.2.4.1.2.2. Scheduled (planned): maintenance carried out on a periodic basis (time-related or number-of-occurrences-related).

10.2.4.2. The hardware maintenance concept shall be based on the modularity of the equipment. The items to be removed from the system/equipment for replacement, to be repaired or to be replaced/refilled for preventative maintenance shall be defined MSIs (Maintenance Significant Items), with the following characteristics:

10.2.4.2.1. Include those items in the Logistic Breakdown Structure (LBS) which are significant for maintenance at the Organisational Level.

10.2.4.2.2. Include all the candidate items of the spare parts and consumables lists.

10.2.4.2.3. Are subdivided into the following categories:

10.2.4.2.3.1. LRU (Line Replaceable Unit)

10.2.4.2.3.1.1. Its failure can be detected and indicated by a BIT (Built In Test System) system or by abnormal condition/failure display/alarm, in conjunction with Technical Manuals (TMs) and general-purpose test equipment and troubleshooting procedures;

10.2.4.2.3.1.2. It is easily accessed for replacement purposes;

10.2.4.2.3.1.3. It is easy to replace, through the use of a plug-in connector, screwed terminal, nut/bolt fixing or similar connector;

10.2.4.2.3.1.4. It has minimal adjustment/alignment requirements, such as voltage level settings, SW/FW installations/adaptations;

10.2.4.2.3.1.5. Adjustments may be carried out with the Built-In test (BIT) or with general-purpose HW/SW tools and test equipment;

10.2.4.2.3.1.6. When only one LRU has failed, its replacement returns the system/equipment to full operational status.

10.2.4.2.3.1.7. LRUs are subdivided into the following two categories:

10.2.4.2.3.1.7.1. Statistical (LS): This category includes (but it’s not limited to) the items subject to faults that occur with a statistical probability (most of them are

electronic items) e.g. IF/RF strips/boards, SBCs, PPCs, Computers/Servers/Workstations and theirs components/peripherals, Networking equipment (Routers, switches), Power Supplies, electric/electronic components in general.

10.2.4.2.3.1.7.2. Limited Life (LL): This category includes (but it's not limited to) the items whose faults are due to ageing (most of them are electromechanical items) e.g. TWTs, Rotary Joints, Slip Rings, Engines, T/R switches, Fans and Fan Assemblies.

10.2.4.2.3.1.7.3. Insurance Item (II): This category includes (but it's not limited to) those items that have a very low failure rate and whose replacement may be necessary as a consequence of deterioration or fault by accident e.g. passive elements (attenuators, couplers, circulators, terminations), circuit breakers, patch panels, cables, metallic frames/cabinets/chassis.

10.2.4.2.3.2. Consumable Items:

10.2.4.2.3.2.1. Consumables are subdivided into the following three categories:

10.2.4.2.3.2.1.1. Technical Consumables (C[T]): This category of consumables includes (but it's not limited to) Fuses, Bulbs, Lamps, Gaskets, o-rings, EMI/Tempest seals, Surge Protectors, gas dischargers, Batteries and, in general, any other item replaced in case of preventive or corrective maintenance on the System.

10.2.4.2.3.2.1.2. Not-Technical Consumables (C[NT]): This category of consumables includes (but it's not limited to) all POLs (Petrol, Oils, Lubricants), adhesive, sealing paste, gas and, in general, any other item replaced in case of preventative or corrective maintenance on the System.

10.2.4.2.3.2.1.3. Generic Consumables (C[G]): This category of consumables includes (but it's not limited to) ink cartridges, toners, printing paper, print ribbons, generic cleaning material and in general all the materials whose consumption cannot be predicted (e.g. is not associated to any preventative or corrective maintenance on the System).

10.2.4.2.3.3. Attaching Parts (AP)

10.2.4.2.3.3.1. The Attaching Parts are the items reported in the Corrective and Preventative Maintenance Procedures and in the Illustrated Parts Breakdown such as screws, gaskets, nuts, bolts, washers.

10.2.4.3. Hardware Maintenance Levels

10.2.4.3.1. The hardware maintenance levels used are generally known as HL1, HL2 HL3 and HL4.

10.2.4.3.1.1. Organizational Maintenance (HL1) is Hardware maintenance capable of being carried out:

10.2.4.3.1.1.1. on-site;

10.2.4.3.1.1.2. by relatively low technical skill level personnel performing preventive maintenance and changing Line Replaceable Units (LRU) and Insurance Items (IIs) on the basis of diagnostic outputs;

10.2.4.3.1.1.3. using Built-In-Test (BIT) facilities for start-up and on-line diagnostics, by referring to main equipment Technical Manuals (TM);

10.2.4.3.1.1.4. no Special Tools and Test Equipment (TTE) are envisioned to be used;

10.2.4.3.1.1.5. typical tasks will include visual inspection, preventative maintenance tasks, manual reconfiguration if necessary, external adjustments, removal and replacement of LRUs/IIs;

10.2.4.3.1.1.6. includes system failure recovery by the application of simple on-line diagnostics or technician initiated restart of the system and the use of off-line diagnostics which do not require external test module support;

10.2.4.3.1.1.7. generation of equipment failure reports, supply requisitions and other pertinent maintenance and supply records.

10.2.4.3.1.2. Organizational Maintenance (HL2) is Hardware maintenance capable of being carried out:

10.2.4.3.1.2.1. on-site;

10.2.4.3.1.2.2. by higher technical skill level personnel performing preventive maintenance and changing Line Replaceable Units (LRU) and Insurance Items (IIs) on the basis of diagnostic outputs;

10.2.4.3.1.2.3. using Built-In-Test (BIT) facilities for start-up and on-line diagnostics, simple Tools and Test Equipment (TTE) (standard and special-to-type) in addition to BIT as a means for on-line and off-line diagnostics, and by referring to main equipment Technical Manuals (TM) to perform exhaustive fault isolation;

10.2.4.3.1.2.4. simple either commercial or special-to-type TTE are envisioned to be used (e.g.: screwdrivers, multimeters, oscilloscope, adapters, peculiar support equipment);

10.2.4.3.1.2.5. where the fault is beyond the capabilities of HL1 technical support, HL2 activities will be performed by Support Site personnel (through on-site intervention);

10.2.4.3.1.2.6. where remote fault management is not feasible, technicians from the host site will travel to the remote site hand carrying relevant spares to perform maintenance tasks;

10.2.4.3.1.2.7. generation of equipment failure reports, supply requisitions and other pertinent maintenance and supply records.

10.2.4.3.1.3. Intermediate Maintenance (HL3) is Hardware maintenance capable of being carried out;

10.2.4.3.1.3.1. at maintenance facilities and through technical support and assistance or on-site intervention/work by maintenance personnel with skills enabling tasks to be accomplished within the relevant technologies;

10.2.4.3.1.3.2. by higher technical skill level personnel performing:

10.2.4.3.1.3.3. repairing, testing and calibrating Line Replaceable Units (LRU), Shop Replaceable Units (SRU) and secondary spare parts (SSPs);

10.2.4.3.1.3.4. on-site investigations and major scheduled servicing/overhaul, detailed inspection, major equipment repair, major equipment modification, complicated adjustments, system/equipment testing;

10.2.4.3.1.3.5. failure trend analysis including reporting to relevant Purchaser authorities and Post Design Services (PDS);

10.2.4.3.1.3.6. repair tasks will be performed using Automatic Test Equipment (ATE), general purpose and special-to-type TTE, calibration equipment, any applicable support software, and the necessary equipment TMs and a Technical Data Package (TDP);

10.2.4.3.1.3.6.1. where the fault is beyond the capabilities of HL1/2 technical support, HL3 activities will be performed by Support Site personnel (through on-site intervention) or by the Contractor, depending on the Maintenance Concept;

10.2.4.3.1.3.6.2. It includes generation of equipment failure reports, supply requisitions and other pertinent maintenance and supply records.

10.2.4.3.1.4. Depot Maintenance (HL4) is Hardware maintenance capable of being carried out:

10.2.4.3.1.4.1. at maintenance facilities (industry or military, OEMs) and through technical support and assistance or on-site intervention/work by maintenance personnel with skills enabling tasks to be accomplished within the relevant technologies;

10.2.4.3.1.4.2. where the fault is beyond the capabilities of HL1-3 technical support, HL4 activities will be performed by the Contractor;

10.2.4.3.1.4.3. It includes generation of equipment failure reports, supply requisitions and other pertinent maintenance and supply records.

10.2.5. Software Maintenance and Software Change

10.2.5.1. The software maintenance is a modification for the purposes of software fault removal, adaptation to a new environment, or improvement of performance.

10.2.5.2. The software maintenance for the purposes of software faults avoidance, identification and/or removal can be:

10.2.5.2.1. Corrective/Unscheduled - it refers to tasks necessitated by actual errors in a software product. If the software product does not meet its requirements, corrective maintenance is performed. It is a Reactive modification of a software product performed after a new version is made available (patch/update) to correct the discovered problem(s). This activity is linked to Configuration Management, change management (Contractor initiated ECP), new SW release(s) and Product baseline (PBL) change.

10.2.5.2.2. Preventative/Scheduled – it refers to tasks necessitated for detecting potential errors in a software product or anticipate and avoid potential failures (daily checks, DBs clean up/integrity checks, cache cleaning, rebooting/restarting). The task can lead, if latent failures are discovered, to a modification of a software product after delivery to detect and correct latent faults in the software product before they become effective faults (leading to a deferred corrective action).

10.2.5.3. The software maintenance for the purposes of adaptation to a new environment, or improvement of performance is a software change that enhances the software product. These changes are those that were not in the original design specifications or in the originally released software and are subject to purchaser initiated ECPs:

10.2.5.3.1. Adaptive maintenance: software maintenance for the purposes of adaptation to a new environment (e.g.: a new environment could be a new type of hardware or a new operating system on which the software is to be run). Adaptive refers to a change necessary to accommodate a changing environment. Adaptive changes include changes to implement new system interface requirements, new system requirements, or new hardware requirements. This is a modification of a software product performed after delivery to keep a software product usable in a changed or changing environment.

10.2.5.3.2. Perfective maintenance: software maintenance performed to improve the performance, maintainability, or other attributes of a computer program (e.g.: maintenance that adds new required functions is often referred to as enhancement). Perfective refers to a change that improves the software product's performance. A perfective change might entail providing new functionality improvements for users or reverse engineering to create maintenance documentation that did not exist previously or to change existing documentation. This is a modification of a software product after delivery to improve performance or maintainability.

10.2.5.4. Software Maintenance Levels

10.2.5.4.1. The software maintenance levels used are generally known as SL1, SL2 SL3 and SL4.

10.2.5.4.1.1. Organizational Maintenance (SL1) is Software maintenance capable of being carried out with the same characteristics highlighted for HL1. SL1 are those functions/tasks in support of the on-site software that are within the capabilities of site maintenance personnel. This includes software failure recovery by the application of simple diagnostics, or site maintenance personnel initiated restart.

10.2.5.4.1.2. Organizational Maintenance (SL2) is Software maintenance capable of being carried out with the same characteristics highlighted for HL2 e.g. SW settings, simple SW customizations (per site/instance), SW reloading/installation with automated or detailed procedures reported in the TMs, execution of scripts, management of users/profiles. SL2 are those functions/tasks in support of the on-site software that are within the capabilities of a System Administrator.

10.2.5.4.1.3. Intermediate Maintenance (SL3) is Software maintenance capable of being carried out with the same characteristics highlighted for HL3 e.g. SW/FW fine tuning (per site/instance), SW/FW bugs recording and reporting, SW/FW troubleshooting including Operating Systems. SL3 (on-site intervention) comprises those functions/tasks in support of the on-site software that require specialist intervention (SW System architects, SW programmers, experienced Systems' Administrators, Network specialists). The tasks can be performed either by software personnel visiting the site or by remote diagnostics if enabled by the System and allowed by NCIRC.

10.2.5.4.1.4. Depot Maintenance (SL4) is Software maintenance capable of being carried out with the same characteristics highlighted for HL4 e.g. SW/FW debugging, re-coding and testing (both in simulated and emulated environments), SW/FW patches creation and deployment. The tasks can be performed by software engineers in properly configured environments (SW development and testing facilities) under strict Configuration Control.

10.2.6. Support Concept

10.2.6.1. A Support Concept is a definition of the support objectives (scenarios) in relation with maintenance levels, maintenance support and their interrelationships.

10.2.6.2. This is peculiar for IT/SW-intensive and IT/SW-driven systems and shall be implemented in conjunction and coordination with the Maintenance Concept.

10.2.6.3. Support levels

10.2.6.3.1. There are (4) support levels

10.2.6.3.1.1. First level support (on-site, non-specialised)

10.2.6.3.1.1.1. It consists of simple routine administration and activities. This level is user facing and is the first line of technical support. A single point of contact inside the NCI Agency central Service Desk is provided to customers for the implemented services. The Service Desk will log, categorise, prioritise, diagnose and resolve incidents within the boundaries of their training and permissions. The pertinent NCI Agency CIS Support Units (CSUs) carry

out this level of support, in coordination with the NCI Agency Centralised Service Desk.

10.2.6.3.1.1.2. The 1st Level Support Process implements the Incident Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent;

10.2.6.3.1.1.3. 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.

10.2.6.3.1.2. Second level support (centralised)

10.2.6.3.1.2.1. It provides escalated technical support to incident investigation and diagnosis. This level delivers advanced expertise to process services related to centralised system operations, fault isolation, system administration, management of maintenance services, system configuration, including reconfiguration of data sources and data connectivity to restore operations, assistance to first level and on-site support. This level performs end-to-end service monitoring and takes actions to resolve the incident and recover the services impacted.

10.2.6.3.1.2.2. The 2nd Level Support Process implements the Problem Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent;

10.2.6.3.1.2.3. The Problem Management process receives the TT from the Service Desk and performs the following tasks:

10.2.6.3.1.2.3.1. (Re-)evaluation of TT category, criticality and priority;

10.2.6.3.1.2.3.2. Identification of the root cause of the issue (e.g. by issue replication testing);

10.2.6.3.1.2.3.3. Identification of workarounds;

10.2.6.3.1.2.3.4. Identification and initial planning of possible short, medium and long-term solutions (e.g. Workarounds, Patches, or new Baseline or CI Releases);

10.2.6.3.1.2.3.5. Create Problem Analysis Report and Change Request (CR) incl. schedule of implementation, and synchronisation with the Baseline Maintenance process;

10.2.6.3.1.2.3.6. Presentation of the Problem Analysis Report and CR to the Change Control Board (CCB) for approval;

10.2.6.3.1.2.3.7. Monitor and Control the approved CR during implementation;

10.2.6.3.1.2.3.8. Trigger 3rd Level Support and/or 3rd Level Maintenance process to implement the CR;

10.2.6.3.1.2.3.9. Perform the post- CR implementation review.

10.2.6.3.1.3. Third level support (centralised)

10.2.6.3.1.3.1. It consists of central service management, central problem isolation and resolution, system-level maintenance, local repairs or spares provision, and management of deficiencies and warranty cases, beyond the capability of the second level support.

10.2.6.3.1.3.2. The 3rd Level Support Process implements the Deployment and Release Management process in accordance with the ISO/IEC 20000 and ITIL framework or equivalent.

10.2.6.3.1.3.3. The Deployment and Release Management process receives the approved Change Request from the 2nd Level Support and performs the following tasks:

10.2.6.3.1.3.3.1. Release of the solution (release unit/record);

10.2.6.3.1.3.3.2. Development of the solution (e.g. new CI Fix, Repair, Replacement, Patch, or Release);

10.2.6.3.1.3.3.3. Testing of the solution (e.g. Regression testing, issue/deficiency replication testing);

10.2.6.3.1.3.3.4. Update of Baseline content and status;

10.2.6.3.1.3.3.5. Delivery and deployment of the solution.

10.2.6.3.1.4. Fourth level support (OEM/vendor)

10.2.6.3.1.4.1. It consists of off-site factory/vendor problem resolution and maintenance, beyond the capability of third level support.

10.2.7. Support scenarios

10.2.7.1. The support concept is the apportionment of maintenance activities:

10.2.7.1.1. NATO Maintenance Task (NMT) will be performed by NATO personnel (military or civilian);

10.2.7.1.2. Industry Maintenance Task (IMT) will be performed by industry personnel under Warranty or Post Warranty Arrangement arrangement.

10.2.7.2. Theoretically there are four possible scenarios:

10.2.7.2.1. NONO – NATO Owned / NATO Operated. If this approach is chosen the solution would be procured as a system and would be operated and

maintained by NATO. The responsibilities for NATO maintenance levels are defined in the Maintenance Concept;

10.2.7.2.2. COCO – Contractor Owned / Contractor Operated. If this approach is chosen NATO would have the solution delivered by a Contractor as a Service;

10.2.7.2.3. NOCO – NATO Owned / Contractor Operated. With this approach NATO would procure a system, but would “outsource” the Operation and Maintenance of it;

10.2.7.2.4. CONO – Contractor Owned / NATO Operated. This approach exists and is usually called “Financial leasing”.

10.2.7.3. For NONO and CONO scenario the Contractor shall agree with the Purchaser on maintenance levels commitments and develop a tailored logistic support concept based on a blended sharing of maintenance levels (this means that the Contractor shall apply the Maintenance Concept defined in the SOW).

10.2.7.4. For NOCO and COCO scenario the Contractor is responsible for all the Maintenance Levels (HL 1/2/3/4 and SL 1/2/3/4.

NATO Communications and Information Agency

Discussion and Audio Visual Systems for JFC Brunssum

Short Title: DAVS for JFCB

Book II – Part IV

Statement of Work (SoW)

Annex A – System Requirements Specification (SRS)

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1.1. Introduction

1.1.1. Purpose

The purpose of this System Requirements Specification (SRS) (as Annex A to the Statement of Work) is to define the functional and technical requirements for the DAVS components and their integration with the existing infrastructure and PFE. The SRS defines the quantity, standards, quality, design requirements and constraints that shall be adhered to in the design and implementation of DAVS in JFCB.

1.2. JFCB JOC Conference Rooms Systems Requirements Specifications

1.2.1. General Description

1.2.1.1. Summary

This section describes the requirements for the Joint Operations Centre (JOC) Floor Conference Room and the JOC Conference Room. These Conference Rooms require replacement of all AV hardware. The technical requirements listed in this SoW outline both Technical and Functional Requirements. The Contractor shall deliver an installation, fully compliant with all aspects as described in the SoW. If any aspects or details are missing or not fully described, the Contractor is responsible to include them in the bid proposal. Should anything be required for inclusion after the bid is awarded, the Contractor shall include it at no additional cost. The Contractor shall deliver no less than a compliant and fully working installation. The hardware description in this document targets specific devices. The

Contractor shall only be allowed to propose or install hardware with equal or better specifications than what is outlined in this document.

1.2.2. JOC Floor Conference Room

1.2.2.1. General

1.2.2.1.1. AV Control: The Contractor shall install one (1) AV Control Processor, dedicated to the JOC Floor Conference Room. It shall be capable of integrated system control including native intersystem communication with AVoIP Encoders and Decoders, Audio DSPs and Amplifiers and AV Control Processors by the same manufacturer. The AV Control processor shall be the central connecting point for equipment and devices in the JOC Floor Conference Room. As the central element of communication for system devices under control, and all devices and sensors providing status, and feedback, the AV Control Processor shall integrate multiple disparate devices and systems without requiring multiple third-party protocol adaptors, translators, or gateways. The AV Control Processor shall also be capable of sharing status, state, and feedback information from other connected devices. The Contractor shall only provide, install and configure a Control Processor that meets the requirements outlined in Annex A (1.4) of this document. All cabling and additionally required hardware shall be included. The Contractor shall develop a custom UI for AV Control that will provide quick and easy access to essential controls, but will also accommodate more in depth control and in depth status monitoring.

1.2.2.1.2. **AV over IP (AVoIP):** The Contractor shall install a Software-Defined AV over IP System (AVoIP) replacing currently installed hardware Switchers, Matrixes and Video Wall Processors. This will allow for future scalability beyond the requirements outlined in this SoW. The AVoIP System shall support simultaneous transport of 4K 60fps Video (4:4:4 24bit and 10bit HDR), Multi-Channel Audio, USB 2.0 and Control over standard 1Gbps Network Infrastructure. For this, he shall install the required Network Infrastructure and Hardware AVoIP Encoders and Decoders at each Source and Destination. Where multiple Encoders and Decoders are co-located by design, and to reduce the need for local Power Supplies, he shall install Multi-Port Gigabit PoE Midspans and/or Encoder/Decoder Rack Frames.

1.2.2.1.3. **Discussion System:** In the JOC Floor Conference Room, the Contractor shall install a new Discussion System. He shall install twenty-six (26) table-top Discussion Units on the user desks and one (1) for the room operator. He shall also install one (1) flush-mounted Discussion Unit, built-in into an existing Lectern. The Contractor shall modify the existing Lectern to cover any holes that were left due to previous hardware removal and ensure for a flush-mount installation of the new discussion unit. All Discussion Units shall be licensed and configured for translation or multi-channel audio. External audio sources shall be available on the Discussion System through Dante and presented as channels on the Discussion Units. For every discussion unit, the Contractor shall provide one (1) Headset. All the above-listed hardware shall be from the same manufacturer. The Contractor shall provide,

install, program and configure all hardware and shall leave no less than a fully working and compliant system.

1.2.2.1.4. **Video Wall:** The Contractor shall install a large, three (3) screens high and eleven (11) screens wide, Video Wall. The Video Wall must be able to simultaneously display at least one (1) primary source in 3x3 format, four (4) secondary sources in 2x2 format and eight (1) tertiary sources in single-screen format. Sources should not have to be displayed smaller than a single 55” display. It must be possible to display any source from within the JOC Floor Conference Room onto any display, or a group of displays, simultaneously up to a maximum thirty-three (33) sources at once on the Video Wall. It must also be possible to route sources from the adjacent JOC Conference Room onto the Video Wall. Each 55” Video Wall Display shall have its own dedicated AVoIP Decoder, powered using PoE through a Multi-Port Gigabit PoE Midspan. No displays nor AVoIP decoders shall be daisy-chained for display grouping. The Video Wall Displays shall be powered using, fully redundant remotely installed, power supplies. They shall be installed using a specialized self-aligning hardware mounting structure, allowing for quick display panel replacement. It shall be possible to replace any display panel without removing source cabling. The Video Wall Displays and Mounting Hardware shall be from the same manufacturer.

1.2.2.1.5. **Secure KVM:** To separate the AVoIP Network from the Data Networks, Secure KVM’s shall be installed. All twenty-six (26) User Desks, the Operator Desk (1) and the Lectern (1) shall be equipped with Secure KVM’s. They shall allow for connectivity of up to two (2) workstations and shall have two (2) display outputs. The inputs and outputs shall accept DVI, DisplayPort, and HDMI with passive cabling. The secondary display output shall be converted to AVoIP through an Encoder and shall be available for the operator, for controlled video distribution throughout the JOC Floor Conference Room or adjacent JOC Conference Room. The chosen AVoIP Encoder shall offer an HDMI output so that the Encoded HDMI Signal is still usable as a secondary monitor output for local display.

1.2.2.1.6. **Videoconferencing:** The Contractor shall integrate the conference room AV solution with a customer provided Videoconferencing Codec (Poly Group 700). The Contractor shall install three (3) PTZ 1080p60 SDI Cameras and a Clean Switching SDI Router to handle the Camera Sources. The Router’s HDMI output shall also carry embedded audio from the Discussion System or DSP. A separate AVoIP Decoder shall be used as a Dante audio break-out point. The Codec’s HDMI Monitor Outputs shall be converted to AVoIP for audio and video distribution over the network. One of these shall be Dante enabled for audio distribution on Dante. As for Content, both audio and video shall be routed to the Codec through an AVoIP Decoder. The Contractor shall also integrate the Discussion System with the Camera System for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching pre-set shall be triggered.

1.2.2.1.7. **Operator Desk:** The Contractor shall install an Operator Desk with access to all room AV Management through a custom GUI. The Operator Desk shall be equipped with the same set-up as found on a User Desk, but shall also

receive some additional hardware to facilitate Conference Room Management. The Contractor shall design a custom user interface, accessible through web and a Contractor provided 21.5” Touch Panel and Graphics Engine. The user interface shall offer Audio Controls, Video Controls, Operator Workstation Control, Monitoring. From the user interface, the Operator Desk shall have access to six (6) remotely installed workstations. Once selected, their video outputs shall be routed, using AVoIP Encoders for each workstation HDMI output, to AVoIP Decoders at the operator workstation for local display and KVM. The remote workstations will mostly be used for the permanently displayed sources on the Video Wall.

1.2.2.2. Core – AV Control

1.2.2.2.1. One (1) Room AV Controller

1.2.2.2.1.1. General

1.2.2.2.1.1.1. The Contractor shall install one (1) AV Control Processor in the Technical Booth of the JOC Floor Conference Room.

1.2.2.2.1.1.2. It shall be programmed to provide the following:

- User interface on a 21.5” Touch Panel, dedicated for the Operator Position;
  - Interface shall also be accessible through Browser.
- Management of video routing between Encoders and Decoders for:
  - Video Wall;
  - User Desks;
  - Operator Desk;
  - Videoconference;
    - Near-End, Far-End and Content;
  - IPTV;
  - JOC Conference Room Sources.
- Management of USB routing (Keyboard and Mouse) for remotely installed workstations for the JOC Floor Conference Room Operator.
- Management of audio routing for:
  - AVoIP;
  - Discussion System;
  - Dante;
  - IPTV;
  - Videoconference;
  - JOC Conference Room;
  - Listening Rooms;
- Access to Lighting Scenes of the existing 0-10V Lighting System in the JOC Floor Conference Room;
- Status Monitoring of all controlled AV Devices.

1.2.2.2.1.1.3. The Contractor shall provide, install and configure a Room AV controller that meets the requirements outlined in 1.4 of this document;

1.2.2.2.1.1.4. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer;

1.2.2.2.1.1.5. All cabling and additionally required hardware shall be included.

1.2.2.3. Core – AV Network

1.2.2.3.1. Multiple (x) Network Switches

1.2.2.3.1.1. General

1.2.2.3.1.1.1. Multiple Network Switches shall be installed by the Contractor in the Technical Booth of the JOC Floor Conference Room.

1.2.2.3.1.1.2. They shall accommodate all AVoIP Endpoints, Dante and AV Control throughout the JOC Conference Rooms.

1.2.2.3.1.1.3. The switches shall support all (not, just the minimum) Network Requirements to support a mix of AVoIP, Dante and Control.

1.2.2.3.1.1.4. The Switches shall form an isolated network with no connection to any existing data networks or the internet.

1.2.2.3.1.1.5. All switches shall be the same brand and model and shall not have an announced EOL Date.

1.2.2.3.1.1.6. Features:

- At least a 1Gbps port per AVoIP Endpoint;
- Non-blocking backplane;
- IGMPv3 multicast snooping;
- 802.1Q VLAN Tagging;
- Port-Based 802.1P QOS;
- 802.1X endpoint authentication;
- Rapid Spanning Tree Protocol;
- mDNS and DNS-SD;
- Precision Time Protocol;
- Energy Efficient Ethernet disabled;
- The AVoIP network segment must receive network services, including DNS and DHCP;
- Switches shall be stacked with support for multicast traffic;
- Ethernet switch guidelines for AVoIP shall be implemented;
- Ethernet switch guidelines for Dante shall be implemented.

1.2.2.4. Core - Discussion System

1.2.2.4.1. One (1) Discussion System Processor

1.2.2.4.1.1. General

1.2.2.4.1.1.1. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the JOC Floor Conference Room.

1.2.2.4.1.1.2. It shall be configured to:

- Manage all Discussion Units;
- Present external Dante Sources as Channels for the Discussion Units;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.2.2.4.1.1.3. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in 1.4 of this document.

1.2.2.4.1.1.4. All cabling and additionally required hardware shall be included.

1.2.2.5. Core – Audio

1.2.2.5.1. One (1) Audio DSP

1.2.2.5.1.1. General

1.2.2.5.1.1.1. The Contractor shall install one (1) Audio DSP in the Technical Booth of the JOC Floor Conference Room;

1.2.2.5.1.1.2. It process all audio to:

- Actively Cancel Echo;
- Eliminate Feedback.

1.2.2.5.1.1.3. The Contractor shall provide, install and configure an Audio DSP that meets the requirements outlined in 1.4 of this document;

1.2.2.5.1.1.4. The Audio DSP shall be of the same manufacturer as the Room AV Controller;

1.2.2.5.1.1.5. All cabling and additionally required hardware shall be included.

1.2.2.6. One (1) Amplifier

1.2.2.6.1.1. General

1.2.2.6.1.1.1. The Contractor shall install one (1) Amplifier in the Technical Booth of the JOC Floor Conference Room;

1.2.2.6.1.1.2. It shall power all ceiling speakers throughout the JOC Floor Conference Room;

1.2.2.6.1.1.3. All audio shall first pass through the Audio DSP;

1.2.2.6.1.1.4. The Contractor shall provide, install and configure an Amplifier that meets the requirements outlined in 1.4 of this document;

1.2.2.6.1.1.5. The Amplifier shall be of the same manufacturer as the Room AV Controller;

1.2.2.6.1.1.6. All Amplifiers, installed as part of this SoW, shall be the same brand and model;

1.2.2.6.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.7. Core – Misc

1.2.2.7.1.1. 19” Racks

1.2.2.7.1.1.1. The Contractor shall install generously sized 19” racks in the Technical Booth to accommodate all AV hardware.

1.2.2.8. Video Wall - Displays

1.2.2.8.1. Thirty-Three (33) 55” Videowall Displays + Mounts

1.2.2.8.1.1. General

1.2.2.8.1.1.1. The Contractor shall install thirty-three (33) 55” Videowall Displays and Mounts inside the JOC Floor Conference Room.

1.2.2.8.1.1.2. They shall be able to receive video from any available AVoIP Source in the JOC Floor Conference Room through a dedicated AVoIP Decoder per Display.

1.2.2.8.1.1.3. The Displays shall be controlled through a LAN Interface, connected to their AVoIP Decoder.

1.2.2.8.1.1.4. The Contractor shall provide, install and configure 55” Videowall Displays and Mounts that meet the requirements outlined in 1.4 of this document.

1.2.2.8.1.1.5. The 55” Videowall Displays and Mounts shall be of the same manufacturer.

1.2.2.8.1.1.6. All 55” Videowall Displays, installed as part of this SoW, shall be the same brand and model.

1.2.2.8.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.9. Video Wall – AVoIP

1.2.2.9.1. Thirty-Three (33) AVoIP Encoder/Decoders (Type A)

1.2.2.9.1.1. General

1.2.2.9.1.1.1. The Contractor shall install thirty-three (33) AVoIP Encoder/Decoders in a custom cabinet underneath the Video Wall:

- They shall be configured as Decoders, and they shall each drive a single Video Wall Display;
- They shall allow “grouping”, so multiple displays act as one (Video Wall Feature);
- They shall be mounted and organized in such a way that it is easy to identify what Display they are connected to.

1.2.2.9.1.1.2. They shall be remotely powered (PoE) through Multi-Port Gigabit PoE Midspans, co-located with the Network Switches in the JOC Floor Conference Room Technical Booth;

1.2.2.9.1.1.3. Signal Routing and Display Grouping (Video Wall) shall be controlled from the Operator Desk Management Interface;

1.2.2.9.1.1.4. The Contractor shall provide, install and configure AVoIP; Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.2.9.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.2.9.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.9.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.10. Video Wall – Misc

1.2.2.10.1. One (1) Videowall Bezel + Cabinet

1.2.2.10.1.1. General

1.2.2.10.1.1.1. The Contractor shall install one (1) Videowall Bezel and Cabinet for the Video Wall inside the JOC Floor Conference Room.

1.2.2.10.1.1.2. It shall provide an esthetical finish to the Video Wall and to hide all peripheral hardware such as AVoIP Encoder/Decoders:

- The Bezel shall match the Video Wall design and shall ensure the Video Wall is blended into the rear wall upon which the Video Wall was installed;
- The Cabinet(s) shall be installed underneath the Video Wall and shall provide easy access to all discretely installed AVoIP Encoder/Decoder Units.

1.2.2.10.1.1.3. The entire solution shall feel as it were an integral part of the Video Wall hardware installation;

1.2.2.10.1.1.4. The Bezel and Cabinet shall form a single uniform structure.

1.2.2.11. Operator Desk – Management Interface

1.2.2.11.1. One (1) 21.5” HD Touch Screen Display

1.2.2.11.1.1. General

1.2.2.11.1.1.1. The Contractor shall install one (1) 21.5” HD Touch Screen Display at the JOC Floor Conference Room, at the Operator Desk position;

1.2.2.11.1.1.2. It shall be used by the Operator to manage all aspects of the AV installation inside the Conference Room;

1.2.2.11.1.1.3. All controls shall be made available through the Digital Graphics Engine, connected to the Room AV Controller;

1.2.2.11.1.1.4. It shall be driven by a Graphics Engine from the same manufacturer.

1.2.2.11.1.1.5. The Contractor shall provide, install and configure a 21.5” HD Touch Screen Display that meets the requirements outlined in 1.4 of this document;

1.2.2.11.1.1.6. The 21.5” HD Touch Screen Display shall be of the same manufacturer as the Room AV Controller;

1.2.2.11.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.11.2. One (1) Digital Graphics Engine

1.2.2.11.2.1. General

1.2.2.11.2.1.1. The Contractor shall install one (1) Digital Graphics Engine at the JOC Floor Conference, at the Operator Desk position.

1.2.2.11.2.1.2. It shall be integrated with the Touch Panel and the Room AV Controller to manage all aspects of the AV installation inside the Conference Room.

1.2.2.11.2.1.3. The Contractor shall provide, install and configure a Digital Graphics Engine that meets the requirements outlined in 1.4 of this document.

1.2.2.11.2.1.4. The Digital Graphics Engine shall be of the same manufacturer as the Room AV Controller.

1.2.2.11.2.1.5. All cabling and additionally required hardware shall be included.

1.2.2.12. Operator Desk – KVM

1.2.2.12.1. One (1) Secure 2-Port Dual-Head Universal KVM Switch with CAC Port

1.2.2.12.1.1. General

1.2.2.12.1.1.1. The Contractor shall install one (1) Secure KVM in the JOC Floor Conference Room, at the Operator Desk;

1.2.2.12.1.1.2. It shall allow for secure KVM switching between two (2) customer provided workstations and shall feature two (2) video outputs;

1.2.2.12.1.1.3. The secondary KVM output shall be converted to AVoIP using an AVoIP Encoder for further distribution throughout the JOC Floor Conference Room;

1.2.2.12.1.1.4. The Contractor shall provide, install and configure KVM’s that meet the requirements outlined in 1.4 of this document;

1.2.2.12.1.1.5. All KVM’s shall be of the same manufacturer and shall be certified for use up to NATO Secret;

1.2.2.12.1.1.6. All cabling and additionally required hardware shall be included.

1.2.2.13. Operator Desk – AVoIP

1.2.2.13.1. Three (3) AVoIP Encoder/Decoders (Type A)

1.2.2.13.1.1. General

1.2.2.13.1.1.1. The Contractor shall install three (3) AVoIP Encoder/Decoders in the JOC Floor Conference Room, at the Operator Desk:

- One (1) shall be configured as Encoder for the secondary Secure KVM Output;

- Two (2) shall be configured as Decoders for local display and keyboard mouse control of the Operator's Remote AVoIP Sources.

1.2.2.13.1.1.2. They shall be locally powered using the included power supply;

1.2.2.13.1.1.3. They shall be installed as "Endpoint" Versions;

1.2.2.13.1.1.4. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.2.13.1.1.5. The Contractor shall provide, install and configure AVoIP; Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.2.13.1.1.6. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.2.13.1.1.7. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.13.1.1.8. All cabling and additionally required hardware shall be included.

1.2.2.14. Operator Desk – Discussion Unit

1.2.2.14.1. One (1) Table top Discussion Unit with Channel Selection – Chairperson

1.2.2.14.1.1. General

1.2.2.14.1.1.1. The Contractor shall install one (1) Table top Discussion Unit with Channel Selection in the JOC Floor Conference Room, at the Operator Desk;

1.2.2.14.1.1.2. It shall be used by the room operator and shall be configured as a Single User Chairperson Unit with Multi-Channel audio;

1.2.2.14.1.1.3. Channels that shall be available:

- Floor;
- Videoconference;
- IPTV.

1.2.2.14.1.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.2.2.14.1.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.2.2.14.1.1.6. It shall come with one (1) headset from the same manufacturer;

1.2.2.14.1.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document;

1.2.2.14.1.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.2.2.14.1.1.9. All cabling and additionally required hardware shall be included.

1.2.2.15. Operator Desk – Remote AVoIP Sources

1.2.2.15.1. Twelve (12) AVoIP Encoder/Decoders (Type A)

1.2.2.15.1.1. General

1.2.2.15.1.1.1. The Contractor shall install twelve (12) AVoIP Encoder/Decoders in the Technical Booth of the JOC Floor Conference Room;

- Six (6) shall be configured as Encoders for the primary Display Outputs and USB (Keyboard and Mouse) of the Remote Workstations;
- Six (6) shall be configured as Encoders for the secondary Display Outputs of the Remote Workstations.

1.2.2.15.1.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer;

1.2.2.15.1.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.2.15.1.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.2.15.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.2.15.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.15.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.16. User Desk – KVM

1.2.2.16.1. Twenty-Six (26) Secure 2-Port Dual-Head Universal KVM Switches with CAC Port

1.2.2.16.1.1. General

1.2.2.16.1.1.1. The Contractor shall install twenty-six (26) Secure KVMs in the JOC Floor Conference Room, at the User Desks.

1.2.2.16.1.1.2. They shall allow for secure KVM switching between two (2) customer provided workstations at each desk and shall each feature two (2) video outputs.

1.2.2.16.1.1.3. Their secondary KVM outputs shall be converted to AVoIP using AVoIP Encoders for further distribution throughout the JOC Floor Conference Room.

1.2.2.16.1.1.4. The Contractor shall provide, install and configure KVM’s that meet the requirements outlined in 1.4 of this document.

1.2.2.16.1.1.5. All KVM’s shall be of the same manufacturer and shall be accredited for use up to NATO Secret.

1.2.2.16.1.1.6. All cabling and additionally required hardware shall be included.

1.2.2.17. User Desk – AVoIP

1.2.2.17.1. Twenty-Six (26) AVoIP Encoder/Decoders (Type A)

1.2.2.17.1.1. General

1.2.2.17.1.1.1. The Contractor shall install twenty-six (26) AVoIP Encoder/Decoders in the JOC Floor Conference Room, at the User Desks.

1.2.2.17.1.1.2. They shall be configured as Encoder for the secondary Secure KVM Output.

1.2.2.17.1.1.3. They shall be locally powered using the included power supply.

1.2.2.17.1.1.4. They shall be installed as “Endpoint” Versions.

1.2.2.17.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.2.17.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document.

1.2.2.17.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.2.17.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.2.17.1.1.9. All cabling and additionally required hardware shall be included.

1.2.2.17.2. Twenty-Six (26) Table top Discussion Units – Delegate

1.2.2.17.2.1. General

1.2.2.17.2.1.1. The Contractor shall install twenty-six (26) Table top Discussion Units with Channel Selection in the JOC Floor Conference Room, at the User Desks;

1.2.2.17.2.1.2. They will be used by the room users and shall be configured as a Single User Delegate Units with Multi-Channel audio;

1.2.2.17.2.1.3. Channels that shall be available:

- Floor;
- Videoconference;
- IPTV.

1.2.2.17.2.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.2.2.17.2.1.5. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.2.2.17.2.1.6. They shall each come with one (1) headset from the same manufacturer.

1.2.2.17.2.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document;

1.2.2.17.2.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.2.2.17.2.1.9. All cabling and additionally required hardware shall be included.

1.2.2.18. Lectern – KVM

1.2.2.18.1. One (1) Secure 2-Port Dual-Head Universal KVM Switch with CAC Port

1.2.2.18.1.1. General

1.2.2.18.1.1.1. The Contractor shall install one (1) Secure KVM in the JOC Floor Conference Room, at the Lectern.

1.2.2.18.1.1.2. It shall allow for secure KVM switching between two (2) customer provided workstations at each desk and shall each feature two (2) video outputs.

1.2.2.18.1.1.3. It secondary KVM outputs shall be converted to AVoIP using AVoIP Encoders for further distribution throughout the JOC Floor Conference Room.

1.2.2.18.1.1.4. The Contractor shall provide, install and configure KVM's that meet the requirements outlined in 1.4 of this document.

1.2.2.18.1.1.5. All KVM's shall be of the same manufacturer and shall be accredited for use up to NATO Secret.

1.2.2.18.1.1.6. All cabling and additionally required hardware shall be included.

1.2.2.19. Lectern – AVoIP

1.2.2.19.1. One (1) AVoIP Encoder/Decoder (Type A)

1.2.2.19.1.1. General

1.2.2.19.1.1.1. The Contractor shall install one (1) AVoIP Encoder/Decoders in the JOC Floor Conference Room, at the Lectern.

1.2.2.19.1.1.2. It shall be configured as Encoder for the secondary Secure KVM Output.

1.2.2.19.1.1.3. It shall be locally powered using the included power supply.

1.2.2.19.1.1.4. It shall be installed as "Endpoint" Versions.

1.2.2.19.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.2.19.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document.

1.2.2.19.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.2.19.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.2.19.1.1.9. All cabling and additionally required hardware shall be included.

1.2.2.20. Lectern – Discussion Unit

1.2.2.20.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.2.2.20.1.1. General

1.2.2.20.1.1.1. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the JOC Floor Conference Room, at the Lectern.

1.2.2.20.1.1.2. It shall be used by the Lectern User and shall be a Single User Delegate Unit with Multi-Channel audio;

1.2.2.20.1.1.3. Channels that shall be available:

- Floor;
- Videoconference;
- IPTV.

1.2.2.20.1.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.2.2.20.1.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.2.2.20.1.1.6. It shall come with one (1) headset from the same manufacturer;

1.2.2.20.1.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document;

1.2.2.20.1.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.2.2.20.1.1.9. All cabling and additionally required hardware shall be included.

1.2.2.21. Room - Audio

1.2.2.21.1. Twenty-Four (24) Speakers

1.2.2.21.1.1. General

1.2.2.21.1.1.1. The Contractor shall install twenty-four (24) Low-Profile Ceiling-Mounted Speakers in the JOC Floor Conference Room.

1.2.2.21.1.1.2. They shall be powered by the dedicated JOC Floor Conference Room Amplifier, installed in the Technical Booth of the JOC Floor Conference Room.

1.2.2.21.1.1.3. Volume control shall be possible through the Operator Desk Touch Panel.

1.2.2.21.1.1.4. The Contractor shall provide, install and configure Speakers that meet the requirements outlined in 1.4 of this document.

1.2.2.21.1.1.5. All Speakers shall be of the same manufacturer as the Room AV Controller.

1.2.2.21.1.1.6. All cabling and additionally required hardware shall be included.

1.2.2.22. Videoconference – Full HD PTZ Cameras

1.2.2.22.1. Three (3) Full HD PTZ Cameras and Mounts

1.2.2.22.1.1. General

1.2.2.22.1.1.1. The Contractor shall install three (3) Full HD PTZ Cameras in the JOC Floor Conference Room.

1.2.2.22.1.1.2. They shall be connected using 3G-SDI to the Clean Switch SDI/HDMI Router for video routing to the customer provided Poly Group 700 HDMI Camera Input.

1.2.2.22.1.1.3. They shall be connected to the AV LAN for control.

1.2.2.22.1.1.4. A white version of the camera and matching wall mount shall be installed.

1.2.2.22.1.1.5. The Contractor shall provide, install and configure Full HD PTZ Cameras that meet the requirements outlined in 1.4 of this document.

1.2.2.22.1.1.6. All Full HD PTZ Cameras shall be of the same manufacturer.

1.2.2.22.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.23. Videoconference – Camera Routing

1.2.2.23.1. One (1) Clean Switch SDI/HDMI Router

1.2.2.23.1.1. General

1.2.2.23.1.1.1. The Contractor shall install one (1) Clean Switch SDI/HDMI Router in the Technical Booth of the JOC Floor Conference Room.

1.2.2.23.1.1.2. Cameras shall be connected using 3G-SDI.

1.2.2.23.1.1.3. It shall output video using HDMI, serving as Camera Input for the Poly Group 700.

1.2.2.23.1.1.4. It shall be connected to the AV LAN for Control.

1.2.2.23.1.1.5. The Contractor shall provide, install and configure a Clean Switch SDI/HDMI Router meets the requirements outlined in 1.4 of this document.

1.2.2.23.1.1.6. All Clean Switch SDI/HDMI Routers shall be of the same manufacturer.

1.2.2.23.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.24. Videoconference – AVoIP

1.2.2.24.1. Two (2) AVoIP Encoder/Decoder with Dante (Type B)

1.2.2.24.1.1. General

1.2.2.24.1.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders with Dante in the Technical Booth of the JOC Floor Conference Room:

- One (1) shall be configured as Encoder for the Primary Video Output of the Poly Group 700, It shall also put the Poly Group 700 Audio Out on the network using Dante.
- One (1) shall be configured as Decoder:

- Dante Audio from the Discussion System or any other Dante Source shall be injected into the Clean Switch SDI/HDMI Router using HDMI;
- The Clean Switch SDI/HDMI Router shall then embed the audio on its HDMI output so it can be routed alongside the camera picture, to the Poly Group 700.

1.2.2.24.1.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer;

1.2.2.24.1.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.2.24.1.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.2.24.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.2.24.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.24.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.24.2. Two (2) AVoIP Encoder/Decoders (Type A)

1.2.2.24.2.1. General

1.2.2.24.2.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders in the Technical Booth of the JOC Floor Conference Room;

1.2.2.24.2.1.2. One (1) shall be configured as Encoder for the Secondary Video Output of the Poly Group 700;

1.2.2.24.2.1.3. One (1) shall be configured as Decoder for the Content Input of the Poly Group 700.

1.2.2.24.2.1.4. They shall be installed as “Card” Versions in a Chassis from the same manufacturer;

1.2.2.24.2.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.2.24.2.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.2.24.2.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.2.24.2.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.24.2.1.9. All cabling and additionally required hardware shall be included.

1.2.2.25. Listening Room – User Interface

1.2.2.25.1. Two (2) Control Panels

1.2.2.25.1.1. General

1.2.2.25.1.1.1. The Contractor shall install two (2) Control Panels in the adjacent Listening Rooms;

1.2.2.25.1.1.2. They shall give users in the Listening Rooms access to the following:

- Audio Source Selection:
  - JOC Conference Rooms;
  - IPTV Channels;
  - Videoconferencing.
- Volume Control.

1.2.2.25.1.1.3. The buttons shall be labelled for easy identification of the available sources.

1.2.2.25.1.1.4. Sources that are not available or blocked by the Operator shall be clearly recognizable.

1.2.2.25.1.1.5. The JOC Floor Conference Room Operator shall be able to control the available sources for the adjacent Listening Rooms;

1.2.2.25.1.1.6. All Control Panels shall be of the same manufacturer as the Room AV Controller;

1.2.2.25.1.1.7. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.2.25.1.1.8. All cabling and additionally required hardware shall be included.

1.2.2.26. Listening Room - Audio

1.2.2.26.1. One (1) Amplifier

1.2.2.26.1.1. General

1.2.2.26.1.1.1. The Contractor shall install one (1) Amplifier in the Technical Booth of the JOC Floor Conference Room.

1.2.2.26.1.1.2. It shall power all ceiling speakers throughout the JOC Floor Listening Rooms.

1.2.2.26.1.1.3. All audio shall first pass through the Audio DSP.

1.2.2.26.1.1.4. The Contractor shall provide, install and configure an Amplifier that meets the requirements outlined in 1.4 of this document.

1.2.2.26.1.1.5. The Amplifier shall be of the same manufacturer as the Room AV Controller.

1.2.2.26.1.1.6. All Amplifiers, installed as part of this SoW, shall be the same brand and model.

1.2.2.26.1.1.7. All cabling and additionally required hardware shall be included.

1.2.2.26.2. Four (4) Speakers

1.2.2.26.2.1. General

1.2.2.26.2.1.1. The Contractor shall install four (4) Low-Profile Ceiling-Mounted Speakers in the JOC Floor Listening Rooms – two (2) speakers per room;

1.2.2.26.2.1.2. They shall be powered by the dedicated JOC Floor Listening Room Amplifier, installed in the Technical Booth of the JOC Floor Conference Room;

1.2.2.26.2.1.3. Volume control shall be possible through the Operator Desk Touch Panel and the Listening Room Control Panels;

1.2.2.26.2.1.4. The Contractor shall provide, install and configure Speakers that meet the requirements outlined in 1.4 of this document;

1.2.2.26.2.1.5. All Speakers shall be of the same manufacturer as the Room AV Controller;

1.2.2.26.2.1.6. All cabling and additionally required hardware shall be included.

1.2.2.27. Misc – IPTV Integration

1.2.2.27.1. Four (4) AVoIP Encoder/Decoders with Dante (Type B)

1.2.2.27.1.1. General:

1.2.2.27.1.1.1. The Contractor shall install four (4) AVoIP Encoder/Decoders with Dante in the Technical Booth of the JOC Floor Conference Room;

1.2.2.27.1.1.2. They shall be configured as Encoders for the IPTV HDMI Outputs;

1.2.2.27.1.1.3. They shall also put the IPTV Audio Out on the network as Dante.

1.2.2.27.1.1.4. They shall be locally powered using the included power supply.

1.2.2.27.1.1.5. They shall be installed as “Endpoint” Versions.

1.2.2.27.1.1.6. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.2.27.1.1.7. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document.

1.2.2.27.1.1.8. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.2.27.1.1.9. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.2.27.1.1.10. All cabling and additionally required hardware shall be included.

1.2.2.27.2. Two (2) Flexible Microphones

1.2.2.27.2.1. General

1.2.2.27.2.1.1. The Contractor shall install two (2) Flexible Microphones inside the JOC Floor Conference Room.

1.2.2.27.2.1.2. It shall be possible to connect these wired handheld microphones at two (2) User Desk positions inside the conference room.

1.2.2.27.2.1.3. When activated, they shall act as delegate units for the discussion system.

1.2.2.27.2.1.4. The Contractor shall integrate them using Dante, so they form an integral part of the Discussion System.

1.2.2.27.2.1.5. They shall be professional grade and from a leading brand.

1.2.3. JOC Conference Room

1.2.3.1. General

1.2.3.1.1. **AV Control:** The Contractor shall install one (1) AV Control Processor, dedicated to the JOC Conference Room. It shall be capable of integrated system control including native intersystem communication with AVoIP Encoders and Decoders, Audio DSPs and Amplifiers and AV Control Processors by the same manufacturer. The AV Control processor shall be the central connecting point for equipment and devices in the JOC Conference Room. As the central element of communication for system devices under control, and all devices and sensors providing status, and feedback, the AV Control Processor shall integrate multiple disparate devices and systems without requiring multiple third-party protocol adaptors, translators, or gateways. The AV Control Processor shall also be capable of sharing status, state, and feedback information from other connected devices. The Contractor shall only provide, install and configure a Control Processor that meets the requirements outlined in Annex A (1.4) of this document. All cabling and additionally required hardware shall be included. The Contractor shall develop a custom UI for AV Control that will provide quick and easy access to essential controls, but will also accommodate more in depth control and in depth status monitoring. Hardware description in this document targets specific devices. The Contractor shall only be allowed to propose or install hardware with equal or better specifications than what is outlined in this document.

1.2.3.1.2. AV **over IP (AVoIP):** The Contractor shall install a Software-Defined AV over IP System (AVoIP) replacing currently installed hardware Switchers and Matrixes. This will allow for future scalability beyond the requirements outlined in this SoW. The AVoIP System shall support simultaneous transport of 4K 60fps Video (4:4:4 24bit and 10bit HDR), Multi-Channel Audio, USB 2.0 and Control over standard 1Gbps Network Infrastructure. For this, he shall install the required Network Infrastructure and Hardware AVoIP Encoders and Decoders at each Source and Destination. Where multiple Encoders and Decoders are co-located by design, and to reduce the need for local Power Supplies, he shall install Multi-Port Gigabit PoE Midspans and/or Encoder/Decoder Rack Frames.

1.2.3.1.3. **Discussion System:** In the JOC Conference Room, the Contractor shall install a new Discussion System. He shall install eight-teen (18) table-top Discussion Units on the Conference Table. He shall also install one (1) flush-mounted Discussion Unit, built-in into an existing Lectern. The Contractor

shall modify the existing Lectern to cover any holes that were left due to previous hardware removal and ensure for a flush-mount installation of the new discussion unit. All Discussion Units shall be licensed and configured for translation or multi-channel audio. External audio sources shall be available on the Discussion System through Dante and presented as channels on the Discussion Units. For every discussion unit, the Contractor shall provide one (1) Headset. All the above-listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system.

1.2.3.1.4. **Secure KVM:** To separate the AVoIP Network from the Data Networks, Secure KVM's shall be installed. The Operator Desk (1) and the Lectern (1) shall be equipped with Secure KVM's. They shall allow for connectivity of up to two (2) workstations and shall have two (2) display outputs. The inputs and outputs shall accept DVI, DisplayPort, and HDMI with passive cabling. The secondary display output shall be converted to AVoIP through an Encoder and shall be available for the operator, for controlled video distribution throughout the JOC Conference Room or adjacent JOC Floor Conference Room. The chosen AVoIP Encoder shall offer an HDMI output so that the Encoded HDMI Signal is still usable as a secondary monitor output for local display.

1.2.3.1.5. **Videoconferencing:** The Contractor shall integrate the conference room AV solution with a customer provided Videoconferencing Codec (Poly Group 700). The Contractor shall install three (3) PTZ 1080p60 SDI Cameras and a Clean Switching SDI Router to handle the Camera Sources. The Router's HDMI output shall also carry embedded audio from the Discussion System or DSP. A separate AVoIP Decoder shall be used as a Dante audio break-out point. The Codec's HDMI Monitor Outputs shall be converted to AVoIP for audio and video distribution over the network. One of these shall be Dante enabled for audio distribution on Dante. As for Content, both audio and video shall be routed to the Codec through an AVoIP Decoder. The Contractor shall also integrate the Discussion System with the Camera System for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching preset shall be triggered.

1.2.3.1.6. **Operator Desk:** The Contractor shall install an Operator Desk with access to all room AV Management through a custom GUI. The Operator Desk shall be equipped with the same set-up as found on a User Desk, but shall also receive some additional hardware to facilitate Conference Room Management. The Contractor shall design a custom user interface, accessible through web and a Contractor provided 21.5" Touch Panel and Graphics Engine. The user interface shall offer Audio Controls, Video Controls, Operator Workstation Control, Monitoring.

1.2.3.2. Core – AV Control

1.2.3.2.1. One (1) Room AV Controller

1.2.3.2.1.1. General

1.2.3.2.1.1.1. The Contractor shall install one (1) AV Control Processor in the Technical Booth of the JOC Conference Room;

1.2.3.2.1.1.2. It shall be programmed to provide the following:

- User interface on a 21.5” Touch Panel, dedicated for the Operator Position:
  - Interface shall also be accessible through Browser.
- Management of video routing between Encoders and Decoders for:
  - Video Wall;
  - User Desks;
  - Operator Desk;
  - Videoconference:
    - Near-End, Far-End and Content;
  - IPTV;
  - JOC Floor Conference Room Sources.
- Management of audio routing for:
  - AVoIP;
  - Discussion System;
  - Dante;
  - IPTV;
  - Videoconference;
  - JOC Conference Room;
  - Listening Rooms.
- Access to Lighting Scenes of the existing 0-10V Lighting System in the JOC Conference Room;
- Status Monitoring of all controlled AV Devices.

1.2.3.2.1.1.3. The Contractor shall provide, install and configure a Room AV controller that meets the requirements outlined in 1.4 of this document;

1.2.3.2.1.1.4. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer;

1.2.3.2.1.1.5. All cabling and additionally required hardware shall be included.

1.2.3.3. Core – AV Network

1.2.3.3.1. One (1) Network Switches

1.2.3.3.1.1. General

1.2.3.3.1.1.1. One (1) Network Switches shall be installed by the Contractor in the Technical Booth of the JOC Conference Room.

1.2.3.3.1.1.2. It shall accommodate all AVoIP Endpoints, Dante and AV Control throughout the JOC Conference Room.

1.2.3.3.1.1.3. It shall support all (not, just the minimum) Network Requirements to support a mix of AVoIP, Dante and Control.

1.2.3.3.1.1.4. It shall form an isolated network with no connection to any existing data networks or the internet.

1.2.3.3.1.1.5. All switches shall be the same brand and model and shall not have an announced EOL Date.

1.2.3.3.1.1.6. Features:

- At least a 1Gbps port per AVoIP Endpoint;
- Non-blocking backplane;
- IGMPv3 multicast snooping;
- 802.1Q VLAN Tagging;
- Port-Based 802.1P QOS;
- 802.1X endpoint authentication;
- Rapid Spanning Tree Protocol;
- mDNS and DNS-SD;
- Precision Time Protocol;
- Energy Efficient Ethernet disabled;
- The AVoIP network segment must receive network services, including DNS and DHCP;
- Switches shall be stacked with support for multicast traffic;
- Ethernet switch guidelines for AVoIP shall be implemented;
- Ethernet switch guidelines for Dante shall be implemented.

1.2.3.4. Core - Discussion System

1.2.3.4.1. One (1) Discussion System Processor

1.2.3.4.1.1. General

1.2.3.4.1.1.1. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the JOC Conference Room;

1.2.3.4.1.1.2. It shall be configured to:

- Manage all Discussion Units;
- Present external Dante Sources as Channels for the Discussion Units;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.2.3.4.1.1.3. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in 1.4 of this document;

1.2.3.4.1.1.4. All cabling and additionally required hardware shall be included.

1.2.3.5. Core – Audio

1.2.3.5.1. One (1) Audio DSP

1.2.3.5.1.1. General

1.2.3.5.1.1.1. The Contractor shall install one (1) Audio DSP in the Technical Booth of the JOC Conference Room;

1.2.3.5.1.1.2. It process all audio to:

- Actively Cancel Echo;

- Eliminate Feedback.

1.2.3.5.1.1.3. The Contractor shall provide, install and configure an Audio DSP that meets the requirements outlined in 1.4 of this document;

1.2.3.5.1.1.4. The Audio DSP shall be of the same manufacturer as the Room AV Controller;

1.2.3.5.1.1.5. All cabling and additionally required hardware shall be included.

1.2.3.5.2. One (1) Amplifier

1.2.3.5.2.1. General

1.2.3.5.2.1.1. The Contractor shall install one (1) Amplifier in the Technical Booth of the JOC Conference Room.

1.2.3.5.2.1.2. It shall power all ceiling speakers throughout the JOC Conference Room.

1.2.3.5.2.1.3. All audio shall first pass through the Audio DSP.

1.2.3.5.2.1.4. The Contractor shall provide, install and configure an Amplifier that meets the requirements outlined in 1.4 of this document.

1.2.3.5.2.1.5. The Amplifier shall be of the same manufacturer as the Room AV Controller.

1.2.3.5.2.1.6. All Amplifiers, installed as part of this SoW, shall be the same brand and model.

1.2.3.5.2.1.7. All cabling and additionally required hardware shall be included.

1.2.3.6. Core – Misc

1.2.3.6.1. 19” Racks

1.2.3.6.1.1. The Contractor shall install generously sized 19” racks in the Technical Booth to accommodate all AV hardware.

1.2.3.7. Operator Desk – Management Interface

1.2.3.7.1. One (1) 21.5” HD Touch Screen Display

1.2.3.7.1.1. General

1.2.3.7.1.1.1. The Contractor shall install one (1) 21.5” HD Touch Screen Display at the JOC Conference Room, at the Operator Desk position.

1.2.3.7.1.1.2. It shall be used by the Operator to manage all aspects of the AV installation inside the Conference Room.

1.2.3.7.1.1.3. All controls shall be made available through the Digital Graphics Engine, connected to the Room AV Controller.

1.2.3.7.1.1.4. It shall be driven by a Graphics Engine from the same manufacturer.

1.2.3.7.1.1.5. The Contractor shall provide, install and configure a 21.5” HD Touch Screen Display that meets the requirements outlined in 1.4 of this document.

1.2.3.7.1.1.6. The 21.5” HD Touch Screen Display shall be of the same manufacturer as the Room AV Controller.

1.2.3.7.1.1.7. All cabling and additionally required hardware shall be included.

1.2.3.7.2. One (1) Digital Graphics Engine

1.2.3.7.2.1. General

1.2.3.7.2.1.1. The Contractor shall install one (1) Digital Graphics Engine at the JOC Conference, at the Operator Desk position.

1.2.3.7.2.1.2. It shall be integrated with the Touch Panel and the Room AV Controller to manage all aspects of the AV installation inside the Conference Room.

1.2.3.7.2.1.3. The Contractor shall provide, install and configure a Digital Graphics Engine that meets the requirements outlined in 1.4 of this document.

1.2.3.7.2.1.4. The Digital Graphics Engine shall be of the same manufacturer as the Room AV Controller.

1.2.3.7.2.1.5. All cabling and additionally required hardware shall be included.

1.2.3.8. Operator Desk – KVM

1.2.3.8.1. One (1) Secure 2-Port Dual-Head Universal KVM Switch with CAC Port

1.2.3.8.1.1. General

1.2.3.8.1.1.1. The Contractor shall install one (1) Secure KVM in the JOC Conference Room, at the Operator Desk.

1.2.3.8.1.1.2. It shall allow for secure KVM switching between two (2) customer provided workstations and shall feature two (2) video outputs.

1.2.3.8.1.1.3. The secondary KVM output shall be converted to AVoIP using an AVoIP Encoder for further distribution throughout the JOC Conference Room.

1.2.3.8.1.1.4. The Contractor shall provide, install and configure KVM’s that meet the requirements outlined in 1.4 of this document.

1.2.3.8.1.1.5. All KVM’s shall be of the same manufacturer and shall be accredited for use up to NATO Secret.

1.2.3.8.1.1.6. All cabling and additionally required hardware shall be included.

1.2.3.9. Operator Desk – AVoIP

1.2.3.9.1. One (1) AVoIP Encoder/Decoders (Type A)

1.2.3.9.1.1. General

1.2.3.9.1.1.1. The Contractor shall install one (1) AVoIP Encoder/Decoder in the JOC Conference Room, at the Operator Desk.

1.2.3.9.1.1.2. It shall be configured as Encoder for the secondary Secure KVM Output.

1.2.3.9.1.1.3. It shall be locally powered using the included power supply.

1.2.3.9.1.1.4. It shall be installed as “Endpoint” Versions.

1.2.3.9.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.3.9.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document.

1.2.3.9.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.3.9.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.3.9.1.1.9. All cabling and additionally required hardware shall be included.

1.2.3.10. Operator Desk – Discussion Unit

1.2.3.10.1. One (1) Table top Discussion Unit with Channel Selection

1.2.3.10.1.1. General:

1.2.3.10.1.1.1. The Contractor shall install one (1) Table top Discussion Unit with Channel Selection in the JOC Conference Room, at the Operator Desk.

1.2.3.10.1.1.2. It shall be used by the room operator and shall be configured as a Single User Delegate Unit with Multi-Channel audio.

1.2.3.10.1.1.3. Channels that shall be available:

1.2.3.10.1.1.4. Floor;

1.2.3.10.1.1.5. Videoconference;

1.2.3.10.1.1.6. IPTV.

1.2.3.10.1.1.7. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor.

1.2.3.10.1.1.8. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference.

1.2.3.10.1.1.9. It shall come with one (1) headset from the same manufacturer.

1.2.3.10.1.1.10. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document.

1.2.3.10.1.1.11. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors.

1.2.3.10.1.1.12. All cabling and additionally required hardware shall be included.

1.2.3.11. Conference Table – Discussion Units

1.2.3.11.1. Eighteen (18) Table top Discussion Units

1.2.3.11.1.1. General

1.2.3.11.1.1.1. The Contractor shall install eighteen (18) Table top Discussion Units with Channel Selection in the JOC Conference Room, on the Conference Table:

- One (1) shall be configured as Chairperson Unit;
- Seventeen (17) shall be configured as Delegate Units.

1.2.3.11.1.1.2. They will be used by the room users and shall be configured as a Single User Units with Multi-Channel audio:

- Channels that shall be available:
  - Floor;
  - Videoconference;
  - IPTV.

1.2.3.11.1.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor.

1.2.3.11.1.1.4. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference.

1.2.3.11.1.1.5. They shall each come with one (1) headset from the same manufacturer.

1.2.3.11.1.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document.

1.2.3.11.1.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors.

1.2.3.11.1.1.8. All cabling and additionally required hardware shall be included.

1.2.3.12. Lectern – AVoIP

1.2.3.12.1. One (1) AVoIP Encoder/Decoder (Type A)

1.2.3.12.1.1. General

1.2.3.12.1.1.1. The Contractor shall install one (1) AVoIP Encoder/Decoders in the JOC Conference Room, at the Lectern:

- It shall be configured as Decoder to receive Video from the Operator Desk Secondary KVM Output;
- It shall also give Keyboard and Mouse Control to the Operator Desk Workstations.

1.2.3.12.1.1.2. It shall be locally powered using the included power supply;

1.2.3.12.1.1.3. It shall be installed as “Endpoint” Versions;

1.2.3.12.1.1.4. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.3.12.1.1.5. The Contractor shall provide, install and configure AVoIP; Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.3.12.1.1.6. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.3.12.1.1.7. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.3.12.1.1.8. All cabling and additionally required hardware shall be included.

1.2.3.13. Lectern – Discussion Unit

1.2.3.13.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.2.3.13.1.1. General

1.2.3.13.1.1.1. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the JOC Conference Room, at the Lectern;

1.2.3.13.1.1.2. It shall be used by the Lectern User and shall be a Single User Delegate Unit with Multi-Channel audio;

1.2.3.13.1.1.3. Channels that shall be available:

- Floor;
- Videoconference;
- IPTV.

1.2.3.13.1.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor.

1.2.3.13.1.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference.

1.2.3.13.1.1.6. It shall come with one (1) headset from the same manufacturer.

1.2.3.13.1.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in 1.4 of this document.

1.2.3.13.1.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors.

1.2.3.13.1.1.9. All cabling and additionally required hardware shall be included.

1.2.3.14. Wall Display – Displays

1.2.3.14.1. Four (4) 40” Displays

1.2.3.14.1.1. General

1.2.3.14.1.1.1. The Contractor shall install four (4) 40” NEC V404 Displays in the JOC Conference Room;

1.2.3.14.1.1.2. Currently, four (4) NEC V423 40” Displays are already installed and will have to remain;

1.2.3.14.1.1.3. The Contractor shall include any mounting hardware, required to mount these eight (8) displays in pairs;

1.2.3.14.1.1.4. Each monitor will have its own AVoIP Decoders to receive any video source from within the JOC Conference Room or the JOC Floor Conference Room.

1.2.3.15. Video Wall – AVoIP

1.2.3.15.1. Eight (8) AVoIP Encoder/Decoders (Type A)

1.2.3.15.1.1. General

1.2.3.15.1.1.1. The Contractor shall install eight (8) AVoIP Encoder/Decoders in the JOC Conference Room;

1.2.3.15.1.1.2. They shall be configured as Decoders, and they shall each drive a single 40” Display;

1.2.3.15.1.1.3. It shall be locally powered using the included power supply;

1.2.3.15.1.1.4. It shall be installed as “Endpoint” Versions;

1.2.3.15.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.3.15.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.3.15.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.3.15.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.3.15.1.1.9. All cabling and additionally required hardware shall be included.

1.2.3.16. Room - Audio

1.2.3.16.1. Sixteen (16) Speakers

1.2.3.16.1.1. General

1.2.3.16.1.1.1. The Contractor shall install sixteen (16) Low-Profile Ceiling-Mounted Speakers in the JOC Conference Room;

1.2.3.16.1.1.2. They shall be powered by the dedicated JOC Conference Room Amplifier, installed in the Technical Booth of the JOC Conference Room;

1.2.3.16.1.1.3. Volume control shall be possible through the Operator Desk Touch Panel;

1.2.3.16.1.1.4. The Contractor shall provide, install and configure Speakers that meet the requirements outlined in 1.4 of this document;

1.2.3.16.1.1.5. All Speakers shall be of the same manufacturer as the Room AV Controller:

1.2.3.16.1.1.6. All cabling and additionally required hardware shall be included.

1.2.3.17. Videoconference – Full HD PTZ Cameras

1.2.3.17.1. Three (3) Full HD PTZ Cameras and Mounts

1.2.3.17.1.1. General

1.2.3.17.1.1.1. The Contractor shall install three (3) Full HD PTZ Cameras in the JOC Conference Room;

1.2.3.17.1.1.2. They shall be connected using 3G-SDI to the Clean Switch SDI/HDMI Router for video routing to the customer provided Poly Group 700 HDMI Camera Input;

1.2.3.17.1.1.3. They shall be connected to the AV LAN for control;

1.2.3.17.1.1.4. A white version of the camera and matching wall mount shall be installed;

1.2.3.17.1.1.5. The Contractor shall provide, install and configure Full HD PTZ Cameras that meet the requirements outlined in 1.4 of this document;

1.2.3.17.1.1.6. All Full HD PTZ Cameras shall be of the same manufacturer;

1.2.3.17.1.1.7. All cabling and additionally required hardware shall be included.

1.2.3.18. Videoconference – Camera Routing

1.2.3.18.1. One (1) Clean Switch SDI/HDMI Router

1.2.3.18.1.1. General

1.2.3.18.1.1.1. The Contractor shall install one (1) Clean Switch SDI/HDMI Router in the Technical Booth of the JOC Conference Room;

1.2.3.18.1.1.2. Cameras shall be connected using 3G-SDI;

1.2.3.18.1.1.3. It shall output video using HDMI, serving as Camera Input for the Poly Group 700;

1.2.3.18.1.1.4. It shall be connected to the AV LAN for Control;

1.2.3.18.1.1.5. The Contractor shall provide, install and configure a Clean Switch SDI/HDMI Router meets the requirements outlined in 1.4 of this document;

1.2.3.18.1.1.6. All Clean Switch SDI/HDMI Routers shall be of the same manufacturer;

1.2.3.18.1.1.7. All cabling and additionally required hardware shall be included.

1.2.3.19. Videoconference – AVoIP

1.2.3.19.1. Two (2) AVoIP Encoder/Decoder with Dante (Type B)

1.2.3.19.1.1. General

1.2.3.19.1.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders with Dante in the Technical Booth of the JOC Conference Room:

- One (1) shall be configured as Encoder for the Primary Video Output of the Poly Group 700:

- It shall also put the Poly Group 700 Audio Out on the network using Dante.

- One (1) shall be configured as Decoder:
  - Dante Audio from the Discussion System or any other Dante Source shall be injected into the Clean Switch SDI/HDMI Router using HDMI;
  - The Clean Switch SDI/HDMI Router shall then embed the audio on its HDMI output so it can be routed alongside the camera picture, to the Poly Group 700.

1.2.3.19.1.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer;

1.2.3.19.1.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.3.19.1.1.4. The Contractor shall provide, install and configure AVoIP; Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.3.19.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.3.19.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.3.19.1.1.7. All cabling and additionally required hardware shall be included.

1.2.3.19.2. Two (2) AVoIP Encoder/Decoders (Type A)

1.2.3.19.2.1. General

1.2.3.19.2.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders in the Technical Booth of the JOC Conference Room:

- One (1) shall be configured as Encoder for the Secondary Video Output of the Poly Group 700;
- One (1) shall be configured as Decoder for the Content Input of the Poly Group 700.

1.2.3.19.2.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer;

1.2.3.19.2.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface;

1.2.3.19.2.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in 1.4 of this document;

1.2.3.19.2.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller;

1.2.3.19.2.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares;

1.2.3.19.2.1.7. All cabling and additionally required hardware shall be included.

1.3. JFCB Meeting Rooms Systems Requirements Specification

1.3.1. General Description

1.3.1.1. Summary

This section describes the technical requirements for five (5) meeting rooms where only the current, and obsolete, discussion system shall be replaced. A new discussion system shall be installed in each of these rooms and shall have to be integrated with existing AV. Integration with existing AV is required to enable these rooms with automatic camera-tracking. For the most, the technical requirements will be identical except for the Brussels Meeting Room where Interpretation and Language Distribution are required. The hardware description in this document targets specific devices. The Contractor shall only be allowed to propose or install hardware with equal or better specifications than what is outlined in this document.

1.3.2. Brussels Meeting Room

1.3.2.1. General

In the Brussels Meeting Room, the Contractor shall install a new Discussion System with language distribution using an infrared transmitter and two (2) infrared radiators. He shall install twenty one (21) table top Discussion Units on the conference table and one (1) for the room operator inside the technical booth. He shall install one (1) flush-mounted Discussion Unit into a customer provided Lectern. For this, he shall modify the existing Lectern and re-finish the Lectern surface to close any unwanted holes. All Discussion Units shall be licensed and configured for translation and those installed on the conference table, except for the Chairperson position and the operator unit, shall also be licensed for dual-use so two (2) users can share a Discussion Unit. For every discussion unit, the Contractor shall provide one (1) or two (2) Headsets depending on the unit's single or dual-use set-up. The Contractor shall also deliver twenty (20) Infrared Receivers for those users that will not sit at the conference table. A charging case for these receivers shall be included. All the above listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system. Lastly, the Contractor shall also integrate the discussion system with existing room AV for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching and already existing preset shall be triggered. The Discussion System shall also be integrated with audio into an existing Polycom HDX Series Endpoint and Room Amplifier. The Contractor will be given access to the source code for the existing Crestron CP3 program. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.3.2.2. Core - Discussion System

1.3.2.2.1. One (1) Discussion System Processor

1.3.2.2.1.1. General

1.3.2.2.1.1.1. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the Brussels Meeting Room;

1.3.2.2.1.1.2. It shall be configured to:

- Manage all Discussion Units;
- Present Interpretation Channels o Language Transmitter through Dante;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.3.2.2.1.1.3. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in Annex A (1.4) of this document;

1.3.2.2.1.1.4. All cabling and additionally required hardware shall be included.

1.3.2.3. Core - Translation System

1.3.2.3.1. One (1) Language Transmitter

1.3.2.3.1.1. General

1.3.2.3.1.1.1. The Contractor shall install one (1) Language Transmitter in the technical booth of the meeting room;

1.3.2.3.1.1.2. The Language Transmitter shall be from the same manufacturer as the Discussion System Processor;

1.3.2.3.1.1.3. It shall comply with IEC 61603-7 and IEC 60914 standards.

1.3.2.3.1.2. Digital Audio

1.3.2.3.1.2.1. Audio shall be injected through a Dante Interface;

1.3.2.3.1.2.2. It shall support six (6) languages by default, with an option to expand, through licenses, to forty (40).

1.3.2.3.1.3. Configuration

1.3.2.3.1.3.1. Complete fine-grained configuration shall be possible through a built-in web server;

1.3.2.3.1.3.2. It shall be possible to easily (re-)assign ISO codes to each of the audio channels;

1.3.2.3.1.3.3. It shall be possible to override the injected audio through the built-in webserver or dry contact;

1.3.2.3.1.3.4. It shall allow you to automatically configure radiators without the need to change settings on every radiator itself;

1.3.2.3.1.3.5. It shall not be required to use the same cable lengths between radiators to prevent delay line compensation;

1.3.2.3.1.3.6. It shall allow driving multiple Infrared Radiators up to 900 m through its BNC output connectors;

1.3.2.3.1.3.7. It shall automatically assign IR bands and allow for certain bands to be disabled to prevent interference with other IR devices such as IR microphones.

1.3.2.3.1.4. Testing and Debugging

1.3.2.3.1.4.1. It shall feature built-in infrared emitters for audio monitoring and a test generator for system setup and debugging;

1.3.2.3.1.4.2. It shall feature a built-in web server offering possibilities to identify the topology of the radiators;

1.3.2.3.1.4.3. It shall be possible to activate different modes to show information on the radiators' status LEDs, the connected port on the transmitter and number in the branch, the received delay compensation value, and the power state value;

1.3.2.3.1.4.4. It shall also be possible, from the webserver, to adjust the power levels of radiators, tune the delay compensation values or adapt power modes.

1.3.2.3.1.5. Connectivity

- Dante;
- Ethernet for web server access;
- Power connection;
- 3.5 mm stereo headphone connection;
- Factory reset button;
- 2 XLR inputs with status LEDs;
- Phoenix Printed-circuit board connector for music and emergency.

1.3.2.3.1.6. Certification

- IEC61603-7, IEC60914.

1.3.2.3.2. Two (2) Infrared Radiators + Mount

1.3.2.3.2.1. General

1.3.2.3.2.1.1. Two (2) Infrared Radiators shall be installed in the Meeting Room to distribute interpretation channels to the Infrared Receivers;

1.3.2.3.2.1.2. The Infrared Transmitter shall be from the same manufacturer as the Language Transmitter;

1.3.2.3.2.1.3. They shall come with all required mounting hardware using standard VESA 100;

1.3.2.3.2.1.4. It shall comply with IEC 61603-7 and IEC 60914 standards.

1.3.2.3.2.2. Energy-efficient

1.3.2.3.2.2.1. They shall automatically follow the state of the Infrared Transmitter:

- They shall go to standby if there is no signal from the transmitter;
- They shall switch off in case the temperature becomes too high;
- It shall be possible to switch them to half power.

1.3.2.3.2.3. Configuration

1.3.2.3.2.3.1. They shall feature Automatic Delay Line Compensation to prevent dead spots and eliminate manual configuration for each radiator;

1.3.2.3.2.3.2. They shall automatically calculate the required compensation needed in multi-radiator setups;

1.3.2.3.2.3.3. They shall feature automatic gain control to compensate for signal loss;

1.3.2.3.2.3.4. They shall feature adjustable radiation angles to ensure maximum coverage;

1.3.2.3.2.3.5. They shall transmit at a frequency from 2 to 10 MHz to prevent interference from high-frequency lighting systems.

1.3.2.3.2.4. Connectivity

- 2 BNC connectors 75 Ohm;
- Mains input.

1.3.2.3.2.5. Certification

- IEC61603-7, IEC60914.

1.3.2.4. Operator Desk Equipment

1.3.2.4.1. One (1) Table top Discussion Unit with Channel Selection – Delegate

1.3.2.4.1.1. General

1.3.2.4.1.1.1. One (1) Table top Discussion Unit with Channel Selection shall be installed in the technical booth of the Brussels Meeting Room;

1.3.2.4.1.1.2. It shall be used by the room operator and shall be configured as a Single User Delegate Unit with Translation;

1.3.2.4.1.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.2.4.1.1.4. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.2.4.1.1.5. It shall come with one (1) headset from the same manufacturer;

1.3.2.4.1.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.2.4.1.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.2.4.1.1.8. All cabling and additionally required hardware shall be included.

1.3.2.5. Conference Table Equipment

1.3.2.5.1. Twenty-One (21) Table top Discussion Units with Channel Selection.

1.3.2.5.1.1. General

1.3.2.5.1.1.1. The Contractor shall install twenty-one (26) Table top Discussion Units with Channel Selection in the Brussels Meeting Room, on the Conference Table:

- One (1) shall be configured as Single User Chairperson Unit;
- Twenty (20) shall be configured as Dual User Delegate Units.

1.3.2.5.1.1.2. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.2.5.1.1.3. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.2.5.1.1.4. They shall each come with two (2) headsets from the same manufacturer;

1.3.2.5.1.1.5. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.2.5.1.1.6. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.2.5.1.1.7. All cabling and additionally required hardware shall be included.

1.3.2.6. Translator Booth Equipment

1.3.2.6.1. Two (2) Translator Units + Headsets

1.3.2.6.1.1. General

1.3.2.6.1.1.1. Two (2) Translator Units shall be installed in a Translator Booth, adjacent to the Meeting Room;

1.3.2.6.1.1.2. They shall be designed for professional interpreters and shall focus on user feedback, ergonomics, and intuitive interfacing;

1.3.2.6.1.1.3. They shall comply with the strict ISO 20109:2016 standard for interpreter equipment;

1.3.2.6.1.1.4. They shall be backed by “Plixus” network technology with redundant cabling to ensure maximum reliability;

1.3.2.6.1.1.5. They shall feature an angled faceplate, optimized for optimal viewing;

1.3.2.6.1.1.6. They shall come with a 30 cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.2.6.1.1.7. They shall come with Interpreter Headsets from the same manufacturer;

1.3.2.6.1.1.8. All Discussion Units, Discussion System Processors an Infrared Language Distribution hardware shall be from the same manufacturer.

1.3.2.6.1.2. Features:

- Ergonomic division between controls & display;
- Intuitive layout of controls;
- Push buttons with LED indicator;
- Tactile and acoustic feedback for visually impaired interpreters;
- Hearing Protection Technology;

- Small footprint, compact design;
- Back-firing loudspeaker;
- Color screen with a clean and clutter-free interface;
- 6 relays and A/B/C channel selection;
- ISO 20109:2016 compliant.

1.3.2.6.1.3. Connectivity

- Screw-lock socket to connect a removable microphone;
- 2 x RJ 45 connectors for loop through cabling;
- 1 x RJ 45 connector for LAN connectivity (Future use);
- Three 3.5 mm stereo jack sockets for headphones/headsets;
- “Plixus” powered, 64 channels available.

1.3.2.7. Lectern – Discussion Unit

1.3.2.7.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.3.2.7.1.1. General

1.3.2.7.1.1.1. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the Brussels Meeting Room, at the Lectern:

1.3.2.7.1.1.2. Channel Selection is required for future changes.

1.3.2.7.1.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.2.7.1.1.4. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.2.7.1.1.5. It shall come with one (1) headset from the same manufacturer;

1.3.2.7.1.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.2.7.1.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.2.7.1.1.8. All cabling and additionally required hardware shall be included.

1.3.2.8. Back Seater Equipment

1.3.2.8.1. Twenty (20) Infrared Receivers and Headsets;

1.3.2.8.2. One (1) Charging Case.

1.3.2.8.2.1. General

1.3.2.8.2.1.1. Twenty (20) digital infrared pocket receivers that can receive up to 6 channels shall be provided;

1.3.2.8.2.1.2. All Discussion Units, Discussion System Processors an Infrared Language Distribution hardware shall be from the same manufacturer;

1.3.2.8.2.1.3. They shall come with a headset from the same manufacturer;

1.3.2.8.2.1.4. They shall come with a charging case from the same manufacturer.

1.3.2.8.2.1.5. Design

1.3.2.8.2.1.6. They shall feature a large and crisp OLED screen to display the channel number, language name, and volume. A battery icon shall appear when the battery is low. In scanner mode, the screen shall also display reception quality;

1.3.2.8.2.1.7. The Lingua receiver shall be powered via a rechargeable Li-ion battery pack with an autonomy of about 20 hours;

1.3.2.8.2.1.8. The charging case shall have a LAN connection with a built-in web interface for configuration, statistics retrieval (battery health), and firmware updates;

1.3.2.8.2.1.9. To increase the battery lifespan, the IR receivers shall be switched off when the headphone is disconnected. When signal reception becomes too low, the audio shall be muted. If the receiver does not receive any valid IR signal for more than 10 minutes, it shall automatically switch to standby.

1.3.2.8.2.2. Receiver

1.3.2.8.2.2.1. They shall offer a 270° wide reception angle and built-in error correction to ensure crystal-clear sound at all times;

1.3.2.8.2.2.2. Reception shall be impervious to high-frequency lighting;

1.3.2.8.2.2.3. A reception test mode shall be available to easily check the radiator coverage.

1.3.2.8.2.3. Standards-compliant

1.3.2.8.2.3.1. They shall comply with IEC 61603-7 and IEC 60914 standards.

1.3.2.8.2.4. Channel Override Modes

1.3.2.8.2.4.1. It should be possible, before the meeting starts, to distribute a separate music channel to all participants and in case of emergency, to send an evacuation message to all channels.

1.3.2.8.2.5. Features

- Channel Up/Down buttons;
- Volume Up/Down buttons;
- OLED display with:
- Channel number;
- Language;
- Volume bar;
- Battery status indication (if the battery is low);
- Operates on an included Li-ion rechargeable battery pack;
- Standby mode when no headphone connected;
- Audio muted when received signal is too low.

1.3.2.8.2.6. Connectivity

- 3.5 mm jack plug for headphones.

1.3.2.8.2.7. Certification

- IEC61603-7, IEC60914.

1.3.3. London Meeting Room

1.3.3.1. General

In the London Meeting Room, the Contractor shall install a new Discussion System. He shall install thirteen (13) table-top Discussion Units on the conference tables and one (1) for the room operator inside the technical booth. He shall install one (1) flush-mounted Discussion Unit into a customer provided Lectern. For this, he shall modify the existing Lectern and re-finish the Lectern surface to close any unwanted holes. All Discussion Units shall be licensed for dual-use, except for the Chairperson position an the operator position, so two (2) users can share a Discussion Unit. All the above listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system. Lastly, the Contractor shall also integrate the discussion system with existing room AV for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching and already existing preset shall be triggered. The Discussion System shall also be integrated with audio into an existing Polycom HDX Series Endpoint and Room Amplifier. The Contractor will be given access to the source code for the existing Crestron CP3 program. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.3.3.2. Core - Discussion System

1.3.3.2.1. One (1) Discussion System Processor

1.3.3.2.1.1. General

1.3.3.2.1.1.1. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the London Meeting Room;

1.3.3.2.1.1.2. It shall be configured to:

1.3.3.2.1.1.3. Manage all Discussion Units;

1.3.3.2.1.1.4. Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.3.3.2.1.1.5. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in Annex A (1.4) of this document.

1.3.3.2.1.1.6. All cabling and additionally required hardware shall be included.

1.3.3.3. Operator Desk Equipment

1.3.3.3.1. One (1) Table top Discussion Unit with Channel Selection – Delegate

1.3.3.3.1.1. General

1.3.3.3.1.1.1. One (1) Table top Discussion Unit with Channel Selection shall be installed in the technical booth of the London Meeting Room;

1.3.3.3.1.1.2. It shall be used by the room operator and shall be configured as a Single User Delegate Unit;

1.3.3.3.1.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.3.3.1.1.4. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.3.3.1.1.5. It shall come with one (1) headset from the same manufacturer;

1.3.3.3.1.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.3.3.1.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.3.3.1.1.8. All cabling and additionally required hardware shall be included.

1.3.3.4. Conference Table Equipment

1.3.3.4.1. Thirteen (13) Table top Discussion Units with Channel Selection

1.3.3.4.1.1. General

1.3.3.4.1.1.1. The Contractor shall install thirteen (13) Table top Discussion Units in the London Meeting Room, on the Conference Table;

- One (1) shall be configured as Single User Chairperson Unit;
- Twenty (12) shall be configured as Dual User Delegate Units.

1.3.3.4.1.1.2. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.3.4.1.1.3. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.3.4.1.1.4. They shall each come with two (2) headsets from the same manufacturer;

1.3.3.4.1.1.5. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.3.4.1.1.6. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.3.4.1.1.7. All cabling and additionally required hardware shall be included.

1.3.3.5. Lectern – Discussion Unit

1.3.3.5.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.3.3.5.1.1. General

1.3.3.5.1.2. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the London Meeting Room, at the Lectern;

1.3.3.5.1.3. Channel Selection is required for future changes.

1.3.3.5.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.3.5.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.3.5.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.3.5.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.3.5.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.3.5.1.9. All cabling and additionally required hardware shall be included.

1.3.4. Washington Meeting Room

1.3.4.1. General

In the Washington Meeting Room, the Contractor shall install a new Discussion System. He shall install thirteen (13) table-top Discussion Units on the conference tables and one (1) for the room operator inside the technical booth. He shall install one (1) flush-mounted Discussion Unit into a customer provided Lectern. For this, he shall modify the existing Lectern and re-finish the Lectern surface to close any unwanted holes. All Discussion Units shall be licensed for dual-use, except for the Chairperson position and the operator position, so two (2) users can share a Discussion Unit. All the above listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system. Lastly, the Contractor shall also integrate the discussion system with existing room AV for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching and already existing preset shall be triggered. The Discussion System shall also be integrated with audio into an existing Polycom HDX Series Endpoint and Room Amplifier. The Contractor will be given access to the source code for the existing Crestron CP3 program. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.3.4.2. Core - Discussion System

1.3.4.2.1. One (1) Discussion System Processor

1.3.4.2.1.1. General

1.3.4.2.1.2. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the Washington Meeting Room;

1.3.4.2.1.3. It shall be configured to:

- Manage all Discussion Units;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.3.4.2.1.4. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in Annex A (1.4) of this document;

1.3.4.2.1.5. All cabling and additionally required hardware shall be included.

1.3.4.3. Operator Desk Equipment

1.3.4.3.1. One (1) Table top Discussion Unit with Channel Selection – Delegate

1.3.4.3.1.1. General

1.3.4.3.1.2. One (1) Table top Discussion Unit with Channel Selection shall be installed in the technical booth of the Washington Meeting Room;

1.3.4.3.1.3. It shall be used by the room operator and shall be configured as a Single User Delegate Unit;

1.3.4.3.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.4.3.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.4.3.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.4.3.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.4.3.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.4.3.1.9. All cabling and additionally required hardware shall be included.

1.3.4.4. Conference Table Equipment

1.3.4.4.1. Thirteen (13) Table top Discussion Units with Channel Selection

1.3.4.4.1.1. General

1.3.4.4.1.2. The Contractor shall install thirteen (13) Table top Discussion Units in the Washington Meeting Room, on the Conference Table:

- One (1) shall be configured as Single User Chairperson Unit;
- Twenty (12) shall be configured as Dual User Delegate Units.

1.3.4.4.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.4.4.1.4. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.4.4.1.5. They shall each come with two (2) headsets from the same manufacturer;

1.3.4.4.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document.

1.3.4.4.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.4.4.1.8. All cabling and additionally required hardware shall be included.

1.3.4.5. Lectern – Discussion Unit

1.3.4.5.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.3.4.5.1.1. General

1.3.4.5.1.2. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the Washington Meeting Room, at the Lectern:

1.3.4.5.1.3. Channel Selection is required for future changes.

1.3.4.5.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.4.5.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.4.5.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.4.5.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.4.5.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.4.5.1.9. All cabling and additionally required hardware shall be included.

1.3.5. Amsterdam Meeting Room

1.3.5.1. General

In the Amsterdam Meeting Room, the Contractor shall install a new Discussion System. He shall install two (2) table-top Discussion Units on the conference tables and one (1) for the room operator inside the technical booth. He shall install one (1) flush-mounted Discussion Unit into a customer provided Lectern. For this, he shall modify the existing Lectern and re-finish the Lectern surface to close any unwanted holes. All Discussion Units shall be licensed for dual-use, so two (2) users can share a Discussion Unit. All the above listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system. Lastly, the Contractor shall also integrate the discussion system with existing room AV for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching and already existing preset shall be triggered. The Discussion System shall also be integrated with audio into an existing Polycom HDX Series Endpoint and Room Amplifier. The Contractor will be given access to the source code for the existing Crestron CP3 program. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.3.5.2. Core - Discussion System

1.3.5.2.1. One (1) Discussion System Processor

1.3.5.2.1.1. General

1.3.5.2.1.2. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the Amsterdam Meeting Room;

1.3.5.2.1.3. It shall be configured to:

- Manage all Discussion Units;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking;

1.3.5.2.1.4. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in Annex A (1.4) of this document;

1.3.5.2.1.5. All cabling and additionally required hardware shall be included.

1.3.5.3. Operator Desk Equipment

1.3.5.3.1. One (1) Table top Discussion Unit with Channel Selection – Delegate

1.3.5.3.1.1. General

1.3.5.3.1.2. One (1) Table top Discussion Unit with Channel Selection shall be installed in the technical booth of the Amsterdam Meeting Room;

1.3.5.3.1.3. It shall be used by the room operator and shall be configured as a Single User Delegate Unit;

1.3.5.3.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.5.3.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.5.3.1.6. It shall come with one (1) headset from the same manufacturer.

1.3.5.3.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.5.3.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.5.3.1.9. All cabling and additionally required hardware shall be included.

1.3.5.4. Conference Table Equipment

1.3.5.4.1. Two (2) Table top Discussion Units with Channel Selection.

1.3.5.4.1.1. General

1.3.5.4.1.2. The Contractor shall install two (2) Table top Discussion Units in the Amsterdam Meeting Room, on the Conference Table:

1.3.5.4.1.3. They shall be configured as Dual User Delegate Units.

1.3.5.4.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.5.4.1.5. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.5.4.1.6. They shall each come with two (2) headsets from the same manufacturer.

1.3.5.4.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.5.4.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.5.4.1.9. All cabling and additionally required hardware shall be included.

1.3.5.5. Lectern – Discussion Unit

1.3.5.5.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.3.5.5.1.1. General

1.3.5.5.1.2. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the Amsterdam Meeting Room, at the Lectern:

1.3.5.5.1.3. Channel Selection is required for future changes.

1.3.5.5.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.5.5.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.5.5.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.5.5.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.5.5.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.5.5.1.9. All cabling and additionally required hardware shall be included.

1.3.5.6. Misc. - Flexible Microphones

1.3.5.6.1. Two (2) Flexible Microphones

1.3.5.6.1.1. General

1.3.5.6.1.2. The Contractor shall install two (2) Flexible Microphones inside the Amsterdam Meeting Room;

1.3.5.6.1.3. It shall be possible to connect these wired handheld microphones at two (2) User Desk positions inside the conference room;

1.3.5.6.1.4. When activated, they shall act as delegate units for the discussion system;

1.3.5.6.1.5. The Contractor shall integrate them using Dante, so they form an integral part of the Discussion System;

1.3.5.6.1.6. They shall be professional grade and from a leading brand.

1.3.6. Berlin Meeting Room

1.3.6.1. General

In the Berlin Meeting Room, the Contractor shall install a new Discussion System. He shall install thirteen (9) table-top Discussion Units on the conference tables and one (1) for the room operator on the operator desk. He shall install one (1) flush-mounted Discussion Unit into a customer provided Lectern. For this, he shall modify the existing Lectern and re-finish the Lectern surface to close any unwanted holes. All Discussion Units shall be licensed for single-use. All the above listed hardware shall be from the same manufacturer. The Contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system. Lastly, the Contractor shall also integrate the discussion system with existing room AV for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching and already existing preset shall be triggered. The Discussion System shall also be integrated with audio into an existing Polycom HDX Series Endpoint and Room Amplifier. The Contractor will be given access to the source code for the existing Crestron CP3 program. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.3.6.2. Core - Discussion System

1.3.6.2.1. One (1) Discussion System Processor

1.3.6.2.1.1. General

1.3.6.2.1.2. The Contractor shall install one (1) Discussion System Processor in the Technical Booth of the Berlin Meeting Room;

1.3.6.2.1.3. It shall be configured to:

- Manage all Discussion Units;
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.3.6.2.1.4. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in Annex A (1.4) of this document;

1.3.6.2.1.5. All cabling and additionally required hardware shall be included.

1.3.6.3. Operator Desk Equipment

1.3.6.3.1. One (1) Table top Discussion Unit with Channel Selection – Delegate

1.3.6.3.1.1. General

1.3.6.3.1.2. One (1) Table top Discussion Unit with Channel Selection shall be installed in the Berlin Meeting Room on the Operator Desk;

1.3.6.3.1.3. It shall be used by the room operator and shall be configured as a Single User Delegate Unit;

1.3.6.3.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.6.3.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.6.3.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.6.3.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.6.3.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.6.3.1.9. All cabling and additionally required hardware shall be included.

1.3.6.4. Conference Table Equipment

1.3.6.4.1. Nine (9) Table top Discussion Units with Channel Selection

1.3.6.4.1.1. General

1.3.6.4.1.2. The Contractor shall install nine (9) Table top Discussion Units in the Berlin Meeting Room, on the Conference Table:

1.3.6.4.1.3. One (1) shall be configured as Single User Chairperson Unit;

1.3.6.4.1.4. Eight (8) shall be configured as Dual User Delegate Units.

1.3.6.4.1.5. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.6.4.1.6. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.6.4.1.7. They shall each come with two (2) headsets from the same manufacturer;

1.3.6.4.1.8. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.6.4.1.9. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.6.4.1.10. All cabling and additionally required hardware shall be included.

1.3.6.5. Lectern – Discussion Unit

1.3.6.5.1. One (1) Flush-mount Discussion Unit with Channel Selection

1.3.6.5.1.1. General

1.3.6.5.1.2. The Contractor shall install one (1) Flush-Mounted Discussion Unit with Channel Selection in the Berlin Meeting Room, at the Lectern:

1.3.6.5.1.3. Channel Selection is required for future changes.

1.3.6.5.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor;

1.3.6.5.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference;

1.3.6.5.1.6. It shall come with one (1) headset from the same manufacturer;

1.3.6.5.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in Annex A (1.4) of this document;

1.3.6.5.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors;

1.3.6.5.1.9. All cabling and additionally required hardware shall be included.

1.4. Systems Requirements Specifications – Devices Specifications – Minimal Requirements

1.4.1. Room AV Controller

1.4.1.1. General

1.4.1.1.1. It shall be capable of integrated system control including native intersystem communication with AVoIP Encoders and Decoders, Audio DSPs and Amplifiers and AV Control Processors by the same manufacturer.

1.4.1.1.2. The AV Control processor shall be the central connecting point for equipment and devices.

1.4.1.1.3. As the central element of communication for system devices under control, and all devices and sensors providing status, and feedback, the AV Control Processor shall integrate multiple disparate devices and systems without requiring multiple third-party protocol adaptors, translators or gateways.

1.4.1.1.4. The AV Control Processor shall also be capable of sharing status, state, and feedback information from other connected devices.

1.4.1.2. Operating System

1.4.1.2.1. The modular architecture shall support multiple simultaneous running programs.

1.4.1.2.2. Number of simultaneously running user programs: 10.

1.4.1.2.3. Real-time, pre-emptive multithreaded/multitasking kernel.

1.4.1.2.4. Vector floating-point coprocessor.

1.4.1.2.5. Utilize a real-time, event-driven, multi-tasking, multi-threaded operating system.

1.4.1.3. Communication

1.4.1.3.1. Control Processor shall support direct communication with the following devices:

- Connected Ethernet devices;
- Devices connected to built-in control ports;
- Proprietary control network devices;

- BACnet IP devices;
- Control processors of the same type.

1.4.1.3.2. File Structure

- Transaction-safe extended FAT32 file system.

1.4.1.3.3. Memory

- RAM: 512 MB;
- Flash: Built-In: 4 GB, USB or MMC slot: up to 32 GB;
- External Storage: Supports up to 1 TB.

1.4.1.4. Network

- Two built-in 10/100/1000BaseT Ethernet ports;
    - Primary LAN port:
        - Isolated WAN connection for remote management.
- Subnet port:
    - The control processor shall automatically discover and assign IP addresses to compatible devices;
    - DHCP server, DNS Server, port forwarding and Isolation Mode.
- Built-In Web Server: IIS v.6.0;
- SNMP remote management;
- Active Directory support;
- IPv4 and IPv6;
- TCP/IP Communications;
- DHCP and DNS Support;
- Native SMTP Email Client;
- Remote Diagnostics;
- Remote Program Loading and Administration;
- SSL, TLS, SSH, SFTP, CIP, 802.1X, SNMP, BACnet/IP Active Directory authentication;
- FIPS 140-2 compliant encryption;
- Support user assigned or dynamic IP address.

1.4.1.5. External connection ports

- Infrared Output Port
    - Number of built-in ports: 8;
    - Connector: 2 8-pin 3.5mm detachable terminal blocks;

- Signal
  - One-way infrared: up to 1.2 MHz;
  - One-way serial output: TTL/RS-232 (0-5 Volts);
  - Baud rate: 9600 to 115,200 baud.

- Serial Communication Port - Type 1
  - Number of built-in ports: 1;
  - Connector: 5-pin 3.5mm detachable terminal blocks;
  - Signal
    - Bidirectional RS-232
      - Baud rate: 1200 to 115,000 baud;
      - Software handshaking: off or XON.
    - Bidirectional RS-422 or RS-485
      - Baud rate: 1200 to 115,000 baud;
      - Hardware handshaking: CTS, RTS, or RTS/CTS;
      - Software handshaking: off or XON.
- Serial Communication Port – Type 2
  - Number of built-in ports: 2;
  - Connector: 3-pin 3.5mm detachable terminal blocks;
  - Signal
    - Bidirectional RS-232:
      - Baud rate: up to 115,000 baud;
      - Software handshaking.
- Input-Output Port
  - Number of built-in ports: 8;
  - One 9-pin 3.5mm detachable terminal block;
  - Individually programmable 2Kohm pull-up resistor;
  - Individually configurable to one of three modes;
  - Digital Input Mode:
    - Digital contact closure inputs;
    - Rating
      - 0-24 VDC;
      - Impedance: 20Kohm;
      - Logic threshold High: >3.125V;
      - Logic threshold Low: <1.875V.
  - Rated for 0-24 Volts DC, referenced to GND;

- Digital Output Mode
  - Rating
    - 250 mA sync from maximum 24 VDC.
- Analog Input Mode
  - Rating
    - 0-10 VDC;
    - Protection: 24 VDC maximum;
    - Impedance: 21 Kohm.
- Relay Port
  - Number of built-in ports: 8;
  - Two 8-pin 3.5mm detachable terminal blocks;
    - Normally open, isolated relays.
  - Rating
    - 1 Amp, 30 Volts AC/DC.
  - MOV arc suppression across contacts.
- Ethernet
  - Number of built-in ports: 2;
    - Port 1: Primary LAN;
    - Port 2: Control Subnet.
  - Two 8-wire RJ45 with 2 LED indicators
    - 10/100/1000BaseT Ethernet port;
    - Connection speed LED indicator;
    - Ethernet activity LED indicator.
- Communication Network
  - Number of built-in ports: 1;
  - Four 4-pin 3.5mm detachable terminal block;
    - Master net communications port.
- USB Type 1
  - Programming and configuration interface;
  - Number of built-in ports: 1;
  - Connector
    - USB Type-B female USB 2.0.
- USB Type 2
  - Memory storage device port;
  - Number of built-in ports: 1;

- Connector
  - USB Type-A female USB 2.0.

1.4.2. Discussion System Processor

1.4.2.1. General

1.4.2.1.1. The Discussion System Processor shall come as a 1U 19” rack-mountable appliance that provides audio processing and signal handling required for a “Plixus” enabled network.

1.4.2.1.2. It shall offer reliable processing with core audio functions available right inside the Discussion System Processor.

1.4.2.1.3. It shall be possible to manage meetings without the need for an additional computer.

1.4.2.1.4. The Discussion System Processor shall offer a simple user-interface with access to all essential controls.

1.4.2.1.5. It shall also feature an integrated web server allowing operators to have full control over all settings through an easy, modern, and intuitive web interface. From initialization and microphone management to interpretation channels, audio routing, and camera control.

1.4.2.1.6. The processor shall additionally allow for status monitoring of the “Plixus” environment using a built-in Diagnostics application.

1.4.2.2. Dante Enabled

1.4.2.2.1. To work with third-party audio sources, the Discussion System Processor shall feature a built-in Dante audio networking card (64x64).

1.4.2.2.2. This shall allow for the conference system to easily interconnect to Dante-enabled devices such as Infrared Encoders, DSPs, Amplifiers, or Dante-enabled AVoIP Devices.

1.4.2.2.3. Through the Dante controller software, the audio shall then be routed between any Dante enabled device that is available on the network.

1.4.2.2.4. The Dante interface shall enable the Discussion System Processor for Dante Domain Manager functionality.

1.4.2.3. Packet Based

1.4.2.3.1. It shall utilize a packet-based network specifically for mission-critical conference applications.

1.4.2.3.2. Through dynamic bandwidth attribution, it shall offer guaranteed audio quality.

1.4.2.3.3. It shall maximize the use of available bandwidth so that there is no need to compromise on audio quality.

1.4.2.3.4. Audio shall be passed uncompressed over the network at 48 kSps.

1.4.2.4. Architecture

1.4.2.4.1. It shall feature four conference ports.

1.4.2.4.2. A single Cat6 SFTP network cable shall interconnect the discussion units in daisy-chain or closed-loop for extra redundancy using Dual Branch technology.

1.4.2.4.3. This standard cable shall transport high-quality audio and power for the discussion units.

1.4.2.4.4. Power Supply

1.4.2.4.5. The Discussion System Processor shall use an external power supply for no-noise operation and shall offer redundant power as an option.

1.4.2.5. Redundancy

1.4.2.5.1. All Discussion Units shall be connected through loop cabling, thus creating redundant paths.

1.4.2.5.2. This shall ensure for the self-healing mechanism to work.

1.4.2.5.3. Where needed, the Contractor shall install “Plixus” network extenders to accommodate and power all Discussion Units.

1.4.2.6. Connectivity

- 2 Power connectors;
- 4 Conference network ports;
- 2 redundant Dante ports;
  - Link Speed: 1Gbps;
  - Sample Rate: 48kSps;
  - Sample width: 24bit;
  - Input Channels: max 64;
  - Output Channels: max 64.
- 1 USB 2.0 ports (external storage);
- IP Control LAN port;
  - Shielded FTP.
- 1 Balanced XLR audio input
  - Level: +4 to +24dBu;
  - Impedance: 10 kΩ;
  - Dynamic Range: > 90dB;
  - Frequency Response: 20Hz to 20 kHz.
- 1 Balanced XLR audio output

- Level: +4 to +24dBu;
- Impedance: 10 kΩ;
- Dynamic Range: > 90dB;
- Frequency Response: 20Hz to 20kHz;
- THD @ nominal level 0.1%;
- Load impedance: > 600 Ω.

- 2 Unbalanced Cinch audio inputs
  - Level: -10 to +10dBV;
  - Impedance: 10 kΩ;
  - Dynamic Range: > 90dB;
  - Frequency Response: 20Hz to 20kHz.
- Unbalanced Cinch audio outputs
  - Level: -10 to +10dBV;
  - Impedance: 10 kΩ;
  - Dynamic Range: > 90dB;
  - Frequency Response: 20Hz to 20kHz;
  - THD @ nominal level 0.1%;
  - Load impedance: > 10 kΩ.

1.4.3. Audio DSP

1.4.3.1. Audio Digital Signal Processor (DSP)

1.4.3.1.1. The Audio Digital Signal Processor (DSP) shall be purpose-built for professional use. Each DSP shall include an internal processor that will provide advance audio controls and shall operate with a control system from the same manufacturer.

1.4.3.2. Communications

1.4.3.2.1. The DSPs will be configured, monitored and controlled by the DSP software tool.

1.4.3.2.2. The DSP software tool shall allow multiple instances to be active on a common network.

1.4.3.2.3. The DSP software tool channel strip architecture shall not require compiling to pass audio.

1.4.3.2.4. Remote communications with the DSP software tool and Touch Panels by the same manufacturer will be via standard Ethernet.

1.4.3.2.5. It shall support: 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half-duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, SSH, SFTP (SSH File Transfer Protocol).

1.4.3.2.6. The DSP shall provide a local Universal Serial Bus (USB) console port connection on a standard USB-B type connector.

1.4.3.3. Audio I/O

1.4.3.3.1. Shall provide 12 balanced input connections with selectable phantom power for condenser microphones.

1.4.3.3.2. Shall provide 8 balanced output connections.

1.4.3.3.3. Input connections shall be selectable for balanced line-level analogue audio signals on Phoenix-style removable connectors.

1.4.3.3.4. Each channel shall have a dedicated connection.

1.4.3.3.5. Analog to Digital and Digital to Analog Conversion shall be 24 bit, 48kHz.

1.4.3.4. Audio Configuration

1.4.3.4.1. The channel strip software shall be configurable for instant audio delivery without requiring configuration code compile.

1.4.3.4.2. Presets shall recall any system configuration.

1.4.3.4.3. Views shall recall any system control screen configuration.

1.4.3.4.4. Channel Strips shall allow for the creation of unique configurations that are repeatable and portable.

1.4.3.4.5. The Digital Signal Processor shall provide:

- Spectrum analyzer;
- Gain controls (Input/Output);
- Any-to-Any Matrix Routing;
- Matrix In/Out level trim;
- Matrix cross-point level;
- Filters for all models shall include
  - Equalization;
  - Limiters;
  - Gates;
  - Compressors;
  - Crossovers;
  - Delays;
  - Hi-Pass filters;
  - Low Pass filters;
  - Lo and Hi Shelf;
  - Gating style Auto Mixer.
- Acoustic Echo Cancellation on all 12 input channels;
- Separate POTS connector RJ11;
- Separate VoIP connector RJ45;
- USB 2.0 audio 8x8 with type B connector;
- Dante audio connectivity

- Separate Primary and Secondary Dante network ports, RJ45.

1.4.3.5. Auxiliary channel strips.

1.4.3.5.1. An additional eight (8) Auxiliary channel strips with comprehensive signal processing shall be provided.

1.4.3.5.2. All Auxiliary Strips shall be routable to any Matrix cross-point or output Bus.

1.4.3.6. User Interface Export

1.4.3.6.1. Touch Panels by the same manufacturer shall integrate natively with the DSP for a rich graphic user interface;

1.4.3.6.2. Graphic control elements will be selectable and exportable directly from the DSP software tool;

1.4.3.6.3. The User Interface Export file shall enable the building of touch panels with a drag and drop process.

1.4.4. Amplifier

1.4.4.1. General

1.4.4.1.1. The Contractor shall install one (1) Amplifier in the Technical Booth of the JOC Floor Conference Room.

1.4.4.1.2. It shall be used to power the ceiling speakers throughout the Conference Room.

1.4.4.1.3. All Amplifiers shall be of the same manufacturer as the Room AV Controller.

1.4.4.1.4. All Amplifiers installed shall be the same brand and model for all JOC Conference Rooms.

1.4.4.2. Communications

1.4.4.2.1. Ethernet: 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half-duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, SSH, SFTP (SSH File Transfer Protocol);

1.4.4.2.2. USB Device: USB device port for computer console (setup).

1.4.4.3. Audio

- Input Signal Types: Balanced or unbalanced analog line-level;
- Output Signal Types: 4/8 Ohm;
- 100 Volt direct-coupled.

1.4.4.4. Operating Modes

- Mono: Each channel is configurable to operate independently from all other channels;
- Stereo: Adjacent channels (1&2, 3&4, 5&6, 7&8) are configurable to operate as a stereo pair with linked control settings;
- Bridged: Adjacent channels (1&2, 3&4, 5&6, 7&8) are configurable to operate as an 8 Ohm bridged mono output;
- 4/8Ω Mode: Each channel is configurable for 4/8 Ohm “Lo-Z” output;
- 100V Mode (AMPI-8150 only): Each channel is configurable for 100 Volt “Hi-Z” output;
- Output Power: 150 Watts per channel @ 4-8 Ohms or 100 Volts nominal; 300 Watts per bridged pair of channels @ 8 Ohms;
- Frequency Response: 20 Hz to 20 kHz ±0.5 dB at 1 Watt, 4-8 Ohms, 200 Hz to 20 kHz ±0.5 dB at 1 Watt, 70/100 Volts;
- High Pass Filter: -3 dB @ 80 Hz, 12 dB per octave in 70V or 100V mode;
- THD+N: <0.1% @ 1 kHz at 3 dB below clipping;
- S/N Ratio: >103 dBA, 20 Hz to 20 kHz;
- Channel Separation: >70 dB;
- Input Sensitivity: 1.23 Vrms, +4 dBu (balanced) for full rated output power.
- Fault Protection:
  - Over Current: Protects each channel individually against an excessive speaker load or shorted speaker line;
  - DC Offset: Protects each channel and speaker line against DC voltages sensed at each output;
  - Over Temperature: Protects the amplifier power supply and each channel against overheating due to poor ventilation or excessive temperature;
  - Under Voltage: Protects the amplifier if the internal power supply voltage is below tolerance due to excessive output levels or insufficient line voltage;
  - All faults shall report to the control system and indicate on the front panel and in the software tool.
- Output Relays: Disconnects the speaker line at each output under fault conditions, and during startup and shutdown;
- Audio Ramp: Ramps each channel’s audio level up to its last-used setting after the corresponding output relay has closed following startup or fault recovery, ramp time 2 seconds.

1.4.4.5. Connectors

1.4.4.5.1. LINE INPUTS 1 – 8:

- Eight (8) 3-pin 3.5 mm detachable terminal blocks;
- Balanced line-level audio inputs;
- Maximum Input Level: 12.3 Vrms, +24 dBu;
- Input Impedance: 20k Ohms balanced.

1.4.4.5.2. SPEAKER OUTPUTS 1 – 8:

- Eight (8) 2-pin 7.62 mm reversed gender 20A detachable terminal blocks;
- Power amplifier outputs;
- Wire Size: Terminals accept up to 12 AWG (3.31 mm²);
- Note: Output shall be direct-coupled in all modes for all load types, not transformer isolated.

1.4.4.5.3. LAN

- One (1) 8-pin RJ45 female;
- 10Base-T/100Base-TX Ethernet LAN port.

1.4.5. 55” Videowall Displays + Mounts

1.4.5.1. No-Gap

1.4.5.1.1. All Panels shall measure 55” diagonal and shall be optimized to work in a multi-screen arrangement with no more than 1.3mm separation between adjacent screens (gap measured between the closest active pixels).

1.4.5.2. Display Specifications

1.4.5.2.1. The LCD Panels shall utilize PA-VA Technology with Direct LED illumination. The LEDs shall have a lifetime rating of ≥100K hours in 24/7/365 operation;

1.4.5.2.2. They shall offer a native resolution of 1920 x 1080;

1.4.5.2.3. Their “Typical” Luminance in native mode shall be 800 Cd/m2 (nits) or higher with a “Typical” Contrast Ratio of 4000:1 or greater in normal operation;

1.4.5.2.4. Response time shall be less than 8ms;

1.4.5.2.5. The horizontal and vertical viewing angles shall be no less than 178 degrees with a screen “haze” value of 44% or greater.

1.4.5.3. Automatic Calibration

1.4.5.3.1. They shall have built-in light and color sensors with feedback loops to keep display performance, such as luminance and color, uniform at all times across the entire Video Wall

1.4.5.3.2. Calibration shall be automatic and should not require human intervention.

1.4.5.3.3. When measured at least 25 pixels placed at 99% of the diagonal length the resulting uniformity level shall be equal or above 92%;

1.4.5.3.4. It shall be possible to change the brightness target for the entire display wall via control management software;

1.4.5.3.5. If any of the above features require a dedicated control appliance, this shall be provided and installed by the Contractor.

1.4.5.4. Connectivity

1.4.5.4.1. The LCD panels shall have digital input connectivity options, including, but not limited to, HDMI, full Display Port and IP inputs supporting up to Quad HD resolutions at 60fps or higher;

1.4.5.4.2. Each LCD panel shall have the ability to “loop-through” any selected digital input signal via a DP1.2 connection.

1.4.5.5. Silent Operation

1.4.5.5.1. They shall operate without cooling fans for reduced noise levels.

1.4.5.6. Power

1.4.5.6.1. The LCD panels shall include external, remotely installed and rack-mounted AC-DC power supplies;

1.4.5.6.2. The remote power supplies must be hot-swappable and offer redundancy with auto-failover capability;

1.4.5.6.3. The remote power supplies shall be installed at no more than 100 meters distance without any image degradation or brightness loss from the LCD panels.

1.4.5.7. Construction

1.4.5.7.1. They shall be of industrial-grade quality with metallic-constructed fully enclosed housing with clear and easy access to the source and power connections.

1.4.5.8. Mount

1.4.5.8.1. They shall use the power of gravity to slide the screens into position automatically, in any direction along the X, Y and Z axes and allow for perfect alignment;

1.4.5.8.2. All the cabling shall be positioned inside the guiders;

1.4.5.8.3. The self-alignment mechanism shall make sure the panels align gently;

1.4.5.8.4. To facilitate servicing, it shall be possible to move the adjacent screens;

1.4.5.8.5. By doing so, individual panels shall be easily accessible from the front – even the middle panels;

1.4.5.8.6. It shall be possible for each panel to be taken out swiftly and securely.

1.4.6. AVoIP Encoder/Decoders (Type A)

1.4.6.1. Real-Time 4K60 Video Distribution

1.4.6.1.1. The Encoder/Decoder end-to-end latency for 60 frames per second content shall be less than 1 frame.

1.4.6.2. Single Component Design

1.4.6.2.1. In a single card/unit, the Encoder/Decoder shall be configurable to operate as:

- Network AV encoder;
- Network AV decoder.

1.4.6.2.2. The encoder/decoder mode shall be switchable while in use via a control system.

1.4.6.3. Standard 1Gb network operation

- 4K60 Video distribution;
- Web-based control and management.

1.4.6.4. A scalable network distribution system

- The system of encoder/decoder units shall be scalable via a network switch.

1.4.6.5. Auto-Switcher

- The Encoder/Decoder shall include two HDMI inputs. Switching between inputs shall be performed:
  - Automatically using an auto-switching mode;
  - Manually using input select button;
  - Programmatically via a control system;
  - Through a web browser.

1.4.6.6. HDMI Output

1.4.6.6.1. When configured as a decoder, the HDMI output is scaled up or down to match the native resolution of the display device;

1.4.6.6.2. When used as an encoder, the HDMI output shall function as a pass-through output, with a resolution matched to the encoded source.

1.4.6.7. USB and KVM Integration

1.4.6.7.1. The Encoder/Decoder shall support the extension of USB signals, which may be switched and routed alongside the AV signal or separately via a compatible control system.

1.4.6.7.2. USB 2.0 host and device ports are provided on each Encoder/Decoder, allowing a USB mouse, keyboard, or another device to be connected at one endpoint and routed to a computer or other host at any other endpoint.

1.4.6.8. 7.1 Surround Sound Audio

1.4.6.8.1. The Encoder/Decoder shall support lossless transport of 7.1 surround sound audio signals, including Dolby TrueHD, Dolby Atmos, DTS-HD, DTS:X and Uncompressed linear PCM;

1.4.6.8.2. In decoder mode, the Encoder/Decoder shall have the ability to receive both multichannel and 2-channel down-mix signals from a DSP version of the Encoder/Decoder, allowing either signal to be selected at the HDMI output while the 2-channel signal is automatically routed to the analog output.

1.4.6.9. Analog Audio Embedding or De-embedding

1.4.6.9.1. A balanced stereo analog audio port shall be included, which may be configured as either an input or output;

1.4.6.9.2. As an input, it shall allow for a stereo audio source to be connected and combined with the video signal from either HDMI input or the incoming network video stream;

1.4.6.9.3. As an output, it shall be able to provide a stereo line-level signal to feed a local sound system or analog audio switcher. The output volume shall adjustable via a compatible control system or web browser.

1.4.6.10. Breakaway Audio

1.4.6.10.1. In decoder mode, the Encoder/Decoder may select and combine separate video and audio signals from two different inputs, including two different encoders.

1.4.6.11. Text Overlay

1.4.6.11.1. The Encoder/Decoder shall be capable of displaying dynamic or fixed text on the screen.

1.4.6.12. Video Wall Processing

1.4.6.12.1. The Encoder/Decoder shall support video wall functionality;

1.4.6.12.2. Video walls composed of up to 64 individual displays shall be supported with configurations using multiple Encoder/Decoder units;

1.4.6.12.3. Each Encoder/Decoder shall provide fully-adjustable zoom capability and bezel compensation;

1.4.6.12.4. One Encoder/Decoder is required per display, supporting configurations of up to eight wide by up to eight high.

1.4.6.13. Copper or Fiber LAN Connectivity

1.4.6.13.1. The Encoder/Decoder includes two RJ45 1000Base-T LAN ports. Either port may be used as the primary LAN connection, allowing the other to be used to provide a network connection for an additional device. These ports may also be used to daisy-chain multiple Encoder/Decoder units feeding a single-source video wall or individual displays all showing the same video image;

1.4.6.13.2. Encoder/Decoder unit shall support connection to a fiber-optic network by inserting an appropriate SFP transceiver module into the SFP port on the Encoder/Decoder;

1.4.6.13.3. Encoder/Decoder manufacturer shall offer a selection of modules to accommodate various multimode and single-mode fiber types. An RJ45 module is also offered to provide a third RJ45 LAN port.

1.4.6.14. Enterprise-Grade Security

1.4.6.14.1. Encoder/Decoder shall employ advanced security features and protocols including 802.1x authentication, Active Directory credential management, LDAP directory management, PKI certification, AES encryption, TLS, SSH, HTTPS;

1.4.6.14.2. Encoder/Decoder shall run on a dedicated AV network, with fully-managed access to, or isolation from, the user's LAN or the Internet.

1.4.6.15. CEC Device Control

10.2.7.4.1. Through a compatible control processor, the Encoder/Decoder unit shall include a gateway for controlling devices through their HDMI connections using the CEC signal embedded in HDMI.

1.4.6.16. Device Control

10.2.7.4.2. The Encoder/Decoder Unit shall include built-in RS-232 and IR control ports for control of the connected display or device.

1.4.6.17. Web-Based Setup

1.4.6.17.1. Setup of the Encoder/Decoder unit shall be accomplished using a computer web browser;

1.4.6.17.2. Full control and monitoring of the Encoder/Decoder unit is enabled through integration with a compatible control processor.

1.4.6.18. Low-Profile Installation

1.4.6.18.1. The Encoder/Decoder Unit mounts conveniently to a flat surface or rack rail. All connections and LED indicators are positioned on the top and bottom;

1.4.6.18.2. Power is provided using the included 100-240V universal power pack or an optional power injector.

1.4.6.19. Encoding/Decoding

- Video Codec: Pixel Perfect Processing;
- Video Resolutions: Up to 4096x2160@60Hz (DCI 4K60), 4:4:4 color sampling, HDR10, and Deep Color support;
- Audio Formats: Primary multichannel (up to 8-channel LPCM or encoded HBR 7.1 surround sound), secondary 2-channel LPCM;
- Bitrates: 100 to 990 Mbps;
- Streaming Protocols: RTP, RTSP, SDP;
- Container: MPEG-2 transport stream (.ts);
- Session Initiation: Multicast via RTSP;
- Copy Protection: HDCP 2.2.

1.4.6.20. Video

- Input Signal Types: HDMI w/HDR10, Deep Color, and 4K60 4:4:4 support (Dual-Mode DisplayPort and DVI compatible);
- Output Signal Types: HDMI w/HDR10, Deep Color, and 4K60 4:4:4 support (DVI compatible);
- Switcher: 2x1 auto-switching;
- Scaler: 4K60 4:4:4 video scaler with motion-adaptive deinterlacing, intelligent frame rate conversion, Deep Color support, HDR10 support, widescreen format selection (zoom, stretch, maintain aspect-ratio, or 1:1), video wall processing up to 8 wide x up to 8 high, static or dynamic text overlay;
- Copy Protection: HDCP 2.2.

1.4.6.21. Maximum Resolutions

1.4.6.21.1. Maximum Common Resolutions

Scan Type	Resolution	Frame Rate	Color Sampling	Color Depth
Progressive	4096x2160 DCI 4K & 3840x2160 4K UHD	24 Hz	4:4:4	36 bit
		30 Hz	4:4:4	36 bit
		60 Hz	4:2:2	36 bit
		60 Hz	4:4:4	24 bit
	2560x1600 WQXGA	60 Hz	4:4:4	36 bit
	1920x1080 HD 1080p	60 Hz	4:4:4	36 bit

Interlaced (Input only)	1920x1080 HD 1080i	30 Hz	4:4:4	36 bit

1.4.6.21.2. Encoder/Decoder unit shall support other custom resolutions at pixel clock rates up to 600 MHz.

1.4.6.22. Audio

1.4.6.22.1. Input Signal Types: HDMI (Dual-Mode DisplayPort compatible), analog stereo

1.4.6.22.2. Output Signal Types: HDMI, analog stereo;

1.4.6.22.3. Digital Formats: Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS, DTS-ES, DTS 96/24, DTS-HD High Res, DTS-HD Master Audio, DTS:X, LPCM up to 8 channels;

1.4.6.22.4. Analog Formats: Stereo 2-channel;

1.4.6.22.5. Analog-To-Digital Conversion: 24-bit 48 kHz;

1.4.6.22.6. Digital-To-Analog Conversion: 24-bit 48 kHz.

1.4.6.22.7. Analog Performance:

- Frequency Response: 20 Hz to 20 kHz ±0.5 dB;
- S/N Ratio: >95 dB 20 Hz to 20 kHz A-weighted;
- THD+N: <0.005% @ 1 kHz;
- Stereo Separation: >90 dB;
- Analog Output Volume Adjustment: -80 to +20 dB.

1.4.6.23. Communications

1.4.6.23.1. Ethernet: 10/100/1000 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half-duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), IEEE 802.1x, IPv4, HTTPS web browser setup and control, control system integration;

1.4.6.23.2. USB: USB 2.0 host or device signal extension;

1.4.6.23.3. HDMI: HDCP 2.2, EDID, CEC;

1.4.6.23.4. Integrated Control (via Ethernet): HDCP 2.2, AES, RTP, RTSP, SDP, ONVIF, IGMPv3, SMPTE 2022;

1.4.6.23.5. Management of HDCP and EDID;

1.4.6.23.6. Management of CEC between the connected HDMI devices and a control system;

1.4.6.23.7. RS-232: 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system); computer console (for setup)

1.4.6.23.8. IR/Serial: 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 Volts) up to 19.2k baud (via compatible control system).

1.4.6.24. Connectivity

- USB DEVICE:
  - One (1) USB Type-B female;
  - USB 2.0 device port;
  - USB signal extender port for connection to a computer or any other USB 2.0 host.
- USB HOST:
  - One (1) USB Type-A female;
  - USB 2.0 host port;
  - USB signal extender port for connection of a mouse, keyboard, or any other USB 2.0 device;
  - Available Power: 500 mA at 5 Volts DC.
- LAN 1 – 2:
  - Tow (2) 8-pin RJ45 female;
  - 10Base-T/100Base-TX/1000Base-T Ethernet ports.
- LAN 3:
  - One (1) SFP port;
  - Accepts one SFP transceiver module.
- HDMI OUTPUT:
  - One (1) 19-pin Type-A HDMI female;
  - HDMI digital video/audio output (DVI compatible).
- HDMI INPUT 1 – 2:
  - Two (2) 19-pin Type-A HDMI female;
  - HDMI digital video/audio inputs;
  - (DVI & Dual-Mode DisplayPort compatible).
- AUDIO I/O:
  - One (1) 5-pin 3.5 mm detachable terminal block;
  - Balanced/unbalanced stereo line-level audio input or output;
  - Input Impedance: 24k Ohms balanced/unbalanced;
  - Maximum Input Level: 4 Vrms balanced, 2 Vrms unbalanced;
  - Output Impedance: 200 Ohms balanced, 100 Ohms unbalanced;
  - Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced.
- CONSOLE, SERIAL:
  - One (1) 8-pin RJ45 female;
  - RS-232 computer console port (for setup).
- CONSOLE, USB:
  - One (1) USB Type-B female;
  - USB 2.0 computer console port (for setup).
- IR 1 – 2:

- One (1) 4-pin 3.5 mm detachable terminal block;
- comprises (2) IR/Serial ports;
- IR output up to 1.1 MHz.
- 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.

- COM:
  - One (1) 5-pin 3.5 mm detachable terminal block;
  - Bidirectional RS-232 port;
  - Up to 115.2k baud, hardware and software handshaking support.

1.4.7. AVoIP Encoder/Decoder with Dante (Type B)

1.4.7.1. General

1.4.7.1.1. Same specifications as AVoIP Encoder/Decoder (Type A);

1.4.7.1.2. Additionally supports Dante as described below.

1.4.7.2. Dante or AES67 Audio Embedding and De-embedding

1.4.7.2.1. Dante and AES67 support shall allow the selected audio source to be transmitted as a 2-channel Dante or AES67 source while another Dante or AES67 2-channel audio stream is received from a DSP or other third-party device and combined with the video signal;

1.4.7.2.2. In encoder mode, the Dante or AES67 received audio stream can be output via the local HDMI output, primary AV stream, secondary audio stream, and analog audio output;

1.4.7.2.3. In decoder mode, the Dante or AES67 received audio stream can be combined with the video and then output via the HDMI output and analog audio output.

1.4.8. 21.5” HD Touch Screen Display

1.4.8.1. General

1.4.8.1.1. The Contractor shall install one (1) 21.5” HD Touch Screen Display at the JOC Floor Conference Room Operator Desk position;

1.4.8.1.2. It shall be used by the Operator the manage all aspects of the AV installation inside the Conference Room;

1.4.8.1.3. It shall be driven by a Graphics Engine from the same manufacturer.

1.4.8.2. Device Architecture

1.4.8.2.1. The Touch Screen UI shall be composed of the following functional elements:

1.4.8.2.2. Graphical touch video display;

- Annotation Capability;
- Built-in stereo speakers.

1.4.8.3. Graphical Display

1.4.8.3.1. Graphical UI - Touch screen UI display shall support the following viewable elements when integrated with Digital Graphics Engine from the same manufacturer:

- Control buttons and objects;
- Feedback indication via text, button object change in the color, animated object or graphical element;
- H.264 or MJPEG Streaming video.

1.4.8.4. Touch UI Functions

1.4.8.4.1. Supported functions when integrated with a separate graphics engine by the same manufacturer;

1.4.8.4.2. Touch Screen UI shall support Multi-Touch control interfacing;

1.4.8.4.3. Touch Screen UI shall support gesture-driven controls through custom programming and configuration.

1.4.8.5. Functions

1.4.8.5.1. The Touch Screen shall include the following functionality when integrated with a graphics engine by the same manufacturer:

- Custom Control UI - control of integrated system components through custom programming or preset configuration of the system control processor by the same manufacturer;
- System Integration - device shall support controls for compatible integrated AV systems, HVAC and Lighting hardware, and scheduling and management systems;
- Built-in Annotation and Remote Annotation;
- Remote Annotation requires additional compatible graphics engines;
- Custom audio feedback via custom programming;
- Multi-Language support;
- Internet Browsing shall be supported via an Ethernet network.

1.4.8.6. Communication and Power

- Communication: USB;
- Power: Included power supply.

1.4.8.7. Physical

- Touch Screen UI shall be available in the following sizes:

- 21.5 inch TFT active-matrix color LCD touch screen 1920 by 1080 resolution display.

1.4.8.8. Mounting

- It shall come with a table-top stand.

1.4.9. Digital Graphics Engine

1.4.9.1. General

1.4.9.1.1. The Contractor shall install one (1) Digital Graphics Engine at the JOC Floor Conference Room Operator Desk position;

1.4.9.1.2. It shall be integrated with the Touch Panel and the Room AV Controller to manage all aspects of the AV installation inside the Conference Room.

1.4.9.2. Graphics Engine

1.4.9.2.1. Smart Graphics;

1.4.9.2.2. Landscape or portrait orientation;

1.4.9.2.3. Local and remote annotation;

1.4.9.2.4. Multi-language web browser;

1.4.9.2.5. Multi-language on-screen keyboard;

1.4.9.2.6. Scalable dual streaming video windowing (displays any combination of HDMI and/or streaming sources);

1.4.9.2.7. Setup and diagnostics via a web browser or onscreen UI.

1.4.9.3. Memory

- RAM: 2 GB DDR3-SDRAM;
- Flash: 4 GB;
- Maximum Project Size: 1 GB.

1.4.9.4. Communications

- Ethernet: 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half-duplex, TCP/IP, UDP/IP, CIP, DHCP, SSL, TLS, SSH, SFTP (SSH File Transfer Protocol), SNMP, IPv4 or IPv6, Active Directory authentication, HTTPS web browser setup, IEEE 802.1X, IEEE 802.3af and IEEE 802.3at Type 1 compliant, web browser setup, control system integration;
- USB Host: Supports for same manufacturer touch screen display and third-party USB HID-compliant touch screens, mice, and keyboards;

- USB Device: For computer console (installer setup and firmware update)
- RS-232: 2-way device control and monitoring up to 115.2k baud with hardware and software handshaking (via control system);
- IR/Serial: 1-way device control via infrared up to 1.1 MHz or serial TTL/RS-232 (0-5 Volts) up to 19.2k baud (via control system);
- HDMI: HDCP 1.4, EDID, CEC.

1.4.9.5. Pointing Device Support

- The Graphics Engine shall be compatible with the same manufacturer touch screen display and third-party USB HID-compliant touch screens, mice, and keyboards.

1.4.9.6. Streaming Decoder

- Video Formats: H.264 (MPEG-4 part 10 AVC), MJPEG;
- Audio Formats: AAC stereo;
- Bitrates: Up to 25 Mbps;
- Resolutions: Up to 1080p60.

1.4.9.7. Video

1.4.9.7.1. Input Signal Types: HDMI (DVI & Dual-Mode DisplayPort compatible)

1.4.9.7.2. Output Signal Types: HDMI (DVI compatible);

1.4.9.7.3. Input Resolutions: 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60);

1.4.9.7.4. Output Resolutions: 1920x1080@50Hz (1080p50), 1920x1080@60Hz (1080p60).

1.4.9.8. Audio

1.4.9.8.1. Input Signal Types: HDMI (Dual-Mode DisplayPort compatible);

1.4.9.8.2. Output Signal Types: HDMI;

1.4.9.8.3. Input/Output Format: 2 channel LPCM;

1.4.9.8.4. Audio Feedback Formats: MP3.

1.4.9.9. Connectors

- CONSOLE, USB
  - One (1) USB Micro-A connector, female;
  - USB computer console port;
  - Type-A to Micro-A USB cable included;
- IR 1 – 2
  - One (1) 4-pin 3.5 mm detachable terminal block;

    - Comprises (2) IR/Serial ports;
    - IR output up to 1.1 MHz;
    - 1-way serial TTL/RS-232 (0-5 Volts) up to 19200 baud.
- COM
    - One (1) 5-pin 3.5 mm detachable terminal block;
    - Bidirectional RS-232 port;
    - Up to 115.2k baud, hardware and software handshaking support.
- HDMI INPUT
    - One (1) HDMI Type-A connector, female;
    - HDMI digital video/audio input (DVI & Dual-Mode DisplayPort compatible).
- HDMI OUTPUT
    - One (1) HDMI Type-A connector, female;
    - HDMI digital video/audio output (DVI compatible).
- USB
    - One (1) USB Type-A connector, female;
    - USB 2.0 host port for connection of a USB HID-compliant touch screen, mouse, or keyboard.
- LAN PoE
    - One (1) 8-pin RJ45 connector, female;
    - 10Base-T/100Base-TX Ethernet port;
    - Power over Ethernet (PoE) compliant.
- 24VDC 0.75A
    - One (1) 2.1 x 5.5 mm DC power connector;
    - 24 Volt DC power input with included power pack.
- Ground
    - One (1) 6-32 screw;
    - Chassis ground lug.

1.4.10. Secure 2-Port Dual-Head Universal KVM Switch with CAC Port

1.4.10.1. Universal Video Connectivity

1.4.10.1.1. It shall utilize display connection technology, to simultaneously accommodate legacy DVI-D input/output as well as modern, high-resolution HDMI and DisplayPort input/outputs using passive cabling.

1.4.10.1.2. Its connector design and internal video conversion shall allow for the same KVM to be used for legacy systems and modern HDMI or DisplayPort based Systems.

1.4.10.1.3. It shall utilize a combo video connector that accepts DisplayPort or HDMI.

1.4.10.2. Video Resolutions

1.4.10.2.1. It shall be fully compatible with Display Port connections supporting resolutions of UHD 4K @60Hz.

1.4.10.2.2. It shall also allow support for standard definition and HD resolutions supported by DVI-D Single Link without the need for external graphic conversions using active cables.

1.4.10.2.3. It shall support video up to 3840x2160@60hz refresh and 2860x1600@120hz.

1.4.10.3. Security

1.4.10.3.1. It shall be Certified to the NIAP PP3.0 certification and assurance standard, maintaining true air-gap isolation by emulating video EDID and USB communication between inputs and outputs.

1.4.10.3.2. Optical data diodes on all USB connections shall assure uni-directional data flow of HID filtered information with better than -60dB of isolation between channels.

1.4.10.3.3. It shall have dedicated processors with emulators for every port, offering isolated port paths for video, audio, and peripherals to prevent data leaks between computers.

1.4.10.3.4. It shall have no keyboard shortcuts available for switching to ensure operators are always aware of which security enclave they are working on.

1.4.10.4. CAC Card Support

1.4.10.4.1. A Dedicated Common Access Card input ports shall consolidate the number of CAC readers and allow a single reader to be shared across all connected systems for user authentication.

1.4.10.5. Anti-tamper

1.4.10.5.1. It shall feature Integrated anti-tamper switches and internal electrical sensors that immediately render the unit inoperable if opened.

1.4.10.6. Fast Switching

1.4.10.6.1. It shall offer fast switching: No keyboard or mouse delays when switching ports, minimal video delay

1.4.10.7. Connectivity:

1.4.10.7.1. Console Ports (Peripherals)

- Console Mouse and Keyboard Ports: 2 x USB Type-A female connector;
- Console Display Ports: 2 x DP 1.2a or 2 x HDMI 2.0 via combo connector;
- Console Audio Jack: 1/8" (3.5mm) female;
- Console CAC Input: USB Type-A.

1.4.10.7.2. Computer Ports

- Computer Display Ports: 2 x DP 1.2a port or 2 x HDMI 2.0 per Computer via combo connector;
- Computer Audio Jack: 1/8" (3.5mm) female;
- Computer Keyboard/Mouse Ports: USB Type-B;
- Computer CAC Ports: USB Type-B.

1.4.11. Table top Discussion Unit with Channel Selection

1.4.11.1. General

1.4.11.1.1. The Discussion Unit shall be an all-in-one Table top conference unit with an integrated 5.2” touch screen with fingerprint coating.

1.4.11.1.2. It shall combine a slim, non-intrusive, contemporary design offering extended functionality with the effortless ease of use.

1.4.11.1.3. It shall have an interactive display showing meeting information such as agenda topic, who is speaking, position in the request list, speech timers, voting, and language/channel selection depending on activated licenses.

1.4.11.1.4. While current requirements may be limited, the Discussion Units must be upgradable to meet future user needs such as interpretation, chairperson or double use. It shall be possible to add additional functionality over time.

1.4.11.2. Design

1.4.11.2.1. The unit shall have one large physical button that can change its functionality based on the applied configuration.

1.4.11.2.2. Using the secret until lit principle, different functions shall light up indicating which actions are possible with the button.

1.4.11.2.3. Using this principle, the button can be used for delegate, chairperson or double use delegate.

1.4.11.2.4. It shall have a button that contains request-to-speak and priority functionality when the unit is configured as chairperson or two request-to-speak functions in dual-use.

1.4.11.2.5. It shall have a built-in high-quality loudspeaker which is automatically muted when the microphone is active, to prevent acoustic feedback.

1.4.11.2.6. It shall have two (2) headphone outputs with single volume control

1.4.11.3. License Based

1.4.11.3.1. Furthermore, additional functionality should be unlockable based on licenses.

1.4.11.3.2. This means that over time customers should be able to unlock extra functionality without the need to re-invest in new hardware.

1.4.11.3.3. Some of the functions that shall be available through license: Voting, Identification, Dual-Use, NFC and Interpretation.

1.4.11.4. Daisy-Chain

1.4.11.4.1. The Discussion Units shall be interconnected in daisy chain over network cabling to the Discussion System Processor.

1.4.11.4.2. The RJ45 connectors shall be hidden in the base of the unit and facing downwards guiding the cables easily into the cable entry so no cables are visible on the conference table for fixed setups.

1.4.11.4.3. It shall be cabled in a loop so meetings can proceed in the event a cable or a unit gets defective.

1.4.11.4.4. It shall be possible to hot-swap them to reduce the downtime of the units.

1.4.11.5. Display Specs:

- Size: 5,2";
- Technology Type: LCD TFT;
- Touch Technology: Capacitive;
- Bonding Technology: Optical;
- Coating: Anti-fingerprint AF;
- Active Area (mm): 127 (w) x 33.9 (h);
- Refresh Rate: 60 Hz;
- Screen Resolution: minimum 480 x 128;
- Viewing Angle: 65° (left), 65° (right), 55° (top), 65° (bottom);
- Luminance: min. 800 cd / m²;
- Contrast Ratio: 500:1;
- Color Depth: RGB 24b.

1.4.11.6. Speaker Output:

- Maximum Output Power > 1 W;
- Frequency Response 200-20,000 Hz;
- Dynamic Range > 90 dB;
- THD @ Nominal Level < 0.1%;
- Load Impedance 8 Ω.

1.4.11.7. Headphone Output:

- Maximum output > 10 mW;
- Frequency response 200 -20,000 Hz;
- Dynamic range > 90 dB;
- THD @ nominal level < 0.1%;
- Load impedance 16-32 Ω.

1.4.11.8. Microphone Input:

- Nominal Input Level -54.7 dBV;
- Maximum Input Level -24.6 dBV;
- Input Impedance 1 kΩ;
- Dynamic Range > 93 dB;
- Frequency Response 25-20,000 Hz;
- THD @ Nominal Level < 0.1%.

1.4.11.9. Other features

- NFC reader;
- Card reader slot;
- Tap to log-in functionality;
- Haptic feedback on touchscreen;
- Light sensor for automatic luminance adjustment.

1.4.12. Flush-mount Discussion Unit with Channel Selection

1.4.12.1. Design

1.4.12.1.1. It shall allow for minimalistic integration into meeting room furniture.

1.4.12.1.2. It shall have an integrated speaker facilitating the creation of a distributed sound field in the meeting room.

1.4.12.1.3. The unit shall have a screw-lock connector to fit the included removable microphone.

1.4.12.1.4. A 3.5 mm jack socket shall be available to connect headphones or a hearing loop for the hearing impaired.

1.4.12.1.5. For source selection, the panel shall have a channel selector and headphones volume adjustment.

1.4.12.2. Daisy-Chain

1.4.12.2.1. The Discussion Units shall be interconnected in daisy chain over network cabling to the Discussion System Processor.

1.4.12.2.2. The RJ45 connectors shall be hidden in the base of the unit so no cables are visible on the Lectern.

1.4.12.2.3. They shall be cabled in a loop so meetings can proceed in the event a cable or a unit gets defective.

1.4.12.2.4. It shall be possible to hot-swap them to reduce the downtime of the units.

1.4.12.3. Display Specs:

- Display Type: OLED;
- Resolution: minimum 128 x 64;
- Character Height: min 5 mm.

1.4.12.4. Speaker Output:

- Maximum Output Power > 1 W;
- Frequency Response 200-20,000 Hz;
- Dynamic Range > 90 dB;
- THD @ Nominal Level < 0.1%;
- Load Impedance 8 Ω.

1.4.12.5. Headphone Output:

- Maximum output > 10 mW;
- Frequency response 22 -22,000 Hz;
- Dynamic range > 90 dB;
- THD @ nominal level < 0.1%;
- Load impedance 16-32 Ω.

1.4.12.6. Microphone Input:

- Input Impedance 1 kΩ;
- Dynamic Range > 90 dB;
- Frequency Response 20-20,000 Hz;
- THD @ Nominal Level 0.1%.

1.4.13. Speakers

1.4.13.1. Features & Performance

- Woofer
  - 6.5 inch (165 mm) polypropylene w/ring mode decoupled cloth surround and steel basket.
- Tweeter
  - 0.98 inch (25 mm) titanium dome, horn loaded;
  - Crossover Frequency.
  - 2.5 kHz.
- Impedance
  - 8 Ohms nominal with transformer set to "8Ω".
- Transformer Taps
  - 3.75W/7.5W/15W/30W/60W at 70V;
  - 7.5W/15W/30W/60W at 100V.
- Frequency Response
  - 65 Hz to 20 kHz (±3 dB).

- Frequency Range
  - 55 Hz to 20 kHz (-10 dB).
- Power Handling
  - 50 Watts program (8 Ohms).
- Sensitivity
  - 88 dB @ 1W/1m.
- Coverage
  - 95° conical (nominal).

1.4.13.2. Connections

- Input
  - One (1) 4-pin 5mm detachable terminal block with screw-down flanges;
  - Speaker input with parallel pass-thru.

1.4.13.3. Controls

- Transformer Tap
  - One (1) Recessed screwdriver-adjustable rotary switch on baffle;
  - Used to select 70/100V tap or 8 Ohms (bypass).

1.4.14. Full HD PTZ Camera

1.4.14.1. Key Features

- It shall support Full HD 3G-SDI;
- It shall feature a wide viewing angle of 65.1 degrees;
- It shall support simultaneous output via 3G-SDI, HDMI, and IP with Gen-Lock for synchronization;
- It shall offer 20x optical zoom, and intelligent, digital zoom up to 30x;
- It shall feature a 1/2.3-type MOS sensor;
- It shall offer a pan range of ±175° and a tilt range of -30° to +90°;
- Pan and tilt shall operate at a maximum speed of 90°/second and shall respond quickly to remote control operation. Presets shall be recalled at up to 300°/second;
- It shall feature Dynamic Range Stretch (DRS), Digital Noise Reduction (DNR) and a High Dynamic Range (HDR);
- It shall offer Night Mode with auto-switching using an IR illuminator in the 850nm range;
- Up to 100 preset positions and camera settings shall be stored in the camera
- It shall operate quietly at a sound level of NC35 or lower;
- It shall utilize a single cable solution for remote video and audio;
- It shall support PoE+.

1.4.14.2. Video Outputs

- It shall feature standard professional interfaces including 3G-SDI, as well as IP/Network for single cable delivery of high-quality content up to 1080/60p or 1080/60i.

1.4.14.3. Audio Input:

- Audio input and embedding (on IP, HDMI) shall be available via a switchable, stereo MIC/LINE input.

1.4.14.4. Serial Control

- RS-422 serial compatibility shall be available for serial-based control workflows. RS-232 and RS-422 VISCA protocol shall be available.

1.4.14.5. USB Connectivity

- It shall be possible to utilize the Camera as a USB camera using standard USB Video/Audio class drivers.

1.4.14.6. Network Connected:

- It shall support Power over Ethernet+ (PoE+);
- Camera control shall be possible via the network;
- It shall have a built-in web interface to monitor and control all aspects of the camera;
- The AV Controller shall control the camera through its network interface.
- It shall have a built-in H.264/MJPEG encoder for 7 channels of encoding up to 25Mbps.

1.4.14.7. Flexible Installation & Mounting:

- Blend-in: a white version of the camera and matching wall mount shall be installed.

1.4.14.8. Supported Video Formats:

- 1080/59.94p, 29.97p, 59.94i, 29.97psF;
- 1080/50p, 25p, 50i, 25psF;
- 720/59.94p and 50p.

1.4.14.9. Additional Features:

- An Optical Image Stabilizer (OIS) / 4-axis hybrid image stabilizer shall be equipped;
- It shall utilize a Four Drive Lens System that allows for three zoom lenses and one focus lens to operate simultaneously;

- It shall be equipped with a Freeze during Preset function that freezes video during preset playback;
- It shall have a Gen-lock function;
- NDI shall be available through Software Upgrade.

1.4.15. Clean Switch SDI/HDMI Router

1.4.15.1. Cleanly Switch HDCP Content

1.4.15.1.1. It shall provide clean and quiet switching of HDCP encrypted content to its HDMI output alongside SDI and non-encrypted HDMI sources.

1.4.15.1.2. It shall allow for dissolve or cut between HDMI sources such as cameras or disk players, traditional SDI sources and HDCP encrypted devices for output to an HDMI display or projector.

1.4.15.1.3. It shall have built-in frame syncs to ensure instantaneous, clean switches or dissolves between every source without flashing or unexpected black displays, even with completely asynchronous sources.

1.4.15.1.4. It shall be possible to route Non-HDCP encrypted HDMI and SDI sources to SDI destinations independently and simultaneously.

1.4.15.1.5. NOTE: HDCP encrypted sources cannot be routed to SDI destinations.

1.4.15.2. Use Encrypted and Non-Encrypted HDMI along with Side SDI Sources

1.4.15.2.1. It shall be possible to use HDMI sources and SDI sources alongside one

1.4.15.3. Convert While You Route

1.4.15.3.1. It shall allow for format conversion to take place while routing signals to destinations.

1.4.15.3.2. It shall be possible for various formats of high definition and standard definition content to be converted to a common format and routed seamlessly to destinations.

1.4.15.3.3. It shall be possible for standard definition sources to be up-converted to high definition as part of the routing process, as well as cross converting from one HD format to another.

1.4.15.4. Control From Anywhere

1.4.15.4.1. The web-browser user interface shall allow for control and set-up via any web browser-enabled device, while front panel controls shall allow for complete configuration and control of the router without the use of a computer.

1.4.15.4.2. It shall also be possible to be externally controlled through either TCP/IP or DB9 connector under automation control.

1.4.15.5. Router Salvos for Multi-Destination Simultaneous Routing

1.4.15.5.1. It shall be possible to use salvo memory registers to execute several routes simultaneously.

1.4.15.5.2. It shall be possible to create up to eight (8) separate salvo registers and trigger them with any web browser-enabled device.

1.4.15.6. Control From Third-Party Devices

1.4.15.6.1. It shall be possible to be controlled from third party devices using serial protocols via TCP/IP, RS-232, and SNMP.

1.4.15.7. Specifications

- Serial Digital Input
  - Two (2) to five (5), configurable, BNC and SFP;
  - Signal Type: 270 Mb/s SD SDI, SMPTE 259M 1.485 Gb/s HD SDI,SMPTE 274M, 292M, 296M 2.97 Gb/s HD SDI, SMPTE 424M, 425M;
  - Impedance: 75 Ω;
  - Return Loss: >15 dB;
  - Max Cable Length: 300 meters for 270 Mb/s 100 meters for 1.485 Gb/s;
  - Automatic Input Cable Equalization.
- Reference Input
  - One (1)
  - Type: 1 V P-P Composite Video, PAL or NTSC or Tri-Level Sync
  - Impedance: 75 Ω
  - Return Loss: >40 dB
- Serial Digital Output
  - QTY: Two (2) to five (5), configurable, BNC and SFP
  - Type: 270 Mb/s SD SDI, SMPTE 259M 1.485 Gb/s HD SDI,SMPTE 274M, 292M, 296M 2.97 Gb/s HD SDI, SMPTE 424M, 425M
  - Processing: 12 and 16 bit
  - Impedance: 75 Ω
  - Return Loss: >15 dB
  - Max Cable Length: 100 meters for HD 300 meters for SD (Belden 1694A)
- HDMI Input
  - Four (4)
  - Type: HDMI 1.3
  - Format: Supports HDMI signals which map to the video standards listed below
- HDMI Output
  - One (1)
  - Type: HDMI 1.3
  - Format: Follows input

- HDCP
  - The HDMI outputs shall be configurable to generate HDCP encryption. This shall allow both encrypted and non-encrypted HDMI and SDI sources to be cleanly switched to this output.
- Standards Supported
  - 1080i 50, 59.94 or 60 Hz, SMPTE 274M -4,5,6
  - 720p 50, 59.94 or 60 Hz, SMPTE 296M -1,2,3
  - 1080p 23.98, 24 or 25 Hz, SMPTE 274M -9,10,11
  - 1080p 50, 59.94, 60 Hz, SMPTE 424M, 425M, Level A
  - 1080sF 23.98, 24 or 25 Hz, RP211 -14,15,16.

NATO Communications and Information Agency

Discussion and Audio Visual Systems

Optional Site: Ulm, Germany

Annex B
System Requirements Specification (SRS)

1.1. SJSLG Operations Centre

1.1.1. General Description

1.1.1.1. Summary

This section describes the requirements for the Ops Room in Ulm (Germany). The technical requirements listed in this Statement of Work (SoW) outline both Technical and Functional Requirements. The contractor shall deliver an installation, fully compliant with all aspects as described in the SoW. If any aspects or details are missing or not fully described, the contractor is responsible to include them in the bid proposal. Should anything be required for inclusion after the bid is awarded, the contractor shall include it at no additional cost. The contractor shall deliver no less than a compliant and fully working installation. The hardware description in this document targets specific devices. The contractor shall only be allowed to propose or install hardware with equal or better specifications than what is outlined in this document.

1.1.2. Ops Room

1.1.2.1. General

1.1.2.1.1. **AV Control:** The Contractor shall install one (1) AV Control Processor, dedicated to the Ops Room. It shall be capable of integrated system control including native intersystem communication with AVoIP Encoders and Decoders, Audio DSPs and Amplifiers and AV Control Processors by the same manufacturer. The AV Control processor shall be the central connecting point for equipment and devices in the Ops Room. As the central element of communication for system devices under control, and all devices and sensors providing status, and feedback, the AV Control Processor shall integrate multiple disparate devices and systems without requiring multiple third-party protocol adaptors, translators, or gateways. The AV Control Processor shall also be capable of sharing status, state, and feedback information from other connected devices. The Contractor shall only provide, install and configure a Control Processor that meets the requirements outlined in “Annex A (1.4)” of this document. All cabling and additionally required hardware shall be included. The contractor shall develop a custom UI for AV Control that will provide quick and easy access to essential controls, but will also accommodate more in depth control and in depth status monitoring.

1.1.2.1.2. **AV over IP (AVoIP):** The contractor shall install a Software-Defined AV over IP System (AVoIP). This will allow for future scalability beyond the requirements outlined in this SoW. The AVoIP System shall support simultaneous transport of 4K 60fps Video (4:4:4 24bit and 10bit HDR), Multi-Channel Audio, USB 2.0 and Control over standard 1Gbps Network Infrastructure. For this, he shall install the required Network Infrastructure and Hardware AVoIP Encoders and Decoders at each Source and Destination. Where multiple Encoders and Decoders are co-located by design, and to reduce the need for local Power Supplies, he shall install Multi-Port Gigabit PoE Midspans and/or Encoder/Decoder Rack Frames.

1.1.2.1.3. Discussion System: In the Ops Room, the contractor shall install a new Discussion System. He shall install twenty (20) table-top Discussion Units on the user desks and one (1) for the room operator. All Discussion Units shall be licensed and configured for translation or multi-channel audio. External audio sources shall be available on the Discussion System through Dante and presented as channels on the Discussion Units. For every discussion unit, the contractor shall provide one (1) Headset. All the above-listed hardware shall be from the same manufacturer. The contractor shall provide, install, program and configure all hardware and shall leave no less than a fully working and compliant system.

1.1.2.1.4. **Video Wall:** The contractor shall install a large, two (3) screens high and six (6) screens wide, Video Wall. Sources should not have to be displayed smaller than a single 55” display. It must be possible to display any source from within the Ops Room onto any display, or a group of displays, simultaneously up to a maximum eighteen (18) sources at once on the Video Wall. Each 55” Video Wall Display shall have its own dedicated AVoIP Decoder, powered using PoE through a Multi-Port Gigabit PoE Midspan. No displays nor AVoIP decoders shall be daisy-chained for display grouping. They shall be installed using a specialized self-aligning hardware mounting structure, allowing for quick display panel replacement. It shall be possible to replace any display panel without removing source cabling. The Video Wall Displays shall be powered using, fully redundant remotely installed, power supplies. The Video Wall Displays and Mounting Hardware shall be from the same manufacturer.

1.1.2.1.5. **Secure KVM:** To separate the AVoIP Network from the Data Networks, Secure KVM’s shall be installed. All twenty (20) User Desks and the Operator Desk (1) shall be equipped with Secure KVM’s. They shall allow for connectivity of up to two (2) workstations and shall have two (2) display outputs. The inputs and outputs shall accept DVI, DisplayPort, and HDMI with passive cabling. The secondary display output shall be converted to AVoIP through an Encoder and shall be available for the operator, for controlled video distribution throughout the Ops Room. The chosen AVoIP Encoder shall offer an HDMI output so that the Encoded HDMI Signal is still usable as a secondary monitor output for local display.

1.1.2.1.6. **Videoconferencing:** The contractor shall integrate the conference room AV solution with a customer provided Videoconferencing Codec (Poly Group 700). The contractor shall install three (3) PTZ 1080p60 SDI Cameras and a Clean Switching SDI Router to handle the Camera Sources. The Router’s HDMI output shall also carry embedded audio from the Discussion System or DSP. For this, a separate AVoIP Decoder shall be used as a Dante audio break-out point. The Codec’s HDMI Monitor Outputs shall be converted to AVoIP for audio and video distribution over the network. One of these shall be Dante enabled for audio distribution on Dante. As for Content, both audio and video shall be routed to the Codec through an AVoIP Decoder. The contractor shall also integrate the Discussion System with the Camera System for automatic camera tracking. By pressing the discussion unit microphone activation button, a matching preset shall be triggered.

1.1.2.1.7. **Operator Desk:** The contractor shall install an Operator Desk with access to all room AV Management through a custom GUI. The Operator Desk shall be equipped with the same set-up as found on a User Desk, but shall also receive some additional hardware to facilitate Conference Room Management. The Contractor shall design a custom user interface, accessible through web and a Contractor provided 21.5" Touch Panel and Graphics Engine. The user interface shall offer Audio Controls, Video Controls, Operator Workstation Control, Monitoring, etc..

1.1.2.2. Core – AV Control

1.1.2.2.1. One (1) Room AV Controller

1.1.2.2.1.1. General

1.1.2.2.1.1.1. The Contractor shall install one (1) AV Control Processor inside dedicated AV Racks in the Ops Room.

1.1.2.2.1.1.2. It shall be programmed to provide the following:

- User interface on a 21.5" Touch Panel, dedicated for the Operator Position.
  - Interface shall also be accessible through Browser.
- Management of video routing between Encoders and Decoders for:
  - Video Wall
  - User Desks
  - Operator Desk
  - Videoconference
    - Near-End, Far-End and Content
  - IPTV
- Management of USB routing (Keyboard and Mouse) for remotely installed workstations for the Ops Room Operator.
- Management of audio routing for:
  - AVoIP
  - Discussion System
  - Dante
  - IPTV
  - Videoconference
- Status Monitoring of all controlled AV Devices

1.1.2.2.1.1.3. The Contractor shall provide, install and configure a Room AV controller that meets the requirements outlined in "Annex A (1.4)" of this document.

1.1.2.2.1.1.4. Once the installation is completed, all documented and de-compiled source code shall be provided to the customer.

1.1.2.2.1.1.5. All cabling and additionally required hardware shall be included.

1.1.2.3. **Core – AV Network**

1.1.2.3.1. Two (2) Network Switches

1.1.2.3.1.1. General

1.1.2.3.1.1.1. Two (2) Cisco Catalyst C9300L-48T-4G-1E will be provided by the NCI Agency Features

1.1.2.3.1.1.2. Switches shall be stacked with support for multicast traffic.

1.1.2.3.1.1.3. Ethernet switch guidelines for AVoIP shall be implemented.

1.1.2.3.1.1.4. Ethernet switch guidelines for Dante shall be implemented.

1.1.2.4. **Core - Discussion System**

1.1.2.4.1. One (1) Discussion System Processor

1.1.2.4.1.1. General

1.1.2.4.1.1.1. The Contractor shall install one (1) Discussion System Processor inside dedicated AV Racks in the Ops Room.

1.1.2.4.1.1.2. It shall be configured to:

- Manage all Discussion Units.
- Present external Dante Sources as Channels for the Discussion Units.
- Pass Microphone Activation Status to the Room AV Controller for Automatic Camera Tracking.

1.1.2.4.1.1.3. The Contractor shall provide, install and configure Discussion System Processor that meets the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.4.1.1.4. All cabling and additionally required hardware shall be included.

1.1.2.5. **Core – Audio**

1.1.2.5.1. One (1) Audio DSP

1.1.2.5.1.1. General

1.1.2.5.1.1.1. The Contractor shall install one (1) Audio DSP inside dedicated AV Racks in the Ops Room.

1.1.2.5.1.1.2. It process all audio to:

- Actively Cancel Echo;
- Eliminate Feedback.

1.1.2.5.1.1.3. The Contractor shall provide, install and configure an Audio DSP that meets the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.5.1.1.4. The Audio DSP shall be of the same manufacturer as the Room AV Controller

1.1.2.5.1.1.5. All cabling and additionally required hardware shall be included.

1.1.2.5.2. One (1) Amplifier

1.1.2.5.2.1. General

1.1.2.5.2.1.1. The Contractor shall install one (1) Amplifier inside dedicated AV Racks in the Ops Room.

1.1.2.5.2.1.2. It shall power all ceiling speakers throughout the Ops Room.

1.1.2.5.2.1.3. All audio shall first pass through the Audio DSP.

1.1.2.5.2.1.4. The Contractor shall provide, install and configure an Amplifier that meets the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.5.2.1.5. The Amplifier shall be of the same manufacturer as the Room AV Controller.

1.1.2.5.2.1.6. All Amplifiers, installed as part of this SoW, shall be the same brand and model.

1.1.2.5.2.1.7. All cabling and additionally required hardware shall be included.

1.1.2.6. **Core – Misc**

1.1.2.6.1. 19” Racks

1.1.2.6.1.1. General

1.1.2.6.1.1.1. The Contractor shall install generously sized 19” racks in the Ops Room to accommodate all AV hardware.

1.1.2.7. **Video Wall - Displays**

1.1.2.7.1. Eighteen (18) 55” Videowall Displays + Mounts

1.1.2.7.1.1. General

1.1.2.7.1.1.1. The Contractor shall install eighteen (18) 55” Videowall Displays and Mounts inside the Ops Room.

1.1.2.7.1.1.2. They shall be able to receive video from any available AVoIP Source in the Ops Room through a dedicated AVoIP Decoder per Display.

1.1.2.7.1.1.3. The Displays shall be controlled through a LAN Interface and for this, shall be connected to their AVoIP Decoders.

1.1.2.7.1.1.4. The Contractor shall provide, install and configure 55” Videowall Displays and Mounts that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.7.1.1.5. The 55” Videowall Displays and Mounts shall be of the same manufacturer.

1.1.2.7.1.1.6. All 55” Videowall Displays, installed as part of this SoW, shall be the same brand and model.

1.1.2.7.1.1.7. All cabling and additionally required hardware shall be included.

1.1.2.8. Video Wall – AVoIP

1.1.2.8.1. Eighteen (18) AVoIP Encoder/Decoders (Type A)

1.1.2.8.1.1. General

1.1.2.8.1.1.1. The Contractor shall install eighteen (18) AVoIP Encoder/Decoders in a custom cabinet underneath the Video Wall.

- They shall be configured as Decoders, and they shall each drive a single Video Wall Display.
- They shall allow “grouping”, so multiple displays act as one (Video Wall Feature).
- They shall be mounted and organized in such a way that it is easy to identify what Display they are connected to.

1.1.2.8.1.1.2. They shall be remotely powered (PoE) through Multi-Port Gigabit PoE Midspans, co-located with the Network Switches inside dedicated AV Racks in the Ops Room..

1.1.2.8.1.1.3. Signal Routing and Display Grouping (Video Wall) shall be controlled from the Operator Desk Management Interface.

1.1.2.8.1.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.8.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.1.2.8.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.1.2.8.1.1.7. All cabling and additionally required hardware shall be included.

1.1.2.9. Video Wall – Misc

1.1.2.9.1. One (1) Videowall Bezel + Cabinet

1.1.2.9.1.1. General

1.1.2.9.1.1.1. The Contractor shall install one (1) Videowall Bezel and Cabinet for the Video Wall inside the Ops Room.

1.1.2.9.1.1.2. It shall provide an esthetical finish to the Video Wall and shall be used to hide all peripheral hardware such as AVoIP Encoder/Decoders.

- The Bezel shall match the Video Wall design and shall ensure the Video Wall is blended into the rear wall upon which the Video Wall was installed.
- The Cabinet(s) shall be installed underneath the Video Wall and shall provide easy access to all discretely installed AVoIP Encoder/Decoder Units.

1.1.2.9.1.1.3. The entire solution shall feel as it were an integral part of the Video Wall hardware installation.

1.1.2.9.1.1.4. The Bezel and Cabinet shall form a single uniform structure.

1.1.2.10. **Operator Desk – Management Interface**

1.1.2.10.1. One (1) 21.5” HD Touch Screen Display

1.1.2.10.1.1. General

1.1.2.10.1.1.1. The Contractor shall install one (1) 21.5” HD Touch Screen Display in the Ops Room, at the Operator Desk position.

1.1.2.10.1.1.2. It shall be used by the Operator to manage all aspects of the AV installation inside the Ops Room.

1.1.2.10.1.1.3. All controls shall be made available through the Digital Graphics Engine, connected to the Room AV Controller.

1.1.2.10.1.1.4. It shall be driven by a Graphics Engine from the same manufacturer.

1.1.2.10.1.1.5. The Contractor shall provide, install and configure a 21.5” HD Touch Screen Display that meets the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.10.1.1.6. The 21.5” HD Touch Screen Display shall be of the same manufacturer as the Room AV Controller.

1.1.2.10.1.1.7. All cabling and additionally required hardware shall be included.

1.1.2.11. **One (1) Digital Graphics Engine**

1.1.2.11.1. General

1.1.2.11.1.1. The Contractor shall install one (1) Digital Graphics Engine in the Ops Room, at the Operator Desk position.

1.1.2.11.1.2. It shall be integrated with the Touch Panel and the Room AV Controller to manage all aspects of the AV installation inside the Conference Room.

1.1.2.11.1.3. The Contractor shall provide, install and configure a Digital Graphics Engine that meets the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.11.1.4. The Digital Graphics Engine shall be of the same manufacturer as the Room AV Controller.

1.1.2.11.1.5. All cabling and additionally required hardware shall be included.

1.1.2.12. **Operator Desk – KVM**

1.1.2.12.1. One (1) Secure 2-Port Dual-Head Universal KVM Switch with CAC Port

1.1.2.12.1.1. General

1.1.2.12.1.1.1. The Contractor shall install one (1) Secure KVM in the Ops Room, at the Operator Desk.

1.1.2.12.1.1.2. It shall allow for secure KVM switching between two (2) customer provided workstations and shall feature two (2) video outputs.

1.1.2.12.1.1.3. The secondary KVM output shall be converted to AVoIP using an AVoIP Encoder for further distribution throughout the Ops Room.

1.1.2.12.1.1.4. The Contractor shall provide, install and configure KVM's that meet the requirements outlined in "Annex A (1.4)" of this document.

1.1.2.12.1.1.5. All KVM's shall be of the same manufacturer and shall be accredited for use up to NATO Secret.

1.1.2.12.1.1.6. All cabling and additionally required hardware shall be included.

1.1.2.13. **Operator Desk – AVoIP**

1.1.2.13.1. One (1) AVoIP Encoder/Decoder (Type A)

1.1.2.13.1.1. General

1.1.2.13.1.1.1. The Contractor shall install one (1) AVoIP Encoder/Decoder in the Ops Room, at the Operator Desk

1.1.2.13.1.1.2. It shall be configured as Encoder for the secondary Secure KVM Output.

1.1.2.13.1.1.3. It shall be remotely powered (PoE) through Multi-Port Gigabit PoE Midspans, co-located with the Network Switches inside dedicated AV Racks in the Ops Room..

1.1.2.13.1.1.4. It shall be installed as "Endpoint" Versions.

1.1.2.13.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.1.2.13.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in "Annex A (1.4)" of this document.

1.1.2.13.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.1.2.13.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.1.2.13.1.1.9. All cabling and additionally required hardware shall be included.

1.1.2.14. **Operator Desk – Discussion Unit**

1.1.2.14.1. One (1) Tabletop Discussion Unit with Channel Selection – Chairperson

1.1.2.14.1.1. General

1.1.2.14.1.1.1. The Contractor shall install one (1) Tabletop Discussion Unit with Channel Selection in the Ops Room, at the Operator Desk.

1.1.2.14.1.1.2. It shall be used by the room operator and shall be configured as a Single User Chairperson Unit with Multi-Channel audio.

1.1.2.14.1.1.3. Channels that shall be available:

- Floor
- Videoconference
- IPTV
- Etc…

1.1.2.14.1.1.4. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor.

1.1.2.14.1.1.5. It shall come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference.

1.1.2.14.1.1.6. It shall come with one (1) headset from the same manufacturer.

1.1.2.14.1.1.7. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.14.1.1.8. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors.

1.1.2.14.1.1.9. All cabling and additionally required hardware shall be included.

1.1.2.15. **User Desk – KVM**

1.1.2.15.1. Twenty (20) Secure 2-Port Dual-Head Universal KVM Switches with CAC Port

1.1.2.15.1.1. General

1.1.2.15.1.1.1. The Contractor shall install twenty (20) Secure KVMs in the Ops Room, at the User Desks.

1.1.2.15.1.1.2. They shall allow for secure KVM switching between two (2) customer provided workstations at each desk and shall each feature two (2) video outputs.

1.1.2.15.1.1.3. Their secondary KVM outputs shall be converted to AVoIP using AVoIP Encoders for further distribution throughout the Ops Room.

1.1.2.15.1.1.4. The Contractor shall provide, install and configure KVM’s that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.15.1.1.5. All KVM’s shall be of the same manufacturer and shall be accredited for use up to NATO Secret.

1.1.2.15.1.1.6. All cabling and additionally required hardware shall be included.

1.1.2.16. **User Desk – AVoIP**

1.1.2.16.1. Twenty (20) AVoIP Encoder/Decoders (Type A)

1.1.2.16.1.1. General

1.1.2.16.1.1.1. The Contractor shall install twenty (20) AVoIP Encoder/Decoders in the Ops Room, at the User Desks.

1.1.2.16.1.1.2. They shall be configured as Encoder for the secondary Secure KVM Output.

1.1.2.16.1.1.3. They shall be remotely powered (PoE) through Multi-Port Gigabit PoE Midspans, co-located with the Network Switches inside dedicated AV Racks in the Ops Room..

1.1.2.16.1.1.4. They shall be installed as “Endpoint” Versions.

1.1.2.16.1.1.5. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.1.2.16.1.1.6. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.16.1.1.7. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.1.2.16.1.1.8. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.1.2.16.1.1.9. All cabling and additionally required hardware shall be included.

1.1.2.17. **User Desk – Discussion Units**

1.1.2.17.1. Twenty (20) Tabletop Discussion Units – Delegate

1.1.2.17.1.1. General

1.1.2.17.1.1.1. The Contractor shall install twenty (20) Tabletop Discussion Units with Channel Selection in the Ops Room, at the User Desks.

1.1.2.17.1.1.2. They will be used by the room users and shall be configured as a Single User Delegate Units with Multi-Channel audio.

- Channels that shall be available:
  - Floor
  - Videoconference
  - IPTV
  - Etc…

1.1.2.17.1.1.3. The Discussion Units shall be Daisy-Chained in Loop to the Discussion System Processor.

1.1.2.17.1.1.4. They shall each come with one (1) 30cm removable gooseneck microphone from the same manufacturer that is immune to typical mobile phone interference.

1.1.2.17.1.1.5. They shall each come with one (1) headset from the same manufacturer.

1.1.2.17.1.1.6. The Contractor shall provide, install and configure Discussion Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.1.2.17.1.1.7. The Discussion Unit shall be from the same manufacturer as the Discussion System Processors.

1.1.2.17.1.1.8. All cabling and additionally required hardware shall be included.

1.2. Room - Audio

1.2.1.1.1. Twenty-Four (24) Pendant Speakers

1.2.1.1.1.1. General

1.2.1.1.1.1.1. The Contractor shall install twenty-four (24) Pendant Speakers in the Ops Room.

1.2.1.1.1.1.2. They shall be powered by the dedicated Ops Room Amplifier, installed inside dedicated AV Racks in the Ops Room.

1.2.1.1.1.1.3. Volume control shall be possible through the Operator Desk Touch Panel.

1.2.1.1.1.1.4. The Contractor shall provide, install and configure Pendant Speakers that meet the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.1.1.1.5. All Speakers shall be of the same manufacturer as the Room AV Controller.

1.2.1.1.1.1.6. All cabling and additionally required hardware shall be included.

1.2.1.2. Videoconference – Full HD PTZ Cameras

1.2.1.2.1. Three (3) Full HD PTZ Cameras and Mounts

1.2.1.2.1.1. General

1.2.1.2.1.1.1. The Contractor shall install three (3) Full HD PTZ Cameras in the Ops Room.

1.2.1.2.1.1.2. They shall be connected using 3G-SDI to the Clean Switch SDI/HDMI Router for video routing to the customer provided Poly Group 700 HDMI Camera Input.

1.2.1.2.1.1.3. They shall be connected to the AV LAN for control.

1.2.1.2.1.1.4. A white version of the camera and matching wall mount shall be installed.

1.2.1.2.1.1.5. The Contractor shall provide, install and configure Full HD PTZ Cameras that meet the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.2.1.1.6. All Full HD PTZ Cameras shall be of the same manufacturer.

1.2.1.2.1.1.7. All cabling and additionally required hardware shall be included.

1.2.1.3. Videoconference – Camera Routing

1.2.1.3.1. One (1) Clean Switch SDI/HDMI Router

1.2.1.3.1.1. General

1.2.1.3.1.1.1. The Contractor shall install one (1) Clean Switch SDI/HDMI Router inside dedicated AV Racks in the Ops Room.

1.2.1.3.1.1.2. Cameras shall be connected using 3G-SDI.

1.2.1.3.1.1.3. It shall output video using HDMI, serving as Camera Input for the Poly Group 700.

1.2.1.3.1.1.4. It shall be connected to the AV LAN for Control.

1.2.1.3.1.1.5. The Contractor shall provide, install and configure a Clean Switch SDI/HDMI Router meets the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.3.1.1.6. All Clean Switch SDI/HDMI Routers shall be of the same manufacturer.

1.2.1.3.1.1.7. All cabling and additionally required hardware shall be included.

1.2.1.4. Videoconference – AVoIP

1.2.1.4.1. Two (2) AVoIP Encoder/Decoder with Dante (Type B)

1.2.1.4.1.1. General

1.2.1.4.1.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders with Dante inside dedicated AV Racks in the Ops Room.

- One (1) shall be configured as Encoder for the Primary Video Output of the Poly Group 700.
  - It shall also put the Poly Group 700 Audio Out on the network using Dante.
- One (1) shall be configured as Decoder.
  - Dante Audio from the Discussion System or any other Dante Source shall be injected into the Clean Switch SDI/HDMI Router using HDMI.
  - The Clean Switch SDI/HDMI Router shall then embed the audio on its HDMI output so it can be routed alongside the camera picture, to the Poly Group 700

1.2.1.4.1.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer.

1.2.1.4.1.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.1.4.1.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.4.1.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.1.4.1.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.1.4.1.1.7. All cabling and additionally required hardware shall be included.

1.2.1.4.2. Two (2) AVoIP Encoder/Decoders (Type A)

1.2.1.4.2.1. General

1.2.1.4.2.1.1. The Contractor shall install two (2) AVoIP Encoder/Decoders inside dedicated AV Racks in the Ops Room.

- One (1) shall be configured as Encoder for the Secondary Video Output of the Poly Group 700.
- One (1) shall be configured as Decoder for the Content Input of the Poly Group 700.

1.2.1.4.2.1.2. They shall be installed as “Card” Versions in a Chassis from the same manufacturer.

1.2.1.4.2.1.3. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.1.4.2.1.4. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.4.2.1.5. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.1.4.2.1.6. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.1.4.2.1.7. All cabling and additionally required hardware shall be included.

1.2.1.5. **Misc – IPTV Integration**

1.2.1.5.1. Four (4) AVoIP Encoder/Decoders with Dante (Type B)

1.2.1.5.1.1. General

1.2.1.5.1.1.1. The Contractor shall install four (4) AVoIP Encoder/Decoders with Dante in the Ops Room.

1.2.1.5.1.1.2. They shall be configured as Encoders for the IPTV HDMI Outputs.

1.2.1.5.1.1.3. They shall also put the IPTV Audio Out on the network as Dante.

1.2.1.5.1.1.4. They shall be remotely powered (PoE) through Multi-Port Gigabit PoE Midspans, co-located with the Network Switches inside dedicated AV Racks in the Ops Room..

1.2.1.5.1.1.5. They shall be installed as “Endpoint” Versions.

1.2.1.5.1.1.6. Signal Routing shall be controlled from the Operator Desk Management Interface.

1.2.1.5.1.1.7. The Contractor shall provide, install and configure AVoIP Encoder/Decoder Units that meet the requirements outlined in “Annex A (1.4)” of this document.

1.2.1.5.1.1.8. All AVoIP Encoder/Decoder Hardware shall be of the same manufacturer as the Room AV Controller.

1.2.1.5.1.1.9. Model variations shall be kept to a minimum to reduce the number of unique spares.

1.2.1.5.1.1.10. All cabling and additionally required hardware shall be included.