



Protected Tactical Enterprise Service (PTES)

Government Statement of Work (GSOW)

Attachment 1

for

FA8808-17-R-0006

19 March 2018

TABLE OF CONTENTS

SCOPE	8
Applicable Documents	9
1 CLIN 0001: Protected Tactical Enterprise Service (PTES) – PTES System/Segment Design	10
1.1 System Level SEIT/PM and Support Equipment	10
1.1.1 Systems Engineering.....	10
1.1.2 Assembly, Integration and Test	37
1.1.3 Program Management.....	42
1.1.4 Support Equipment and Product Support Planning	46
1.2 Space Vehicle – N/A.....	52
1.3 PTES Ground Operations and Processing Center (GOPC)	52
1.3.1 SEIT/PM and Support Equipment	52
1.3.2 PTES Mission Management System (MMS).....	54
1.3.3 PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)	58
1.4 Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/PTES Joint HUB	62
1.4.1 SEIT/PM and Support Equipment	62
1.4.2 Antenna – N/A	67
1.4.3 Optical Communication Assembly – N/A	67
1.4.4 RF Electronics – N/A.....	67
1.4.5 Timing – N/A.....	67
1.4.6 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Baseband-Network.....	67
1.4.7 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware.....	67
1.4.8 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software	67
1.4.9 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – N/A	67
1.4.10 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support.....	68
1.5 External Network (T-COMM).....	68
1.5.1 SEIT/PM and Support Equipment	68
1.5.2 Leased Circuits/Data Connectivity	68
1.5.3 Purchased Circuits	68
1.6 User Equipment – N/A.....	68
1.7 Facilities	68
1.7.1 SEIT/PM & Support Equipment – TBD.....	69
1.7.2 Site Preparation – TBD.....	69
1.7.3 Landscape – N/A.....	69
1.7.4 Buildings – N/A	69

1.7.5	Equipment and Building Fit Out – N/A	69
1.7.6	Facility Pre-Ops Maintenance – N/A.....	69
1.8	Vehicles and Shelters – N/A.....	69
1.9	Insurance – N/A	69
1.10	Task Orders – N/A	69
1.11	Orbital Transfer Vehicle (OTV) – N/A	69
1.12	Launch Vehicle – N/A	69
1	CLIN 0002 (Option): Protected Tactical Enterprise Service (PTES) – PTES System and Segment Initial Operational Capability (IOC) Development	70
1.1	System Level SEIT/PM and Support Equipment	70
1.1.1	Systems Engineering.....	70
1.1.2	Assembly, Integration and Test	72
1.1.3	Program Management.....	75
1.1.4	Support Equipment and Product Support Planning	76
1.1.5	Pre-Operational Support	79
1.2	Space Vehicle – N/A.....	81
1.3	PTES Ground Operations and Processing Center (GOPC)	81
1.3.1	SEIT/PM and Support Equipment	81
1.3.2	PTES Mission Management System (MMS).....	83
1.3.3	PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)	84
1.4	Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/PTES Joint HUB	85
1.4.1	SEIT/PM and Support Equipment	85
1.4.2	Antenna – N/A	87
1.4.3	Optical Communication Assembly – N/A	87
1.4.4	RF Electronics – N/A.....	87
1.4.5	Timing – N/A	87
1.4.6	SATCOM Gateway/PTES ECU (for KMS and Joint Hub)/Joint Hub Baseband-Network - Reserved.....	87
1.4.7	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware.....	87
1.4.8	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software	88
1.4.9	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – Reserved.....	88
1.4.10	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support – Reserved.....	88
1.5	External Network (T-COMM).....	88
1.5.1	SEIT/PM and Support Equipment	88
1.5.2	Leased Circuits/Data Connectivity	88
1.5.3	Purchased Circuits	88

1.6	User Equipment – N/A.....	88
1.7	Facilities.....	88
1.7.1	SEIT/PM & Support Equipment.....	88
1.7.2	Site Preparation.....	89
1.7.3	Landscape – N/A.....	90
1.7.4	Buildings – N/A.....	90
1.7.5	Equipment and Building Fit Out.....	90
1.7.6	Facility Pre-Ops Maintenance – Reserved.....	90
1.8	Vehicles and Shelters – N/A.....	90
1.9	Insurance N/A.....	90
1.10	Task Orders – N/A.....	90
1.11	Orbital Transfer Vehicle (OTV) – N/A.....	90
1.12	Launch Vehicle – N/A.....	90
1	CLIN 0003 (Option): Protected Tactical Enterprise Service (PTES) – PTES System/Segment Full Operational Capability (FOC) Development.....	91
1.1	System Level SEIT/PM and Support Equipment.....	91
1.1.1	Systems Engineering.....	91
1.1.2	Assembly, Integration and Test.....	93
1.1.3	Program Management.....	96
1.1.4	Support Equipment and Product Support Planning.....	96
1.2	Space Vehicle – N/A.....	100
1.3	Ground Operations and Processing Center (GOPC).....	100
1.3.1	SEIT/PM and Support Equipment.....	100
1.3.2	PTES Mission Management System (MMS).....	104
1.3.3	PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)	106
1.4	Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub.....	107
1.4.1	SEIT/PM and Support.....	107
1.4.2	Antenna – N/A.....	109
1.4.3	Optical Communication Assembly – N/A.....	109
1.4.4	RF Electronics – N/A.....	109
1.4.5	Timing – N/A.....	109
1.4.6	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Baseband-Network.....	109
1.4.7	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware.....	109
1.4.8	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software.....	109
1.4.9	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – N/A.....	110
1.4.10	SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support – N/A.....	110
1.5	External Network (T-COMM) – N/A.....	110

1.6	User Equipment – N/A.....	110
1.7	Facilities – N/A.....	110
1.8	Vehicles and Shelters – N/A.....	110
1.9	Insurance – N/A.....	110
1.10	Task Orders – N/A.....	110
1.11	Orbital Transfer Vehicle (OTV) – N/A.....	110
1.12	Launch Vehicle – N/A.....	110
1	CLIN 0004 (Option): Protected Tactical Enterprise Service (PTES) – PTES Joint Hub End Cryptographic Unit (ECU)/Joint Hub Procurement Full Operational Capability (FOC).....	111
1.1	System Level SEIT/PM and Support Equipment.....	111
1.1.1	System Engineering – N/A.....	111
1.1.2	Assembly, Integration and Test – N/A.....	111
1.1.3	Program Management – N/A.....	111
1.1.4	Support Equipment and Product Support Planning.....	111
1.1.5	Pre-Operational Support – N/A.....	112
1.2	Space Vehicle – N/A.....	112
1.3	PTES Ground Operations and Processing Center (GOPC) – N/A.....	112
1.4	Ground Terminal (GT)/SATCOM Gateway/PTES Joint Hub ECU/PTES Joint HUB.....	112
1.4.1	SEIT/PM and Support Equipment.....	112
1.4.2	Antenna – N/A.....	113
1.4.3	Optical Communication Assembly – N/A.....	113
1.4.4	RF Electronics – N/A.....	113
1.4.5	Timing – N/A.....	113
1.4.6	SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Baseband-Network – N/A.....	113
1.4.7	SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Hardware.....	113
1.4.8	SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Software.....	114
1.4.9	SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Pre-Operations Maintenance – N/A.....	114
1.4.10	SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Pre-Operations Mission Support – N/A	114
1.5	External Network (T-COMM) – N/A.....	114
1.6	User Equipment – N/A.....	114
1.7	Facilities – N/A.....	114
1.8	Vehicles and Shelters – N/A.....	114
1.9	Insurance – N/A.....	114
1.10	Task Orders – N/A.....	114
1.11	Orbital Transfer Vehicle (OTV) – N/A.....	114
1.12	Launch Vehicle – N/A.....	114
1	CLIN 0005 (Option): Protected Tactical Enterprise Service (PTES) -- PTES Joint Hub (w/End Cryptographic Unit (ECU) Installation and Deployment (Full Operational Capability (FOC)).....	115
1.1	System Level SEIT/PM and Support Equipment.....	115

1.1.1	Support Equipment and Product Support Planning	115
1.2	Space Vehicle – N/A.....	116
1.3	PTES Ground Operations and Processing Center (GOPC) – N/A	116
1.4	Ground Terminal/SATCOM Gateway/PTES Joint Hub (w/ECU).....	116
1.4.1	SEIT/PM and Support Equipment	116
1.4.2	Antenna – N/A	117
1.4.3	Optical Communication Assembly – N/A	117
1.4.4	RF Electronics – N/A.....	117
1.4.5	Timing – N/A.....	117
1.4.6	SATCOM Gateway/PTES Joint Hub Baseband-Network.....	117
1.4.7	SATCOM Gateway/ECU/PTES Joint Hub Installation Hardware.....	117
1.4.8	SATCOM Gateway/PTES Joint Hub Software – N/A	118
1.4.9	SATCOM Gateway/PTES Joint Hub Pre-Operations Maintenance – N/A.....	118
1.4.10	SATCOM Gateway/PTES Joint Hub Pre-Operations Mission Support – Reserved.....	118
1.5	External Network (T-COMM).....	118
1.5.1	SEIT/PM and Support Equipment	118
1.5.2	Leased Circuits/Data Connectivity	118
1.5.3	Purchased Circuits	118
1.6	User Equipment – N/A.....	119
1.7	Facilities	119
1.7.1	SEIT/PM & Support Equipment.....	119
1.7.2	Site Preparation.....	120
1.7.3	Landscape – N/A.....	121
1.7.4	Buildings – N/A	121
1.7.5	Equipment and Building Fit Out – N/A.....	121
1.8	Vehicles and Shelters – N/A.....	121
1.9	Insurance – N/A	121
1.10	Task Orders – N/A	121
1.11	Orbital Transfer Vehicle (OTV) – N/A	121
1.12	Launch Vehicle – N/A	121
1	CLIN 0006 (Reserved): Protected Tactical Enterprise Service (PTES) – Initial Spares/Support Equipment/Interim Contractor Support	122
1.1	System Level SEIT/PM and Support Equipment	122
1.1.1	Systems Engineering.....	122
1.2	Spares	125
1	CLIN 0007 (Option): Protected Tactical Enterprise Service (PTES) – Priced Training and Technical Orders Option.....	126
1.1	Training.....	126
1.2	Technical Orders (TOs)	127
1	CLIN 0008 (Option): Protected Tactical Enterprise (PTES) – Special Studies	128

1.1	Special Study Requirements	128
	Appendix A – Agile Product Management.....	130
	Appendix B – Key Personnel Substitution	150
	Appendix C – SMC--Enabling Clause For Government Program Contracts Requiring Interface With Aerospace Federally Funded Research and Development Center (FFRDC) Contract Support (NOV 2017)	152
	Appendix D – Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005) (May 2018)	154
	Appendix E – Acronym List.....	155

LIST OF TABLES

Table 1-1.	PTES Internal System ICDs Led by PTES Contractor	22
Table 1-2.	PTES External System ICDs Supported by PTES Contractor	22
Table 1-3.	Criticality Definitions.....	36
Table 1-4.	Software Assurance (Development Process).....	36
Table 1-5.	Software Assurance (Operational Process)	36
Table 1-6.	Software Assurance (Development Environment).....	37
Table 1-7.	System Test Events Led by PTES Contractor.....	41
Table 1-8.	System Test Events Supported by PTES Contractor.....	41
Table 1-1.	System Test Events Led by PTES Contractor.....	74
Table 1-2.	System Test Events Supported by PTES Contractor.....	74
Table 1-1.	System Test Events Led by PTES Contractor.....	95
Table 1-2.	System Test Events Supported by PTES Contractor.....	95
Table A-1.	Government PTES Program Office (or Designee) Participation at Agile Meetings.....	135
Table A-2.	User Story Definition of Ready Criteria.....	136
Table A-3.	User Story Definition of Done.....	137
Table A-4.	Sprint Definition of Done	139
Table A-5.	Feature Definition of Done.....	140
Table A-6.	Build Definition of Done.....	141
Table A-7.	Release Definition of Done	141
Table A-8.	Build Decision Review Entrance/Exit Criteria.....	142

SCOPE

The Protected Tactical Enterprise Service (PTES) will provide an anti-jam Satellite Communications (SATCOM) capability for the tactical warfighter via Wideband Global SATCOM (WGS) satellites. PTES includes a Mission Management System (MMS), a Key Management System (KMS) and Key Loading and Initialization Facility (KLIF), and provides Joint Hubs to plan the global communication services via WGS satellites. The PTES Initial Operational Capability (IOC) provides regional service utilizing one (1) WGS satellite and the Full Operational Capability (FOC) provides a worldwide service utilizing up to ten (10) WGS satellites.

The PTES MMS, KMS and KLIF will be deployed at Defense Information Systems Agency (DISA) Core Data Centers (CDC), which is a Joint Integration Environment (JIE) CDC. The PTES Joint Hubs will be deployed at existing SATCOM Gateway sites. PTES will be operated by personnel at Schriever AFB. The MMS, KMS and KLIF software will be developed using the Agile Product Management process as specified in this document. For the Joint Hub and End Cryptographic Unit (ECU) the PTES Contractor may choose to use the Agile Product development process or another development lifecycle (e.g., waterfall, incremental).

There are eight Contract Line Item Numbers (CLIN) covering design, development, testing, and fielding. The CLIN structure provides three (3) System Engineering, Integration and Test, Program Management, and Support Equipment CLINs (0001, 0002 and 0003) that covers different periods of performance from Effective Contract Date (ECD) through FOC. CLIN 0001 provides for the design of the hardware (Joint Hub and ECU), Architectural Development of the MMS, KMS, and KLIF (Build 0), and the development, test, and delivery of the MMS, KMS, and KLIF software Builds 1 and 2. CLIN 0002 provides for the development and fielding of the PTES IOC capability to include the ECU, Joint Hub, and MMS, KMS, and KLIF Release 1 (Builds 3 and 4). CLIN 0003 provides for the development of the MMS, KMS, and KLIF FOC Release 2 (Builds 5 through 8) and any required upgrades to the ECU and Joint Hub. CLIN 0004 covers ECU (for the KMS and Joint Hub) and Joint Hub production for FOC. CLIN 0005 provides for the installation of ECUs and Joint Hubs for FOC. CLIN 0006 covers interim contractor support and sparring to support the transition period between IOC and FOC. CLIN 0006 is "Reserved." The Government intends to modify the contract at a later date to include this work. CLIN 0007 provides additional training and documentation requirements for military personnel in the event military personnel are required to operate the PTES system. CLIN 0008 covers special studies.

The technical requirements for PTES have been flowed down from the PTES Capabilities Development Document (CDD) and are defined in the PTES System Technical Requirements Document (TRD) (PTES-8000). The PTES CDD includes fifteen (15) Key Performance Parameters (KPP). The CDD also includes twenty five (25) Key System Attributes (KSA) and sixteen (16) Additional Performance Attributes (APA).

This Government Statement of Work (GSOW) defines the tasks required to develop, build, integrate, test, field, and conduct interim contractor operations of the PTES system. Note that days mentioned in the GSOW, unless otherwise specified, refer to calendar days (CD). The Contractor Statement of Work (CSOW) shall be consistent with the structure, content, and numbering of the GSOW, and shall only add lower level tasks.

The GSOW contains eight CLINs of which seven CLINs contain Contract Data Requirement Lists (CDRL). Additionally, specified requirements in CLIN 0001 that are also applicable to CLINs 0002 and 0003 are referred to in their respective sections. CDRLs contained in CLIN 0001 that are also applicable to CLINs 0002 and 0003 will be identified in CLIN 0001 and submitted as stated below.

With the exception of A054 (Integrated Program Management Report (IPMR)) and A055 (Contract Funds Status Reports (CFSR)), CDRLs for each CLIN shall be identified as follows:

- "A" series CDRLs apply only to CLIN 0001, [AXXX]
- "B" series CDRLs apply only to CLIN 0002, [BXXX]
- "C" series CDRLs apply only to CLIN 0003, [CXXX]
- "D" series CDRLs apply only to CLIN 0004, [DXXX]
- "E" series CDRLs apply only to CLIN 0005, [EXXX]
- "F" series CDRLs are "Reserved," and apply only to CLIN 0006, [FXXX]
- "G" series CDRLs apply only to CLIN 0007, [GXXX]

CDRLs A054 (IPMR) and A055 (CFSR) will run the length of the contract and updated/submitted as indicated on their respective DD Form 1423.

Applicable Documents

All Compliance and Reference documents to include Standards, Handbooks, instructions, policy guidance, operations, etc., are contained in Attachment 2, Compliance and Reference Documents. The PTES Contractor shall comply with Table 1 of Attachment 2 (Compliance and Reference Documents) as defined in this GSOW and the documents in the PTES Technical Baseline unless specifically exempted or tailored by the Government. The PTES Contractor shall notify the Government for resolution in the event a conflict exists between a compliance document and this GSOW. For the purpose of this contract, this GSOW takes precedence over compliance documents except for higher-level Department of Defense (DoD)/DFARS clauses. The words "in accordance with (IAW)" and "in compliance with" will be used when referring to requirements in Compliance documents. The words "consistent with" and "per" will be used when referring to requirements in Reference documents.

Requirements

1 CLIN 0001: Protected Tactical Enterprise Service (PTES) – PTES System/Segment Design

CLIN 0001 includes all activities required to design and develop PTES from Effective Contract Date (ECD) through completion of System Critical Design Review (CDR) and CDR closeout actions. All requirements and nomenclature under this section also apply to CLINs 0002 and 0003 except where expressly stated otherwise.

1.1 System Level SEIT/PM and Support Equipment

The system level System Engineering, Integration and Test (SEIT) and Program Management (PM) and Support Equipment includes all PTES system and segments, overall program planning and controls to guide and execute program objectives. This section includes system engineering, integration, testing, program management, and support equipment efforts across system level activities, intersegment level activities and interfaces with external systems and organizations.

1.1.1 Systems Engineering

1.1.1.1 General Planning

The PTES Contractor shall conduct planning to design, build, and deliver a ground system that meets all PTES functional and performance requirements as defined in Government approved PTES specifications, Interface Control Documents (ICD), Cybersecurity Controls, compliance documents (Attachment 2, Compliance and Reference Documents) and the Operational Concept Description (OCD) for Initial Operational Capability (IOC) and Full Operational Capability (FOC).

- a. The PTES Contractor shall plan to manage and execute the PTES system engineering effort compliant with ISO/IEC/IEEE 15288 (Systems Lifecycle Processes) (as tailored by IEEE 15288.1), IEEE 15288.1 (Application of Systems Engineering on Defense Programs) (as tailored by SMC-T-005 (Risk Management Supplement To IEEE-15288.1 and Attachment 2 (Compliance and Reference Documents)) and SMC-T-006 (Specialty Engineering Supplement to IEEE 15288.1) and in accordance with (IAW) the Government PTES Program Office approved Systems Engineering Management Plan (SEMP).
 1. The PTES Contractor shall prepare and maintain a SEMP that complies with IEEE 15288.1 (Application of Systems Engineering on Defense Programs) (tailored), is consistent with the Government PTES System Engineering Plan (SEP) and documents the contractor's processes for planning, controlling and conducting a fully integrated engineering effort for PTES. [A001], [B001], [C001]
 - i. The PTES Contractor shall include an annex in the SEMP that provides a trace of the IEEE 15288.1 Process Outputs for each process to the Contract Data Requirement List (CDRL). For those Process Outputs that do not trace to a CDRL, the PTES Contractor shall provide a recommended tailoring.
 2. The PTES Contractor shall establish and maintain a PTES engineering change process IAW with Section 1.1.1.10 below.
- b. The PTES Contractor shall deposit all technical and management data that are required deliverables and work products identified in the Software Development Plan (SDP) and SEMP, including: processes, procedures, work instructions, interim CDRLs, and required work products

-
- identified for the Data Accession List (DAL) in the Contractor's secure Integrated Digital Environment (IDE) (see 1.1.1.11 Data Management) within three (3) business days of being updated, and update the DAL. (DAL submission) [A004], [B004], [C004]
- c. The PTES Contractor shall prepare and maintain an OCD consistent with the PTES Capabilities Development Document (CDD), Protected Anti-Jam Tactical SATCOM (PATS) Concept of Operations (CONOPS), and PTES System TRD (PTES-8000). [A002], [B002], [C002]
 - d. The PTES Contractor shall use a disciplined Systems Engineering approach IAW the Government PTES Program Office approved SEMP to define requirements, control changes, verify the PTES product, and achieve Government PTES Program Office acceptance. [A001], [B001], [C001]
 - e. The PTES Contractor shall request Government Furnished Property (GFP) items listed in Attachment 6: Government Furnished Property (GFP) and coordinate the delivery dates established by the Government PTES Program Office.
 - f. The PTES Contractor shall conduct Technical Interchange Meetings (TIM) and engineering tag-up teleconferences with the Government. (assume two per month)
 - g. The PTES Contractor shall produce meeting minutes with action items. (DAL submission) [A004], [B004], [C004]
 - h. All PTES segment markings shall be IAW MIL-STD-130N (Identification Marking of U.S. Military Property).
 - i. The PTES Contractor shall ensure the system and segment design complies with Department of Defense (DoD) Information Technology Standards Registry (DISR) standards to be tailored in coordination with the Government PTES Program Office.
(<https://gtg.csd.disa.mil/distr/dashboard.html>)
 - 1. The PTES Contractor shall provide data to support the Government PTES Program Office in completing the DISR questionnaire and profile. (DAL submission) [A004], [B004], [C004]
 - j. The PTES Contractor shall develop system and segment level systems engineering plans and perform system engineering for the integration of PTES segments and integration of PTES with external systems and organizations.
 - 1. The PTES Contractor shall develop and maintain a System Integration and Test Plan (SITP) that is consistent with the Government SITP (PTES-8950). [A005], [B005], [C005]
 - k. The PTES Contractor shall provide personnel with network and system administration experiences to manage DISA assets belonging to PTES during development.
 - 1. The PTES Contractor shall be, at a minimum, Information Assurance Technical (IAT) Level 1 certified.
 - 2. The PTES Contractor shall meet the background investigation requirements IAW DoDI 8500.01, "Cybersecurity," March 14, 2014."
 - l. The PTES Contractor shall comply with DISA Terms and Conditions (latest version), section on System Technology for hardware and software to be installed at the DISA CDC.
-

- m. The PTES Contractor shall provide adequate cleared personnel up to and including Top Secret/Sensitive Compartmented Information (TS/SCI) in order to process realistic threat scenarios for testing of the PTES system. (See DD Form 254 for more details)

1.1.1.1.1 Support to the Government PTES Program Office

- a. The PTES Contractor shall support the Integrated Product Teams (IPT) listed in the PTES SEP. Support shall include, but not be limited to:
 - 1. Participating in meetings and IPTs with the Government PTES Program Office. (Assume ten (10) (one (1) hour) separate IPT bi-weekly (every two weeks) meetings by teleconference)
 - 2. Providing technical inputs and developing material for IPT products.
 - 3. Providing status on PTES Contractor activities related to the IPT.
- b. The PTES Contractor shall provide the data derived from PTES analyses, demonstrations and modeling and simulation (M&S) activities as inputs for Government PTES Program Office M&S activities associated with system design trades and requirements verification. (DAL submission [A004], [B004], [C004])
- c. The PTES Contractor shall facilitate meetings for unanticipated events as requested by the Government PTES Program Office. (Assume four one-day meetings per year, held at the Contractor's facility with 25 attendees)
- d. The PTES Contractor shall participate in the Government PTES Program Office Engineering Review Board (ERB), Risk Management Board (RMB) and Configuration Control Board (CCB) processes as documented in the PTES SEP. (Assume teleconference every two (2) weeks)
- e. The PTES Contractor shall support the MILSATCOM Control Board (MCB) as requested by the Government PTES Program Office (assume quarterly).
- f. The PTES Contractor shall support planning and execution of the Government testing and assessments as outlined in the Government SITP (PTES-8950):
- g. The PTES Contractor shall participate in the PTES Schedule Management Review (SMR) processes, as documented in the PTES SEP.
 - 1. The PTES Contractor shall provide Contractor schedule status and updates to the Government PTES Program Office for incorporation into the Government PTES Program Office Integrated Master Schedule (IMS).
 - 2. The PTES Contractor shall attend scheduling meetings to review baseline schedule changes and schedule disconnects, and to review near term activities, progress and late tasks. (Assume teleconference every two (2) weeks)
- h. The PTES Contractor shall support the Government PTES Program Office working groups for PTES future extensibility to support the Protected Anti-jam Tactical Satellite Communications (PATS) phases. (Assume one (1) teleconference every month)
 - 1. The PTES Contractor shall support technical discussions with PATS programs' contractors and provide technical input to the working group to define requirements, interfaces, and operations concepts for the extension of PTES functionality to support all PATS phases.

2. The PTES Contractor shall provide comments on technical material provided by other PATS programs' contractors through the working group.
- i. The PTES Contractor shall provide status information for Government PTES Program Office reviews, executive reviews, independent program reviews and assessments, inspections, milestone events, budget excursions and user conferences. (DAL submission. [A004], [B004], [C004])
- j. The PTES Contractor shall support the Government PTES Program Office in the generation and execution of the Program Office's giver/receiver lists.
- k. The PTES Contractor shall provide dedicated office spaces for:
 1. Three Government PTES Program Office personnel at the primary Contractor software development facility and two Government PTES Program Office personnel at up to two other software development facilities. As a minimum, the office space shall be a lockable room and include a desk(s), phone(s), and unclassified computer hookups with access to the internet. The Government PTES Program Office personnel shall also be provided a hot desk and access to the PTES Contractor software development environments and secure IDE.
 2. Two Government PTES Program Office personnel at the primary Contractor hardware development facility and one Government PTES Program Office personnel at up to two other hardware development facilities. As a minimum, the office space shall be a lockable room and include a desk(s), phone(s), and unclassified computer hookups with access to the internet. The Government PTES Program Office personnel shall also be provided a hot desk and access to the PTES Contractor secure IDE.
1. The PTES Contractor shall support the Government PTES Program Office in developing and updating, when necessary, the Defense Information Systems Agency (DISA) Service Request Form (SRF).
 1. The PTES Contractor shall support a TIM with the Government PTES Program Office to finalize the initial SRF within 14 calendar days (CD) of ECD.
 2. The PTES Contractor shall support monthly TIMs to update the SRF and to discuss issues with DISA environments.
 3. The PTES Contractor shall participate in technical meetings and IPTs with DISA. (Assume daily (one (1) hour) technical discussion and separate weekly (one (1) hour) IPT meetings by teleconference)

1.1.1.1.2 Support to External Organizations

- a. The PTES Contractor shall support and provide technical inputs to certifications listed in the Government PTES SITP (PTES-8950) to include, but not be limited to: certification for operation over Wideband Global SATCOM (WGS) system, National Security Agency (NSA) certifications, DISA Core Data Centers (CDC), SATCOM Gateways and DoD Risk Management Framework (RMF).
- b. The PTES Contractor shall participate in meetings, technical discussions, reviews, etc., with external organizations such as the Office of the Secretary of Defense (OSD), DISA, United States Strategic Command (USSTRATCOM), Headquarters (HQ) Air Force Space Command

(AFSPC), Army Forces Strategic Command (ARSTRAT), NSA and terminal Program Offices. (Assume only one (1) external organization teleconference per week)

- c. The PTES Contractor shall coordinate with DISA to:
 - 1. Incorporate Cybersecurity requirements on PTES hardware and software deployed at DISA CDCs.
 - 2. Provide full detailed documentation for performance issues, fixes and change requests recommended to improve the performance or security.
- d. The PTES Contractor shall integrate and collaborate with Government identified Cybersecurity Service Provider (CSSP) to integrate monitoring tools that the CSSP requires to operate based on the level of service (degree of monitoring) of the CSSP.

Note: A CSSP is an organization that provides one or more cybersecurity services to implement and protect the Department of Defense Information Networks (DoDIN). CSSP will:

- Offer and provide cybersecurity services in accordance with DoD O-8530.01-M.
- Execute cybersecurity responsibilities and authorities in accordance with DoD Component policy, MOAs, contracts, or support agreements.
- Comply with directives and orders of USSTRATCOM and supported DoD Component NOSC and organizations.
- Document all supported entities and associated systems in accordance with DoD Component policy, MOAs, contracts, or support agreements.

1.1.1.2 PTES System Level Design

- a. The PTES Contractor shall design and develop a system that:
 - 1. Meets all requirements (software & hardware) required by the GSOW to include Contractor developed PTES specifications, TRDs, ICDs, other applicable specifications and compliance documents (Attachment 2, Compliance and Reference Documents, Table 1).
 - 2. Meets evolving Risk Management Framework (RMF) per DoDI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) and NIST 800-53 (latest version) controls tailored for PTES as specified in the Government PTES-8000 System TRD and including DISA Security Technical Implementation Guide (STIG) requirements.
- b. The PTES Contractor shall develop and maintain a Model Based Systems Engineering (MBSE) Solution Architecture (as delineated in the SEP). The Solution Architecture design shall ensure reuse of information, architecture artifacts, models and viewpoints that can be shared with common understanding in Commercial-Off-The-Shelf (COTS) SysML-compliant tools. The Solution Architecture shall be included as a model and documented in the PTES System/Subsystem Design Description (SSDD), with supporting rationale that meets all PTES requirements. [A006], [B006], [C006]
 - 1. The PTES Contractor shall develop and maintain the SSDD and ensure Solution Architecture alignment with the PTES GRA. [A006], [B006], [C006]

2. The PTES Contractor shall document PTES Dynamic Resource Allocation (DRA) algorithm and Mission Management System (MMS) demodulation packing solution in the SSDD. [A006], [B006], [C006]
 3. The PTES Contractor shall deliver the MBSE products to include the Solution Architecture model as part of the SSDD. [A006], [B006], [C006]
 4. The PTES Contractor shall provide to designated Government Program Office personnel access to the products and models within the Contractor's integrated MBSE environment.
 5. The PTES Contractor shall allow designated Government Program Office personnel to participate in the Configuration Management processes related to the Contractor's MBSE environment.
- c. The PTES Contractor shall ensure the MBSE Solution Architecture Model supports:
1. Applicable products to meet entrance and exit criteria for design reviews are delineated in the SEMP. [A001], [B001], [C001]
 2. Requirements development, requirements analysis and interface definition.
 3. Integration, test, verification, planning and execution.
 4. Updates to Government Department of Defense Architecture Framework (DoDAF) views documenting the end-to-end PTES system architecture, technical baseline changes, and PTES evolving capabilities.
 5. Refinement of the understanding of the PTES operations and maintenance.
- d. The PTES Contractor shall use a Modular Open System Approach (MOSA) for the design and development of the PTES system (reference Defense Acquisition Guidebook CH 3-2.4.1).
1. The PTES Contractor shall design an architecture meeting MOSA principles that allows severable components at the appropriate level to be iteratively added, removed, or replaced throughout the lifecycle of PTES to enable opportunities for technical upgrades, increased interoperability, sustainment benefits, costs savings and schedule reductions.
 - i. The PTES Contractor shall provide a design and develop a system that includes system interfaces that utilize Government-approved ICDs between the PTES system and external systems, between PTES segments, and between subsystems.
 2. As part of the MOSA design architecture and development, the PTES Contractor shall use the following four segments including: the MMS, Key Management System (KMS), Key Loading and Initialization Facility (KLIF) and Joint Hub.
 - i. For MMS, the PTES Contractor shall use a minimum of ten (10) subsystems which include Database Management, WGS Mission Planning, External Input/Output Manager, and Classified Portal Manager, Unclassified Portal Manager, and additional contractor-defined subsystems.
 - ii. For each KMS, KLIF and Joint Hub segments, the PTES Contractor shall use a minimum of six subsystems which include an Input/Output Manager and contractor-defined subsystems.
-

- iii. The PTES Contractor shall ensure that the size Source Lines of Code (SLOC) of a subsystem does not exceed 25% of its segment size (SLOC).
- iv. The PTES Contractor shall provide a design and develop a system such that interfaces between subsystems within a segment use only a common set of industry standard application layer protocols for data exchanges between subsystems.
- e. The PTES Contractor shall demonstrate that the MMS software design meets extensibility requirements (IAW the PTES System TRD) to plan for and manage PATS Terminals, Contingency Hubs, Joint Hubs, and Hub-in-space for the operations for future PATS phases.
- f. The PTES Contractor shall document technical decisions and trades, including trade studies requested by the Government PTES Program Office and present the findings to the Government PTES Program Office as requested. (DAL submission) [A004], [B004], [C004]
 1. The PTES Contractor shall conduct a systems engineering trade-off analysis showing how cost and capability vary as a function of the major design parameters prior to the PTES System Preliminary Design Review (PDR). The analysis will support the Government Program Manager's assessment of refined Key Performance Parameters/Key System Attributes/Additional Performance Attributes (KPPs/KSAs/APAs) and Government validation of the CDD. For planning purposes, anticipate three technical interchange meetings (TIMs) with the Government Program Office to refine the study parameters and brief the results. [A004] (This subparagraph only applies to CLIN 0001)
 2. The PTES Contractor shall conduct a system engineering trade-off analysis on the selection of the integration, test, demonstration, and training environment, and operational environment for the PTES MMS, KMS, and KLIF segments prior to PTES System Functional Review (SFR). The analysis will show how life-cycle factors and risk vary as a function of, but not limited to, cost, performance, integration, test, cybersecurity certification, and sustainment. At a minimum, environments analyzed will include DISA CDCs, DISA milCloud 2.0, and a dedicated hardware/software system collocated with the operators. The analysis will support the Government Program Manager's assessment of the operational computational environment. For planning purposes, anticipate three technical interchange meetings (TIMs) with the Government Program Office to refine the study parameters and brief the results. [A004](This subparagraph only applies to CLIN 0001)
- g. The PTES Contractor shall employ M&S capabilities for the development, test and validation of the PTES system and provide a minimum of Government Purpose Rights for all M&S capabilities developed for this purpose.
- h. The PTES Contractor shall develop and deliver a Design Review Information Package (DRIP) that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES System Requirements Review (SRR). [A008] (This subparagraph only applies to CLIN 0001)
 1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format, and acceptance criteria of the SRR, including tailoring of specific criteria specified in IEEE 15288.2 (Technical Reviews and Audits on Defense Systems) (tailored). Note: SRR criteria related to software for segments using Agile software development will be tailored to be consistent with Agile processes.

- i. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audits requirement contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES SFR. [A008] (This subparagraph only applies to CLIN 0001)
 - 1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format, and acceptance criteria of the SFR, including tailoring of specific criteria specified in IEEE 15288.2 (Technical Reviews and Audits on Defense Systems) (tailored). Note: SFR criteria related to software for segments using Agile software development will be tailored to be consistent with Agile processes.
- j. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES System PDR. [A008] (This subparagraph only applies to CLIN 0001)
 - 1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format, and acceptance criteria of the System PDR, including tailoring of specific criteria specified in IEEE 15288.2 (Technical Reviews and Audits on Defense Systems) (tailored). Note: System PDR criteria related to software for segments using Agile software development will be tailored to be consistent with Agile processes.
 - 2. The PTES Contractor shall also include in the System PDR DRIP a Reliability and Maintainability Predictions Report (see MIL-HDBK-217F).
- k. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES System CDR. [A008] (This subparagraph only applies to CLIN 0001)
 - 1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format, and acceptance criteria of the System CDR, including tailoring of specific criteria specified in IEEE 15288.2 (Technical Reviews and Audits on Defense Systems) (tailored). Note: System CDR criteria related to software for segments using Agile software development will be tailored to be consistent with Agile processes.
 - 2. The PTES Contractor shall also include in the System CDR DRIP a Reliability and Maintainability Predictions Report (see MIL-HDBK-217F).
- l. The PTES Contractor shall conduct the following PTES system reviews in compliance with the tailored IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) entry and exit criteria: System Requirements Review (SRR), System Functional Review (SFR), System Preliminary Design Review (PDR), and System CDR. (This subparagraph only applies to CLIN 0001)
- m. The PTES Contractor shall perform the following for System SRR, SFR, System PDR, and System CDR: (This subparagraph only applies to CLIN 0001)
 - 1. Conduct an Entry Criteria review meeting with the Government PTES Program Office prior to each design review for Government PTES Program Office assessment of entry criteria sufficiency and readiness to hold the review.

-
2. Conduct dry-run presentations with Government PTES Program Office participation no later than fourteen (14) CD prior to the review.
 3. Develop post-review minutes and respond to post-review action item no later than fourteen (14) CD following the review. (DAL submission) [A004], [B004], [C004]
 4. Submit proposed closure of action items and liens for Government PTES Program Office approval no later than fourteen (14) CD following the review. (DAL submission) [A004], [B004], [C004]
 5. Obtain Government PTES Program Office concurrence that acceptance criteria have been met.

1.1.1.3 Software Development

- a. The PTES Contractor shall use an Agile Project Management approach as outlined in Appendix A (Agile Product Management) for the development of the MMS, KMS and KLIF. For the KMS ECU, Joint Hub ECU and Joint Hub software development, the PTES Contractor may choose to use the Agile Product development process or another development lifecycle (e.g., waterfall, incremental). (Note: Regardless of ECU development approach selected, all ECU CDRLs shall be delivered IAW their respective DD 1423 instructions.)
- b. The PTES Contractor shall plan and execute a set of defined management, engineering and support processes for software development:
 1. That are mature, capable, and process interfaces are integrated across the entire team, including subcontractors to ensure work products transition across organization boundaries efficiently.
 2. That leverage organization and industry best practices (e.g., Software Engineering Institute (SEI) Capability Maturity Model-Integrated for Development (CMMI-DEV®), SAE AS9100 Rev D (Quality Management Systems - Requirements for Aviation, Space and Defense Organizations) and ISO 9001 (Quality Management Systems – Requirements)).
 3. That are compliant with evolving program Cybersecurity controls as described in section 1.1.1.14.
 4. That are identified in the SEMP and Software Development Plan (SDP) and accessible in the IDE. [A001], [B001], [C001], [A010], [B010], [C010]
- c. The PTES Contractor shall develop, implement and manage software and associated products IAW SMC-S-012 (SMC Software Development for Space Systems) (as tailored by Attachment 2, Compliance and Reference Documents):
 1. Software Architecture Description (SAD) [A011], [B011], [C011]
 2. Database Design Description (DBDD) [A012], [B012], [C012]
 3. Software Requirements Specification (SRS) (only for Joint Hub if using non-agile software development methods) [A013], [B013], [C013]
 4. Software Development Plan (SDP) [A010], [B010], [C010]
 5. Software Test Plan (STP) [A014], [B014], [C014]
 6. Software Test Description (STD) [A015], [B015], [C015]

7. Software Test Reports (STR) [A016], [B016], [C016]
 8. Software User Manual (SUM) [A017], [B017], [C017]
 9. Software Product Specification (SPS) [A018], [B018], [C018]
 10. Software Version Description (SVD) [A019], [B019], [C019]
 11. Software Resources Data Reporting: Development and Maintenance Reports and Data Dictionary [A020], [B020], [C020]
 12. Software and System Measurement Report (SSMR) [A021], [B021], [C021]
 13. Firmware Support Manual [A022], [B022], [C022]
 14. Software Transition Plan (STrP) [A023], [B023], [C023]
 15. Agile Product Backlog/Product Roadmap [A024], [B024], [C024]
- d. The PTES Contractor shall ensure the team's software development environment is consistent with the Government approved DISA CDC Integration, Demonstration & Test, and Training environment; and Operational environment.
- e. The PTES Contractor shall use secure coding standards identified in the SDP for all PTES software. [A010], [B010], [C010]
1. The PTES Contractor shall conduct training in secure coding based on the standards identified in the SDP for the PTES development team. [A010], [B010], [C010]
- f. The PTES Contractor shall use automated analysis tools to ensure conformance to secure coding standards identified in the SDP. [A010], [B010], [C010]
1. The PTES Contractor shall ensure software, scripts and data developed to support the automated analysis are deposited into the Contractor's IDE and entered into the DAL. [A004], [B004], [C004]
- g. The PTES Contractor shall ensure interim versions of software work products are available in the Contractor's secure IDE, and update the DAL. [A004], [B004], [C004]
- h. The PTES Contractor shall identify and receive Government PTES Program Office concurrence for use of proposed Non-Developmental Items (NDI) (see Appendix A (Agile Product Management) Glossary definition), including updates, in the PTES system and for development, support and maintenance.
1. The PTES Contractor shall ensure that the selected PTES NDI complies with SMC-S-012 (SMC Software Development for Space Systems) Appendix B (tailored) and can be maintained, verified, tested, and sustained.
 2. The PTES Contractor shall conduct NDI pedigree analysis and vulnerability assessments and provide the results to the Government PTES Program Office. (DAL submission) [A004], [B004], [C004]
 3. The PTES Contractor shall use automated analysis and test tools on all NDI to demonstrate functionality, and for integration, regression, and requirement testing.
 4. The PTES Contractor shall annually review changes to NDI product versions, including operating systems, infrastructure and platform software.

5. The PTES Contractor shall identify risks and propose mitigations for use of NDI, present the proposed approach to the Government PTES Program Office.
6. The PTES Contractor shall maintain configuration identification and control of all NDI software used in development, support, or maintenance of PTES. (DAL submission) [A004], [B004], [C004]
 - i. The PTES Contractor shall ensure configuration identification includes: developer name (project name for NDI), product name, version, country of origin, summary of general purpose, where used (e.g., development environment, test environment, end unit) and a website reference.
 - ii. The PTES Contractor shall provide Software Product Specification (SPS) for reuse code. [A018], [B018], [C018]
- i. The PTES Contractor shall identify and minimize the existence of dead or unused code
 1. The PTES Contractor shall use static code analysis to identify dead or unused code
 2. The PTES Contractor shall assess and mitigate the cybersecurity and system performance risks of dead or unused code
 3. The PTES Contractor shall track risks associated with dead or unused code in Risk Management process per paragraph 1.1.1.7 and obtain Government PTES Program Office approval for risk mitigation approach.
- j. The PTES Contractor shall ensure that software provides independence from the GFE operating system and virtualization infrastructure to minimize impact on PTES software from upgrades or changes to the operating system over time.
- k. The PTES Contractor shall deliver a complete list of licenses and warranties for all software used within the system for development, testing and operations. [A025], [B025], [C025]
 1. The PTES Contractor shall maintain the current/active licenses and warranties until turnover (DD Form 250) of the system to the Government.
 2. The PTES Contractor shall formally transfer all equipment software licenses and warranties required to test, operate and maintain the installed system at system turnover (DD Form 250). [A025], [B025], [C025]
 3. The PTES Contractor shall ensure software licenses do not contain requirements that restrict or obligate the Government's use of the source codes, such as requirements to provide software updates back to the owner, limits on the type of use or user, inability to pass the license on to others, or includes other embedded licenses that are not equally available or disclosed.
 4. The PTES Contractor shall ensure software licenses do not have expirations dates (e.g., stops working after 31 December 2050).
 5. The PTES Contractor shall ensure maintenance fees (\$\$ each YY) are negotiated and agreed to by the Government.

1.1.1.4 Requirements and Interfaces

- a. The PTES Contractor shall develop, deliver, and maintain the PTES System Specification and ensure that it is compliant with the PTES System TRD (PTES-8000). [A026], [B026], [C026]
- b. The PTES Contractor shall document and maintain bi-directional requirements traceability between the Government PTES Program Office controlled TRDs and ICDs, PTES CDD, PATSCONOPS, and PTES Contractor developed specifications and ICDs in a Requirements Traceability Matrix (RTM) using a DOORSv9 compatible database data, as the requirement flow-down management system. The PTES Contractor's DOORS version shall be coordinated with the Government PTES Program Office prior to incorporation. [A027], [B027], [C027]
 1. The PTES Contractor shall provide all PTES requirements documents and RTMs, e.g. system, segments and ICDs to the Government PTES Program Office as DOORS modules. [A027], [B027], [C027]
 2. The PTES Contractor shall provide DOORS files in the following format. If the DOORS file(s) contains links to other modules, then the archive file shall be a DOORS project archive (.dpa) file. If there are no links, then the archive shall be a DOORS module archive (.dma) file.
 - All DOORS module archives shall use the following naming convention:
COMPANYNAME_CDRL NUMBER_PROJECT NAME_ARCHIVEDATE.dma.
 - All DOORS project archives shall use the following naming convention:
COMPANYNAME_CDRL NUMBER_PROJECT NAME_ARCHIVEDATE.dpa.
 3. The PTES Contractor shall coordinate with the Government PTES Program Office to deliver a project archive that contains the appropriate link schematic. The project archive shall correctly employ the use of link modules and link sets.
 4. The PTES Contractor shall ensure DOORS database delivery is in synchronization with the approved version of the specifications (Word document).
 5. The PTES Contractor shall provide trace views coordinated with the Government PTES Program Office to ensure proper bi-directional requirements traceability between the Government PTES Program Office controlled TRDs and ICDs, PTES CDD, PATS CONOPS, and PTES Contractor developed specifications and ICDs.
- c. The PTES Contractor shall plan and conduct monthly meetings that involve the Government PTES Program Office to mature requirements and concepts of operation. Government PTES Program Office involvement includes: attendance at the monthly meetings, review of Contractor developed operational concepts, requirements and design details associated with operations as they mature, opening issues and agreeing on closure plans.
- d. The PTES Contractor shall participate in activities to assess and incorporate new or modified system requirements. This includes, but not limited to:
 1. Supporting changes to PTES requirement documents and ICDs proposed by the PTES Contractor and the Government PTES Program Office.
 2. Participating in the Government PTES Program Office configuration management process for changes to PTES requirements and ICDs.

3. The PTES Contractor shall provide dollarized cost estimates, schedule and performance impacts sufficient to support decision making for the Government PTES Program Office configuration management processes.
- e. The PTES Contractor shall lead the definition and documentation of the PTES internal system ICDs listed in Table 1-1, including leading IPT meetings with the Government PTES Program Office and other stakeholders, providing technical detail, incorporating ICD comments from stakeholders, generating draft updates of the ICDs, maintaining internal configuration control of the draft documents and supporting ICD approval through the Government PTES Program Office Configuration Management (CM) and Data Management (DM) process. [A029], [B029], [C029], [A030], [B030], [C030], [A031], [B031], [C031], [A032], [B032], [C032], [A033], [B033], [C033]

Table 1-1. PTES Internal System ICDs Led by PTES Contractor

ICD Number	Title
PTES-8384	Mission Management System to Key Management System (MMS – KMS) ICD [A029], [B029], [C029]
PTES-8283	Mission Management System to Joint Hub (MMS – Joint Hub) ICD [A030], [B030], [C030]
PTES-8385	Mission Management System to Key Loading and Initialization Facility (MMS – KLIF) ICD [A031], [B031], [C031]
TBS by PTES Contractor	Key Management System (KMS) to End Cryptographic Unit (ECU) (KMS – ECU) ICD [A032], [B032], [C032]
TBS by PTES Contractor	Joint Hub to End Cryptographic Unit (ECU) (Joint Hub – ECU) ICD [A033], [B033], [C033]

- f. The PTES Contractor shall support the definition and documentation of the PTES external system ICDs listed in Table 1-2 including participating in Government PTES Program Office IPT meetings, providing technical detail and providing comments on ICD drafts. (Assume bi-weekly (every two (2) weeks) teleconferences for each ICD through System CDR and weekly teleconferences following CDR)

Table 1-2. PTES External System ICDs Supported by PTES Contractor

ICD Number	Title
PTES-8070	PTES Network ICD
PTES-8183	Mission Management System to Terminal Modem - Line Replaceable Unit (MMS – PATS TM LRU) ICD
PTES-8210	Joint Hub to SATCOM Gateway ICD
PTES-8310	Mission Management System to Wideband SATCOM Trending and Anomaly Resolution System (MMS – WSTARS) ICD (planning/monitoring)

ICD Number	Title
PTES-8383	Mission Management System to Contingency Hub (MMS to Contingency Hub) ICD
PTES-8386	Mission Management System to Joint Integrated SATCOM Tool (JIST) (MMS – JIST) ICD
PTES-8370	Key Loading and Initialization Facility (KLIF) to Terminal Modem – Line Replaceable Unit/Joint Hub (KLIF – PATS TM LRU/Joint Hub) ICD
PTES-8700	Protected Tactical Waveform ICD (PTW ICD)
PTES-8390	PTES Mission Management System (MMS) to DISA Core Data Center (CDC) ICD
PTES-8490	PTES Key Management System (KMS) to DISA Core Data Center (CDC) ICD

- g. The PTES Contractor shall lead the definition and documentation of the PTES internal segment ICDs as outlined in section 1.1.1.2.e and 1.1.1.2.f including leading IPT meetings with the Government PTES Program Office and other stakeholders, providing technical detail, incorporating ICD comments from stakeholders, generating draft updates of the ICDs, maintaining internal configuration control of the draft documents and supporting ICD approval through the PTES CM and DM process. [A034.x], [B034.x], [C034.x]

1.1.1.5 System Safety Program

- a. The PTES Contractor shall conduct an analysis to identify hazards associated with each failure pathway and associated causal factors including:
1. The functional depth necessary to identify logical, practical and cost-effective mitigation techniques and requirements for each failure pathway initiator (causal factor).
 2. All hardware, software and human factor interfaces as potential contributors. Human factor considerations shall be IAW with MIL-STD-1472G (Department of Defense Design Criteria Standard: Human Engineering) (tailored).
 3. GFE, GFI and GOTS are to be considered as replaceable units. The PTES Contractor is not responsible for assessing internal hazards of these as the Government accepted those hazards under previous acquisitions. The PTES Contractor is responsible for addressing integrated hazards associated with GFE, GFI, or GOTS within PTES.
- b. The PTES Contractor shall develop and implement a system safety program consistent with MIL-STD-882E (System Safety), SMC-T-004 (Air Force Space Command (AFSPC) SMC – Tailoring: Tailoring Instructions for MIL-STD-882E) and in compliance with PTES-8080, PTES System Safety Management Plan (SSMP), and develop:
1. System Safety Program Plan (SSPP) for PTES [A035], [B035], [C035]
 2. Safety Assessment Report (SAR) including Hazard Tracking System (HTS) data for PTES [A036], [B036], [C036]
 - i. The PTES Contractor shall maintain and update the HTS data in the IDE monthly and submit formally with the SAR per CDRL [A036], [B036], and [C036].

- ii. The PTES Contractor shall include in the HTS any hazard contributor identified in the Reliability FMECA analysis. [A061], [B061], [C061]
- c. The PTES Contractor system safety program shall be consistent with the following: MIL-STD-882E (System Safety), SMC-T-004 (AFSPC SMC – Tailoring: Tailoring Instructions for MIL-STD-882E) Sections 3 and 4, and Tasks 101, 102, 104, 105, 106, 201, 202, 204, 208, 301, 303, 304, and 401. All relevant data shall be deposited in the Contractor’s secure IDE, and update the DAL. (DAL submission) [A004], [B004], [C004]
- d. The PTES Contractor shall define Hazardous Materials (HAZMAT) as “Any item or substance that, due to its chemical, physical, toxicological, or biological nature, could cause harm to people, equipment, or the environment. Minimum HAZMAT tracking and reporting data elements shall include:
 1. HAZMAT item or substance name.
 2. Special Material Content Code (SMCC) as designated in DoD 4100.39-M, Volume 10 (Federal Logistics Information System (FLIS) Procedures Manual).
 3. Location of HAZMAT within the system.
 4. Quantity of HAZMAT within the system with traceability to version specific hardware designs.
 5. Application, process, or activity whereby quantities of HAZMAT are embedded in the system, or used during operations, and support of the system.
 6. Anticipated HAZMAT (whether categorized or not) generated during the system’s life-cycle (e.g., installation, Government test and evaluation, normal use, and maintenance or repair of the system).
 7. Anticipated HAZMAT (whether categorized or not) generated during mishap occurrence.
 8. HAZMAT control, training, handling measures, and Personal Protective Equipment (PPE) needed, including provision of required Safety Data Sheets (SDS).

1.1.1.6 Quality Assurance Program

- a. The PTES Contractor shall implement a Quality Management Program consistent with SAE AS9100, Rev D (Quality Management Systems – Requirements for Aviation, Space and Missile Organizations) and shall:
 1. Assign a Quality Assurance (QA) lead who reports at a management level independent of PTES Program Management and Engineering.
 2. Provide assessment of quality management at Program Management Reviews (PMR).
 3. Ensure prime and all subcontractors processes are integrated across the team and identified in Government PTES Program Office approved program plans.
 4. Ensure prime and all subcontractors are performing processes in Government PTES Program Office approved program plans.
 5. Ensure these assurance processes embrace the complete product development life cycle of engineering artifacts and test artifacts.

6. Describe the Quality Management Plan in the PTES SEMP [A001], [B001], [C001]

1.1.1.7 Risk Management

- a. The PTES Contractor shall establish, implement, and maintain a Risk Management Program that is compliant with IEEE 15288.1 (Application of Systems Engineering on Defense Programs) (tailored) and SMC-T-005 (AFSPC SMC Standard: Risk Management Supplement To IEEE-15288.1) and is consistent with the PTES SEP and documented in a Risk Management Plan (RMP). [A037], [B037], [C037]
 1. The PTES Contractor's RMP shall identify, evaluate and describe mitigation plans and handling strategy including the option to put risks with a low risk rating on a Watch list (enabling the risk registry to be complete while reducing demands on limited resources) for each technical, cost and schedule risk and monitor execution of the mitigation plan. [A037], [B037], [C037]
 2. The PTES Contractor shall provide technical, cost and schedule risk assessments, documented in Risk Management Status Reports. [A038], [B038], [C038]
 3. The PTES Contractor shall plan and execute risk reduction activities including :
 - i. Addressing risks identified through the contractor's risk management process;
 - ii. Tracking risk reduction activities through the IMS;
 - iii. Integrating results into the contractor's segment design;
 - iv. A summary of the risks and issues with mitigation steps and plan status and risk burn-down progress shall be reported at each Government PTES Program Office PMRs and Technical reviews including a summary table showing the portion of the risk registry for which risk ratings have changed since the last Government PTES Program Office review.
- b. The PTES Contractor shall invite the Government PTES Program Office to participate in the Contractor's Risk Management Board as a non-voting member.
- c. The PTES Contractor shall participate in the Government PTES Program Office risk management program. Required activities shall include recommending risks for inclusion in the Government PTES Program Office risk list, providing risk mitigation and status updates for risks being tracked by the PTES Contractor, and participating in risk meetings. The PTES Contractor shall make their risk database available to the Government PTES Program Office in MS EXCEL format. (DAL submission). (Assume monthly meetings via teleconference) [A004], [B004], [C004]

1.1.1.8 Human Engineering

- a. The PTES Contractor shall ensure that the system, including hardware, software and technical procedures, and products and work environment, are compatible with the sensory, perceptual, mental and physical attributes of the personnel who will operate, maintain, control and support the PTES system. The PTES Contractor shall employ Human System Integration (HSI) methods to address both automation and staffing profiles (including at a minimum the number of and skill level of personnel) to reduce lifecycle cost.
- b. The PTES Contractor shall implement a plan that involves operators, maintainers, support personnel and end users of the PTES system that provides information that will guide the system

design to support mission and personnel requirements. The system shall be designed and developed IAW MIL-STD-1472G (Department of Defense Design Criteria Standard: Human Engineering), Human Engineering (tailored), and consistent with ANSI HFES 100 (2007), Human Factors Engineering of Computer Workstations (Tailored) and ensure all HSI work is consistent with the methods defined in MIL-STD-46855A (DoD Standard Practice: Human Engineering Requirements for Military Systems, Equipment and Facilities). The PTES Contractor shall apply appropriate human performance assessment and verification methods that address human performance, human error and workload to meet established HSI and mission requirements.

- c. The PTES Contractor shall conduct human systems engineering, documented in the Human Engineering Program Plan (HEPP) and implement a process for developing the user interface and incorporating operator feedback on the user interface. [A039], [B039], [C039]
 1. The PTES Contractor shall develop and maintain a Style Guide and include in the HEPP. [A039], [B039], [C039]

1.1.1.9 Technical Performance Measures and Margin Planning

- a. The PTES Contractor shall support the Government PTES Program Office system-level Technical Performance Measures (TPM) development and tracking process including recommending system-level TPMs, participating in margin planning and tracking of system-level TPMs and working to analyze and resolve segment-level issues that affect system-level TPMs as documented in the PTES SEP. (Assume four (4) ad hoc teleconferences per month)
- b. The PTES Contractor shall report TPMs monthly, at major design reviews and when a change is identified. The Government PTES Program Office shall identify impacts and initiate responses if required.
- c. The PTES Contractor shall develop and maintain a TPM program that:
 1. Links to the risk management process, including identifying and monitoring TPMs, conducting TPM margin planning and tracking and maintaining a margin management control board that includes Government PTES Program Office participation.
 2. Projects the probable performance of a selected technical parameter over a period of time.
 3. Records the actual performance observed of the selected parameter.
 4. Supports the Contractor's technical manager in making decisions through comparison of actual vs. projected performance.
- d. The PTES Contractor shall employ margin management in the development of system architecture and corresponding design solutions:
 1. Provide design and analysis data at system-level SRR, SFR, PDR, CDR, prior to Developmental and Operational Testing events, and SVR/FCA to demonstrate that sufficient margin exists during program maturation to support system verification and validation of KPPs, KSAs, and APAs. (Assume that the Government PTES Program Office is not holding additional margin at the system level for these CDD requirements) [A008], [B008], [C008], [A106], [B106], [C106]

-
2. Support Government PTES Program Office activities to independently verify that Contractor's margin planning assumptions and analysis activities are reasonable and accurate.
 3. Support Government PTES Program Office activities to analyze and resolve segment-level margin issues that affect the system level margin risk.

1.1.1.10 Configuration Management

- a. The PTES Contractor shall implement a Configuration Management (CM) program in compliance with Electronic Industries Alliance (EIA) 649-1, *Configuration Management Requirements for Defense Contracts* and document in the Contractor's Configuration/Data Management Plan, which includes Identification, Control, Status Accounting and Audits. [A040], [B040], [C040]
 1. The PTES Contractor shall develop and maintain the PTES System and Segment technical baseline including an internal CCB for maintaining and controlling the technical baseline. The PTES Contractor shall notify the Government PTES Program Office of all CCB decisions.
 2. The PTES Contractor shall manage changes to the technical baseline in compliance with SMC-T-007 (AFSPC SMC Tailoring: Tailoring of EIA-649-1: Definition of Major (Class I) Engineering Change Proposal), *Tailoring of EIA-649-1 Definition of Major (Class I) Engineering Change Proposal*, and shall submit an Engineering Change Proposal (ECP) and Contract Change Proposal (CCP) to propose changes to the contract and CSOW requirements. [A041], [B041], [C041]
 3. The PTES Contractor shall manage specification and interface changes through a configuration control process and shall submit Specification Change Notices (SCN) and Interface Revision Notice (IRN) for release of SCNs and IRNs to the technical baseline as changes occur. [A028], [B028], [C028]
 4. The PTES Contractor shall submit Requests for Variance (RFV) for Government PTES Program Office approval. [A042], [B042], [C042]
 5. The PTES Contractor's internal CM and CCB processes shall include procedures to manage the products within the MBSE environment.

1.1.1.11 Data Management

- a. The PTES Contractor shall implement a Data Management (DM) program, documented in the Contractor's Configuration/Data Management Plan, which includes Data Rights. [A040], [B040], [C040]
- b. The PTES Contractor shall deliver all required unclassified data that is listed in the Contract Data Requirements List (CDRL), DD Form 1423, to the Government using TopVue.
- c. The PTES Contractor shall deliver required classified data that is listed in the Contract Data Requirements List (CDRL), DD Form 1423, to the Government IAW the classified data item submittal procedure provided in paragraph 10 of the CDRL Exhibit cover page.
- d. The PTES Contractor shall establish and maintain a secure Integrated Digital Environment (IDE) for hosting all technical data and computer software produced in the performance of this contract. The purpose of the IDE is to create a seamless, collaborative data environment for the

PTES Contractor and Government PTES Program Office team, which contains all pertinent data about the project throughout its development and delivery.

1. Functionality shall include data search, back up, version control and simple interfaces to manage data items.
 2. The data management plan, including IDE structure, format, processes and procedures, shall be documented as part of the Contractor's Configuration/Data Management Plan. [A040], [B040], [C040]
 3. The PTES Contractor shall include program management information in the IDE such as cost, risk and schedule data.
- e. The PTES Contractor shall provide the Government PTES Program Office and Government PTES Program Office support contractors, with properly completed Non-Disclosure Agreements (NDA), continuous electronic access to its IDE and the ability to download artifacts throughout the term of the contract.
- f. The PTES Contractor shall provide the Government PTES Program Office team access to and the ability to download all data listed in the DAL. [A004], [B004], [C004]
1. The PTES Contractor shall deposit non-CDRL items that make up the product baseline into the Contractor's secure IDE, and update the DAL. (DAL submission) [A004], [B004], [C004]

1.1.1.12 Data Rights

- a. All data developed, delivered and otherwise provided in performance of this contract shall be marked IAW DFARS 252.227-7013, 252.227-7014 and 252.227-7015. Ordering of data items on the DAL shall take place using the deferred ordering clause, 252.227-7027. All data listed on the DAL, including drafts of deliverables if applicable, shall be considered delivered for purposes of the DFARS data rights clauses (and subject to the same rights asserted for final deliveries). However, non-final versions of future deliverables shall not constitute acceptance for purposes of Inspection and Acceptance requirements or the DFARS data rights clauses. [A004], [B004], [C004]

- b. Identification and Assertion of Data Rights Restrictions

The PTES Contractor shall not deliver or otherwise provide to the Government PTES Program Office technical data or computer software with restrictive markings (or otherwise subject to restrictions on access, use, modification, reproduction, release, performance, display, or disclosure) unless the technical data or computer software are identified IAW the requirements in the following sections:

1. Identification, Assertion and Notification of Data Rights

The PTES Contractor (including subcontractors or suppliers, or potential subcontractors or suppliers, at any tier) shall identify all technical data and computer software that it proposes to be delivered or otherwise provided (including all Option CLINs as if the Option was exercised) with less than Unlimited Rights. The PTES Contractor shall ensure the technical data and computer software are identified by specific reference to the requirement in each task order to deliver or provide that technical data or computer software, e.g. by referencing

the associated CLINs, CDRLs, or sections in the CSOW. Identification shall be completed as follows:

- i. The PTES Contractor shall identify restrictions on non-commercial technical data; and non-commercial computer software shall be identified pursuant to DFARS 252.227-7013 and 252.227-7014.
 - ii. The PTES Contractor shall also identify and assert restrictions for all commercial technical data, i.e., technical data pertaining to a commercial item by providing an update to clause 252.227-7017. This includes commercial technologies that are used as platforms, frameworks, base concepts etc. upon which the contractor creates derivative or complimentary works.
 - iii. IAW DFARS section 227.7102, the PTES Contractor shall not be required, except for items described in DFARS section 227.7102-1(a), to furnish technical information related to commercial items or processes that is not customarily provided to the public or relinquish to or otherwise provide the Government rights to use, modify, reproduce, release, perform, display, or disclose technical data pertaining to commercial items or processes except for a transfer of rights mutually agreed upon.
 - iv. The PTES Contractor shall provide copies of all proposed negotiated license(s), commercial license(s) and other asserted restrictions other than Government purpose rights; limited rights; restricted rights; Small Business Innovative Research (SBIR) data rights for which the protection period has not expired; or Government's minimum rights as specified in the clause at DFARS 252.227-7015. Licenses for commercial technical data shall be included as an attachment to task orders as mutually agreed upon and applicable.
- c. The PTES Contractor shall identify and assert restrictions for all commercial computer software, including Open Source Software (OSS) by providing an attachment to the PTES Contractor's offer to supplement DFARS clause 252.227-7017. This includes commercial software that is used as a platform, framework, firmware, database or other embedded tools upon which the contractor creates derivative or complimentary works. The PTES Contractor shall provide copies of all commercial license(s). Applicable and mutually agreed upon commercial licenses for software, including seat limitations, shall be included. [A025], [B025], [C025]
 - d. Upon request by the Contracting Officer, the PTES Contractor shall provide sufficient information to enable the Contracting Officer to evaluate listed assertion of rights less than unlimited.

1.1.1.13 Software Assurance

- a. The PTES Contractor shall ensure that protection and assurance activities aimed at mitigating attacks against the operational system throughout the system life cycle and those that address threats to the development environment that are implemented include:
 1. Development processes – assurance activities conducted during the development process to mitigate and minimize successful attacks (e.g., threat assessment and modeling, attack surface analysis, architecture, design, and development reviews, application of static and dynamic code assessment tools and services, penetration testing and red teaming) that the developed system is likely to face when deployed into operation.

2. Operational System – attack countermeasures and other assurance activities applied within the operational environment (e.g., failover, fault isolation, encryption, application firewalls, least privilege and secure exception handling) to mitigate attacks against the delivered system and software interfaces, which may include NDI software.
3. Development Environment –assurance activities and controls (e.g., access controls, configuration management and release testing) applied to tools and activities (e.g., compilers, linkers, integrated development environments, run-time libraries and test harnesses) used to develop and sustain software to mitigate attacks.
 - i. The PTES Contractor shall develop PTES system in cyber secure environments, hardened to the same levels as the operational computational environments.
 - a) The PTES Contractor shall develop Joint Hub ECU, KMS ECU, KLIF, and KMS in an NSA approved cyber secure environment IAW High Assurance Encryption Device Development Environment Security Requirements (HAEDDES).
 - b) The PTES Contractor shall develop MMS and Joint Hub in cyber secure environments IAW DFARS 252.204-7012, NIST SP 800-171 and the following:
 - 1) Network Isolation and I/O Controls:
 - i. The PTES Contractor shall logically isolate the development environment from other non-development networks.
 - ii. The PTES Contractor shall not allow access to the classified development environment from the Internet or from other external unclassified network.
 - iii. The PTES Contractor shall utilized FIPS 140-2 solution to create protected connections between physically separated locations to ensure the confidentiality, integrity, and authenticity of data in transit.
 - iv. The PTES Contractor shall only install software in the development environment that is explicitly required to support the development effort or the target system.
 - v. The PTES Contractor shall employ application whitelisting throughout the development environment.
 - vi. The PTES Contractor shall strictly control the import of data, software libraries, or tools into the development environment.
 - a. The PTES Contractor shall virus check all imports into the development environment.
 - vii. The PTES Contractor shall allow the PTES Government Program Office access to the development facilities for inspection and testing.
 - 2) Network Monitoring:
 - i. The PTES Contractor shall continuously monitor the development network for the purposes of detecting malicious activity and insider threats.

- ii. The PTES Contractor shall expeditiously resolve anomalies or malicious activity or network compromise and report finding to the PTES Government Program Office within 72 hours as stated in NIST SP 800-171.
 - a. The PTES Contractor shall support the Government investigation into malicious activity and network compromise by capturing and storing log files for all the development activities.
- 3) Data Integrity:
- i. The PTES Contractor shall control and monitor any database containing the electronic representations of the design implementation (software code repository, hardware design code, etc.) for unauthorized changes.
- 4) Access Control:
- i. The PTES Contractor shall implement Identification and Access (I&A) controls to properly restrict access to the development environment, network and associated database(s).
 - a. The PTES Contractor shall establish roles and permissions for all users of the development environment (e.g., System administrators, developers, security auditors)
- 5) Development Environment Integrity:
- i. The PTES Contractor shall conduct periodic virus scans using approved virus scanner, implement a patch management plan, and configure and maintain an Information Assurance Vulnerability Alert (IAVA) and STIG compliant development environment.
 - ii. The PTES Contractor shall not move equipment that has been in use in an unclassified environment to the classified development network.
- 6) Software Component Procurement/Acquisition:
- i. If the originating software vendor provides a mechanism for verification of integrity or authenticity (e.g. cryptographically hashed (at least 256 bits) or digitally signed) of the software, then the PTES Contractor shall verify the mechanism prior to incorporation the software into the development environment.
 - ii. The PTES Contractor shall review acquired software (binary or source), if available, for malicious behavior, viruses and known vulnerabilities prior to integrating that code into the development environment.
 - a. The PTES Contractor shall purchase software from the original manufacture or a licensed reseller. For open source software, the PTES Contractor shall download from an official site, such as GitHub.
 - b. The PTES Contractor shall record the origination source and license agreements for software used in the development environment.
 - iii. The PTES Contractor shall ensure that software integrated into the development environment is evaluated using third party tools for “known”

- vulnerabilities (i.e., Common Vulnerability Enumerations (CVE)/National Vulnerability Database entries).
- iv. The PTES Contractor shall use a commercial software application to perform patch management on open source and third party software in order to identify known vulnerable components.
 - v. The PTES Contractor shall track patch management for all open source and third party software incorporated into the development environment.
 - vi. The PTES Contractor shall keep the registry of incorporated open source and third party software in an isolated network.
 - vii. The PTES Contractor shall use malware detection techniques before final packaging and delivery of software, databases, and associated tools and data to the PTES Government Program Office, Test and Integration Environment, and Operational Environments (e.g. scanning finished products and components for malware using one or more up-to-date malware detection tools).
- 7) Software Component:
- i. The PTES Contractor shall attribute and trace all developed code to a single developer.
 - ii. The PTES Contractor shall use Code “check-in” and “check-out” auditable events traced to a single developer.
 - iii. The PTES Contractor shall employ a Configuration Management system including auditing mechanisms to detect suspicious developer activity.
 - iv. The PTES Contractor shall allow the PTES Government Program Office to examine the Configuration Management audit logs.
- 8) Encrypting Software for Delivery:
- i. The PTES Contractor shall utilize encryption keys used to encrypt the classified software which perform at the same level as the classified software.
 - ii. The PTES Contractor shall encrypt the software while in the isolated development environment.

Note: Not all software will require the same level of software assurance activities and mitigation planning and implementation.

1.1.1.14 Cybersecurity

The following cybersecurity requirements are applicable at the system, segment levels and below to include hardware, software and firmware.

- a. The PTES Contractor shall support the Government PTES Program Office led Cybersecurity Review Board (CRB) for the development, refinement and implementation of a cybersecurity strategy that is aligned with the evolving Risk Management Framework (RMF) per DoDI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest

- version). Projected meetings are two (2) per month first year, one (1) per month next two (2) years and quarterly thereafter.
- b. The PTES Contractor shall develop rulesets and support approval and authorization for Cross Domain Solutions (CDS) required for the Contractors' specific PTES design as outlined in the "Air Force Cross Domain Support Element (AF CDSE) Users Guide for AF & Combatant Commanders (COCOM) supported customers," Version 2.0, 30 June 2016.
 - c. The PTES Contractor shall implement and update identified technical Cybersecurity controls into the component and system engineering processes and deliver a Cybersecurity Implementation Plan (CSIP) that indicates integration of Government PTES Program Office identified Cybersecurity controls from Technical Requirements Document(s) (TRD) into the engineering processes, products, system, and segments. The CSIP shall demonstrate how the contractor will deliver a system that is Cybersecurity control compliant. [A043], [B043], [C043]
 - d. The PTES Contractor shall develop, deliver and maintain the Cybersecurity Test & Verification Plan (CTVP) that details how the cybersecurity controls identified from the PTES System TRD (PTES-8000) will be tested and validated throughout the system lifecycle. The CTVP shall be developed for each cybersecurity-enabled device (i.e., router, switch, desktop, server) up through the system level. [A044], [B044], [C044]
 - e. The PTES Contractor shall ensure their overall system cybersecurity test and evaluation process is fully integrated into the overall system test and evaluation processes and plans. The PTES Contractor shall demonstrate and maintain traceability between the CSIP, CTVP and PTES System TRD (PTES-8000). [A043], [B043], [C043], [A044], [B044], [C044]
 - f. The PTES Contractor shall identify and mitigate risks and issues associated with Cybersecurity per Cybersecurity and DoD Instruction (DoDI) 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version).
 - g. The PTES Contractor shall conduct analysis for NDI software that is not on the Government PTES Program Office approved product list to ensure they do not pose a system risk and deliver the analysis to Government Information System Security Manager (ISSM) for approval and deliver as part of the Hardware/Software List. [A117], [B117], [C117]
 - h. The PTES Contractor shall analyze NDI software that is not on the Government PTES Program Office approved product list using NSA-approved static and dynamic code analyzer to ensure they do not pose a system risk and report the analysis in the SSMR. [A021], [B021], [C021]
 - i. The PTES Contractor shall assemble, establish, and use NSA approved cyber secure environments, hardened to the same level as the operational environment for:
 - 1. Development (PTES Contractor provided) (see Section 1.1.1.13.a.3 above)
 - 2. Integration, demonstration & test, and training (DISA CDC)
 - 3. Operational (DISA CDC)
 - j. The PTES Contractor shall ensure that the development environment meets the NSA cyber security requirements in Section 1.1.1.13.a.3. Security guidelines for the environment shall be documented and the security program implemented shall address the security controls described in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53 (latest
-

version), Security and Privacy Controls for Federal Information Systems and Organizations. [A043], [B043], [C043]

- k. The PTES Contractor shall design, develop and implement secure applications and configurations through applying applicable DISA STIGs, vendor (Original Equipment Manufacturer (OEM)) security guidance, best practices and applicable vendor product patches at least quarterly to ensure system under development, test and operation is compliant with stated software assurance standards. The PTES Contractor shall deliver a quarterly status of STIG and OEM test status along with system and segment patch status. (DAL submission) [A004], [B004], [C004]
 1. The PTES Contractor shall deliver both raw and summary STIG results, as well as the version and date of the STIGs used, along with the quarterly status updates into the IDE.
- l. The PTES Contractor shall design, develop and implement an Operating System and Software Patching Plan (OSSPP) that captures and demonstrates how the contractor will maintain the operating system and software patching compliance with published STIGs and vendor OEM standards. The PTES Contractor shall collaborate with DISA and integrate the OSSPP into the systems engineering policies, plans and procedures. [A045], [B045], [C045]
- m. The PTES Contractor shall develop, update, and deliver a Cybersecurity Architecture. [A119], [B119], [C119]
 1. The PTES Contractor shall demonstrate how the system Solution Architecture is resilient (e.g., fail-safe; redundant; able to operate through damage, compromise, degraded operation or degraded communications).
- n. The PTES Contractor shall design and demonstrate how the system will support continuous monitoring of cybersecurity status with the ability to identify, isolate, eradicate and recover from an internal and external threat. This solution shall support integration and reporting into the government identified cybersecurity service provider (CSSP).
- o. The PTES Contractor shall use trades for operating system(s) that reduce mandated upgrades and potential specialized operating system architectures. The intent is to mitigate dependence on standard operating system vulnerabilities and reduce/eliminate the need to upgrade unsupported operating system(s).
- p. The PTES Contractor shall develop and deliver a Hardware/Software (HW/SW) List. [A117], [B117], [C117]
- q. The PTES Contractor shall reduce cybersecurity attack surface by reducing or eliminating non-mission essential Ports, Protocols and Services (PPS). [A118], [B118], [C118]
- r. The PTES Contractor shall support the vulnerability management process throughout the CLIN period of performance by assessing the impact of vulnerabilities, assessing and implementing identified countermeasures and developing custom countermeasures.
- s. The PTES Contractor shall ensure the PTES cybersecurity workforce is certified per DODD 8140.01 (Cyberspace Workforce Management), IA Training, Certification and Workforce Management within six (6) months of ECD.
- t. The PTES Contractor shall attend and provide inputs to the System Security Working Group to resolve issues among stakeholders. (Assume bi weekly teleconference).

-
- u. The PTES Contractor shall meet Committee on National Security Systems Policy (CNSSP) No. 11 (National Policy Governing the Acquisition of Information Assurance (IA) and IA-Enabled Information Technology (IT) Products) and CNSSP No. 12 (Cybersecurity Policy for Space Systems Used to Support National Security Missions) (or most recent), and DoDI 8500.01 (Cybersecurity) for all cybersecurity related to PTES, including subsystems, hardware and software.
 - v. The PTES Contractor shall support all requisite Cybersecurity Test and Evaluation (T&E) activities per the DoD Cybersecurity T&E Guidebook.

1.1.1.15 Program Protection

The following protection requirements are applicable at the system, segment levels and below to include hardware, software and firmware.

- a. The PTES Contractor shall support Government PTES Program Office led System Security Working Groups (SSWG) for the development, refinement and implementation of the Program Protection Plan (PPP) (PTES-8050) and the associated PPP (PTES-8050) content to include the identification and protection recommendations for Critical Program Information (CPI), Critical Components (CC) and the Software Assurance Matrix (SAM). (Assume during the first year, two (2) meetings per month then one (1) meeting per month for the next two (2) years and quarterly thereafter.)
- b. The PTES Contractor shall develop a Program Protection Implementation Plan (PIIP) that details how the contractor implements the Government PTES Program Office PPP (PTES-8050) at the contractor, sub-contractor and vendor controlled locations. [A046], [B046], [C046]
- c. The PTES Contractor shall define their approach to the PPP (PTES-8050) CPI Anti-Tamper protection methodology and implementation and document within the PIIP. [A046], [B046], [C046]
- d. The PTES Contractor shall define their approach to the PPP (PTES-8050) CC supply chain and protection methodology and implementation and document within the PIIP. [A046], [B046], [C046]
- e. The PTES Contractor shall document their access control process to ensure only authorized personnel have access to and use of system design information, DoD-unique technology, software and hardware.
- f. The PTES Contractor shall support the development of system and segment Critical Intelligence Parameters (CIP) that feeds the Validated Online Lifecycle Threat (VOLT) that is developed by the Government.
 - 1. The PTES Contractor shall study the impact of implementing CIPs and make recommendations, via the security working group after MS B, to the Government PTES Program Office.
- g. The PTES Contractor shall support the Government PTES Program Office lead effort to define system and segment CC using the below matrix, Table 1-3, *Criticality Definitions*. The Government PTES Program Office provided PPP (PTES-8050) will enable the contractor to report protection methodology in the PIIP along with protection rationale during Government PTES Program Office led SSWGs.

Table 1-3. Criticality Definitions

Event	Deliverable
Level I - Total Mission Failure	Failure that results in total compromise of mission capability
Level II - Significant/Unacceptable Degradation	Failure that results in unacceptable compromise of mission capability or significant mission degradation
Level III - Partial/Acceptable	Failure that results in partial compromise of mission capability or partial mission degradation
Level IV - Negligible	Failure that results in little or no compromise of mission capability

- h. The PTES Contractor shall take preventative steps at all levels of the respective supply chain, to commit suppliers to providing authentic material. Preventative actions include establishing measures to mitigate counterfeiting risks, managing residual risk throughout the life cycle and maintaining traceability of parts origination and distribution. The supplier information for CC shall be provided to the Government PTES Program Office for inclusion into the PPP (PTES-8050) and subsequently the contractor developed PPIP. [A046], [B046], [C046]
- i. The PTES Contractor shall develop, document and update software assurance using the following three tables; Table 1-4, *Software Assurance (Development Process)*; Table 1-5, *Software Assurance (Operational System)*; and Table 1-6, *Software Assurance (Development Environment)* planned and actuals below IAW the table description. These tables shall also be included in the PPIP. [A046], [B046], [C046]

Table 1-4. Software Assurance (Development Process)

Development Process								
SW (Critical Components & Functions)	Static Analysis p/a (%)	Design Inspect	Code Inspect p/a (%)	CE p/a (%)	CAPEC p/a (%)	CWE p/a (%)	Pen Test	Test Coverage p/a (%)
Developmental Level I and II Critical Function SW								
Other Developmental SW								
COTS Level I and II Critical Function SW								
COTS (Other than Critical Function) and NDI SW								

Table 1-5. Software Assurance (Operational Process)

Operational System						
	Failover Multiple Supplier Redundancy (%)	Fault Isolation	Least Privilege	System Segment Isolation	Input Checking / Validation	SW Load Key
Developmental level I and II Critical Function SW						
Other Developmental SW						

Operational System						
	Failover Multiple Supplier Redundancy (%)	Fault Isolation	Lease Privilege	System Segment Isolation	Input Checking / Validation	SW Load Key
COTS Level I and II Critical Function and NDI SW						

Table 1-6. Software Assurance (Development Environment)

Development Environment				
SW Products (List of COTS used in SW Development)	Source	Release Testing	Generated Code Inspection p/a (%)	OEM
Developmental level I and II Critical Function SW				
Other Developmental SW				
COTS Level I and II Critical Function SW				
COTS (Other than Critical Function) and NDI SW				

1.1.1.16 Cryptology

- a. The PTES Contractor shall support the Government PTES Program Office in the development of a key management approach addressing Type 1 cryptographic products used in PTES. The PTES Contractor shall provide inputs to the following documents:
 1. Key and Certificate Management Plan (KCMP) (PTES-8410) for the KMS ECU and Joint Hub ECU [A047], [B047], [C047], [A048], [B048], [C048]
 2. Key and Certificate Specification (KCS) (if required) for the KMS ECU and Joint Hub ECU [A047], [B047], [C047], [A048], [B048], [C048]
- b. The PTES Contractor shall include Key distribution scenarios (e.g. Initialization, Compromise Recovery, Failure recovery) in the OCD. [A002], [B002], [C002]

1.1.2 Assembly, Integration and Test

The PTES Contractor shall assemble, integrate, test, verify, certify, and coordinate with the PTES Program Office to field the PTES system consistent with the Government SITP (PTES-8950) and the SVP (PTES-8955). The PTES System Integration, Test, Verification, and Certification program will occur during Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). DT&E includes Government and PTES Contractor integration, testing, verification and Certification support. AFOTEC leads OT&E efforts including Multi-Service Operational Test and Evaluation (MOT&E) conducted by Multi-Service Operational Test Agencies (OTA). Integrated Test and Evaluation (IT&E) is Government T&E that meets both developmental and operational objectives. [A005], [B005], [C005], [A049], [B049], [C049]

- a. The PTES Contractor shall assemble, integrate, and test PTES software and hardware, prior to installation of hardware in all locations.
- b. The PTES Contractor shall conduct system verification and support Government certification for requirements.

-
- c. The PTES Contractor shall provide workspace, chairs, tables, and desks to accommodate six people during testing, including access to internet and wired telephones at test sites as outlined in the SITP. [A005], [B005], [C005]
 - d. The PTES Contractor shall invite the Government PTES Program Office, at least 14 CD prior, to witness verification testing of PTES System requirements and interfaces and to witness PTES testing at the operational site(s).

1.1.2.1 Contractor Led DT&E

- a. The PTES Contractor shall conduct a Test Readiness Review (TRR) prior to all tests or demonstrations used for verification of compliance document requirements and invite the Government PTES Program Office. The PTES Program Office will coordinate with the Lead Developmental Test Organization (LDTO) and OTA. [A106]
- b. The PTES Contractor shall follow established Agile development procedures for the MMS, KMS and KLIF (in Appendix A (Agile Product Management)) in the correction of identified software issues or requirement deviations discovered during testing, collaboration with the Government PTES Program Office in prioritizing corrections, regression and retesting activities.
- c. The PTES Contractor shall conduct and provide documentation for integrated system level Risk Reduction Demonstrations (RRDs), including all segments at the conclusion of each software Build delivery to verify the requirements completed in that Build. [A050], [B050], [C050], [A051], [B051], [C051], [A052], [B052], [C052]
 - 1. The PTES Contractor shall conduct system level Over-The-Air (OTA) tests as part of RRD to support formal verification of requirements. As a minimum, Contractor-led system level OTA tests shall be conducted as part of the software Build 4 RRD, Build 5 RRD, Build 6 RRD, Build 7 RRD, and Build 8 RRD.
- d. During Sprint Demonstrations, the PTES Contractor shall plan, conduct and provide the documents to the PTES Program Office if requested. (DAL submission) [A004], [B004], [C004]
- e. The PTES Contractor shall conduct a NSA TRR and Security Verification Test (SVT) witnessed by NSA and the Government PTES Program Office in accordance with the NSA-tailored TSRD. The Government PTES Program Office will coordinate with the NSA, LDTO, and OTA. [A106], [B106], [C106]

1.1.2.2 Government Led DT&E, IT&E and OT&E

- a. The PTES Contractor shall provide support to the Government PTES Program Office for the planning, execution and documentation of all testing during Government led DT&E, IT&E, and OT&E.
- b. The PTES Contractor shall support Early Operational Assessment (EOA), Operational Assessment (OA), and test events including Risk Reduction Tests (RRT), DTs, integration tests, Operational Tests (OT), and MOT&E tests, and requests for test data.
- c. The PTES Contractor shall support the Government PTES Program Office Deficiency Reports (DR) and Joint Deficiency Reporting System (JDERS) process consistent with the SITP. [A005], [B005], [C005]

1.1.2.3 Verification and Certification

- a. The PTES Contractor shall verify all system-level PTES requirements including interfaces with external systems and organizations.
- b. The PTES Contractor shall develop a PTES SVP based on the guidance provided by the Government SVP (PTES-8955). [A049], [B049], [C049]
 1. The PTES Contractor shall develop and maintain Requirement Verification Plans (RVP), documented in the PTES SVP, and generate verification artifacts for every requirement in the PTES System specification. [A049], [B049], [C049]
- c. The PTES Contractor shall develop and maintain a Verification Cross Reference Matrix (VCRM) (included in the PTES System Specification) and shall contain every requirement in the PTES System Specification. [A026], [B026], [C026]
 1. The PTES Contractor shall provide VCRM development and requirement verification status at the Technical Reviews and Audits (e.g. System PDR, Build Decision Reviews (BDR), System CDR, TRRs, System Verification Review (SVR)/Functional Configuration Audit (FCA), and PCA).
- d. The PTES Contractor shall ensure that all test software and test drivers are documented, verified and approved prior to the start of system verification testing. [A050], [B050], [C050]
- e. The PTES Contractor shall implement Verification, Validation & Accreditation (VV&A) processes per the guidance provided in the Government SVP (PTES-8955) for models, emulators and simulations that shall be used to directly support verification of system requirements during developmental and operational testing. The VV&A process shall be documented in the PTES SVP. [A049], [B049], [C049]

1.1.2.4 Development of Test Plans and Procedures

- a. The PTES Contractor shall develop and maintain Test Plans and Procedures consistent with the process/product description outlined in the Government SITP (PTES-8950) and in compliance with SMC-S-024 (AFSPC SMC Standard: Test Requirements for Ground Systems). [A005], [B005], [C005]
 1. The PTES Contractor shall develop and maintain a PTES SITP. [A005], [B005], [C005]
 2. The PTES Contractor shall provide Test Plans, Test Procedures, and Test Reports for each test activity intending to verify requirements in the PTES specifications. [A050], [B050], [C050], [A051], [B051], [C051], [A052], [B052], [C052]
- b. The PTES Contractor shall create and deliver PTES Test CDRLs (test plan, procedures, and reports) once, with updates or amendments for future testing activities; prioritizing content and quality of data gathered and not on formatting. [A050], [B050], [C050], [A051], [B051], [C051], [A052], [B052], [C052]
- c. The PTES Contractor shall conduct a Test Readiness Review (TRR) prior to each test activity intending to verify requirements in the PTES specifications. [A106], [B106], [C106]
- d. The PTES Contractor shall test (including integration, qualification testing and regression testing), using automated tools.

1. In the event that automated tools are precluded, the PTES Contractor shall obtain approval for required manual steps as outlined in the System Test Procedures. [A051], [B051], [C051]
- e. The PTES Contractor shall conduct fielding site surveys and site acceptability for system test events and IOC.

1.1.2.5 Design and Development of Test Equipment

- a. The PTES Contractor shall design, procure (in addition to the operational assets), build, test, and certify a minimum of five (5) ground strings, as outlined in the Government SITP (PTES-8950), to support system-level testing, operator training, and maintenance material testing.
 1. The PTES Contractor shall include all equipment, hardware, software and emulators necessary to support contractor integration, testing, failure analysis, regression testing, Government PTES Program Office test events, and training.
 2. The PTES Contractor shall ensure each system-level ground string includes the capability to test the MMS, KMS, Joint Hub(s), and external interfaces as a system of systems with sufficient fidelity to support the required test.
 3. The PTES Contractor shall certify a ground string for operator training prior to Build 4 completion.
- b. The PTES Contractor shall procure (in addition to the operational assets), deliver and install five (5) ground strings at locations as defined by the PTES Program Office.
 1. The PTES Contractor shall deliver, install, and maintain the hardware (i.e., Joint Hub (w/ECU) with remote connection/access from the Contractor's Facility) for two ground strings at over the air test sites prior to Build 4 completion.
 2. The PTES Contractor shall install and maintain all other ground strings and components that are not installed at a DISA CDC or an over the air test site, at the Contractor's Facility unless otherwise directed by the PTES Program Manager.
- c. At the completion of the contract, the PTES Program Office will provide ground string disposition instructions.

1.1.2.6 Risk Reduction

- a. The PTES Contractor shall conduct early risk reduction activities for system-level requirements and interfaces with applicable GFP to provide for early problem detection and resolution. (Attachment 6: Government Furnished Property (GFP))
- b. The PTES Contractor shall conduct RRDs following each build completion.
- c. The PTES Contractor shall support RRTs (for Builds 1-3) and DT/OTs conducted by the LDTO following each RRD, including technical support with operations and troubleshooting.

1.1.2.7 Support to Government PTES Program Office

- a. The PTES Contractor shall support the following Government PTES Program Office Test and Evaluation activities:

1. Support the development of the PTES Test and Evaluation Master Plan (TEMP), including participating in meetings and providing input for TEMP sections related to PTES Contractor activities.
 2. Participate in PTES Integrated Test Team (ITT) meetings. (Assume quarterly meetings at Government PTES Program Office location in El Segundo, CA)
- b. The PTES Contractor shall participate in System Test IPT Meetings. (Initially, assume quarterly meetings at Government PTES Program Office location in El Segundo, CA. As development tempo increases, expect ITT meetings to increase to weekly. For these meetings, current planning is to conduct meetings via teleconference with a monthly meeting at the Government PTES Program Office in El Segundo, CA.)
 - c. Review planned PTES deliveries and activities with those of the external organizations and the Government PTES Program Office to ensure an executable integration that will meet overall PTES objectives. (Assume monthly meeting via teleconference in conjunction with System Integration Meeting)
 - d. The PTES Contractor shall lead the System Test Events listed in Table 1-7.

Table 1-7. System Test Events Led by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start
RRD	010	Risk Reduction Demonstration (RRD)	Lead	Factory	End of Build 1
RRD	020	Risk Reduction Demonstration (RRD)	Lead	Factory	End of Build 2

- e. Support the System Test Events listed in Table 1-8

Table 1-8. System Test Events Supported by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start
RRT	010	Risk Reduction Test (RRT)	Support	Factory	End of Build 1
RRT	020	Risk Reduction Test (RRT)	Support	Factory	End of Build 2

1.1.2.8 Coordination with External Organizations

- a. The PTES Contractor shall support the Government PTES Program Office in coordination with external organizations as outlined in the Government SEP.
 1. The PTES Contractor shall support the Government PTES Program Office in obtaining U.S. Army Space and Missile Defense Command/Army Forces Strategic Command (USASMDC/ARSTRAT) approval for operating over WGS.

-
2. The PTES Contractor shall participate in test planning meetings, discussions, events, etc., with the LDTO (46th Test Squadron) for Government DT&E and with AFOTEC for OT&E and MOT&Es.
- b. The PTES Contractor shall provide testing results, documentation, data reduction tools and software, and raw test data in support of DT and OT activities. [A050], [B050], [C050], [A051], [B051], [C051], [A052]

1.1.3 Program Management

The PTES Contractor shall provide resources necessary to plan, manage, direct, control and report on all activities contributing to the design of the PTES System and its interfaces to external systems and organizations.

1.1.3.1 General Management

The PTES Contractor shall provide program management including business and administrative planning organizing, directing, coordinating, controlling and approval actions compliant with SMC-S-019, Rev A (AFSPC SMC Standard: Program and Subcontractor Management), designed to accomplish the overall program objectives.

- a. The PTES Contractor shall conduct a Kick-off Meeting to include as a minimum, special topics, schedule review, and risk and mitigation plans. (within thirty (30) CD of ECD)
 1. The PTES Contractor shall develop post-review minutes and respond to post-review action items and post in the IDE. (DAL submission) [A004], [B004], [C004]
- b. The PTES Contractor shall conduct monthly PMRs. [A053], [B053], [C053]
 1. The PTES Contractor shall host a PMR every other month at the Contractor Facility and shall schedule the PMR to coincide with an Agile System Demonstration and Team of Teams meeting (see Appendix A (Agile Product Management), section 2.1.3).
 2. For alternating months, the PTES Contractor shall conduct an Executive PMR.
 - i. The PTES Contractor shall work with the Government PTES Program Office to determine Contractor attendance, location, and agenda. (assume 6 personnel at a Government facility)
- c. The PTES Contractor shall conduct weekly teleconference Tag-Up meetings to support information exchange with the Government PTES Program Office. The content of the Tag-Up shall be provided by the Government PTES Program Office (assume weekly, one (1)-hour Tag-Up meetings).
- d. The PTES Contractor shall report all System Alert events to the Government PTES Program Office within 24 hours. System Alert events are those events in which the contractor or subcontractor experience a product anomaly or problem during design, fabrication, assembly, or test that has a potential impact on the Program's performance, schedule or cost. This includes all events reported to the Contractor's PTES Program Manager.
- e. The PTES Contractor shall report incidents including security violations, cyber/network intrusions, adverse media exposure, criminal investigations, adverse financial and schedule information and mishap reports regarding hardware or personnel to the Government PTES Program Office within 12 hours of the event.

- f. The PTES Contractor shall use the IDE to share program data management indicators and program metrics between the PTES Contractor and the Government PTES Program Office.

1.1.3.2 Key Program Personnel

- a. The PTES Contractor shall establish and maintain an organizational team structure possessing the knowledge, skills, and experience capable of performing all PTES requirements. The PTES Contractor shall not make changes in key personnel, including but not limited to the substitution or addition of key personnel, except in accordance with Appendix B (Key Personnel Substitution).
 1. Program Manager – the individual responsible for managing the PTES program. Must have bachelor’s degree and at least ten (10) years of experience in leading programs similar to PTES in size and scope. Provide the resume highlighting relevant Agile experience.
 2. Product Manager(s) – an individual responsible for the Product Roadmap, Product Backlogs and priorities, coordination among Agile teams, and software releases. Provide the resumes of the Product Manager(s), highlighting relevant Agile experience. Must have a bachelor’s degree in computer science, engineering, or science and at least five years of experience in a product management role in Agile software developments.
 3. Product Owner(s) – an individual responsible for allocating work for the Agile teams and interpreting the Government intentions using the assigned Product Backlog priorities. Provide the resume of the Product Owner for each team, highlighting relevant Agile experience. Must have a bachelor’s degree in computer science, engineering, or science and at least five years of experience in a leadership role in Agile software development and possess a current Agile certification (e.g., Certified Scrum Product Owner® (CSPO) or Program Management Institute Agile Certified Practitioner (PMI-ACP)®)
 4. System Architect/Engineer – the individual responsible for dividing the system into modular components to be built by the Agile teams and for establishing secure environments and infrastructure for development, integration, and test. Must have a bachelor’s degree in computer science, engineering, or science at least seven years of experience architecting programs similar to PTES in size and scope. Must have experience in Agile software development.
 5. System Integration Lead – the individual responsible for leading PTES system integration and testing. Must have a bachelor’s degree in computer science, engineering, or science at least seven years of experience in integration and test of programs similar to PTES in size and scope. Must have Agile software development experience.

1.1.3.3 Project Management

- a. The PTES Contractor shall develop a CWBS that is consistent with the WBS provided by the Government PTES Program Office and as tailored by CDRL [A007], [B007], [C007].
- b. The PTES Contractor shall maintain the Integrated Master Plan (IMP) (Attachment 4 of the PTES contract).
 1. The PTES Contractor shall submit changes to the IMP using a Contract Change Proposal. [A041], [B041], [C041].

1.1.3.4 Business Management/Program Control

- a. The PTES Contractor shall base the PTES architecture upon the reporting level WBS and lower level segregations, as agreed to and implemented through the PTES Contractors CWBS. [A007], [B007], [C007]
- b. The PTES Contractor shall prepare and deliver an IPMR and Contract Funds Status Report (CFSR) in accordance with contract data requirements. These reports will be updated/submitted via [A054] and [A055] for the life of the contract.
- c. The PTES Contractor shall provide a Cost Data Summary Report (CDSR), Functional Cost-Hour Report (FCHR), Contractor Business Data Report, and Software Resources Data Reporting (SRDR): Development and Maintenance Reports and Data Dictionary in accordance with contract data requirements. [A056], [B056], [C056], [A057], [B057], [C057], [A058], [B058], [C058], [A020], [B020], [C020]
- d. The PTES Contractor shall participate in a post award conference with the Government PTES Program Office to ensure that the Contractor's standard cost and software data reporting (CSDR) process complies with the guidelines contained in DoDM 5000.04-M-1, (Cost and Software Data Reporting (CSDR) Manual) and the requirements in the Government PTES Program Office-approved CSDR Plan for the contract, DD Form 2794 and related Resource Distribution Table.
- e. The PTES Contractor shall conduct an Integrated Baseline Review (IBR) (refer to PTES IBR Process Guide).
 1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format and acceptance criteria for the review within 60 CD of ECD.
 2. The PTES Contractor shall directly support the planning, reporting and conduct of an IBR. All IBR activities, including close-out of action items shall be completed within 180 CD of ECD.
- f. The PTES Contractor shall gain Government approval of all significant baseline changes once the PMB is established. Significant changes include those that are directed by the Government, are beyond the normal distribution of management reserves for "in-scope" effort, or are major re-planning or re-baselining efforts. Elimination of cumulative cost performance variances shall not be permitted without Government Contracting Officer direction.
- g. The PTES Contractor may implement the use of rolling wave planning. If the Contractor implements Rolling wave planning, the Contractor shall implement Rolling wave planning wherein the PMB is detailed based on major program milestones or gated events.
- h. The PTES Contractor shall ensure the relationship and consistency of the Earned Value Management Data and the software metrics as described in Appendix A.

1.1.3.5 Contract/Subcontract Management

- a. The PTES Contractor shall establish and maintain Non-Disclosure and other agreements that may be required in support of contract activities.
- b. The PTES Contractor shall enter into Associate Contractor Agreements (ACA) for portions of the contract requiring joint participation in the accomplishment of the Government's requirement. The agreements shall include the basis for sharing information, data, technical knowledge, expertise and resources essential to the integration of the PTES, which shall ensure

the greatest degree of cooperation for the development of the program to meet the terms of the contract.

1. Associate contractors are listed in paragraph 6 below. ACAs shall include the following general information:
 - i. Identify the associate contractors and their relationships.
 - ii. Identify the program involved and the relevant Government contracts of the associate contractors.
 - iii. Describe the associate contractor interfaces by general subject matter.
 - iv. Specify the categories of information to be exchanged or support to be provided.
 - v. Include the expiration date (or event) of the ACA.
 - vi. Identify potential conflicts between relevant Government contracts and the ACA; include agreements on protection of proprietary data and restrictions on employees.
 2. A copy of such agreement shall be provided to the Contracting Officer for review before execution of the document by the cooperating contractors.
 3. The PTES Contractor shall not be relieved of contract requirements or entitled to adjustments to the contract terms because of a failure to resolve a disagreement with an associate contractor.
 4. Liability for the improper disclosure of proprietary data contained in or referenced by agreements shall rest with the parties to the agreement and not the Government.
 5. All costs associated with the agreements are included in the negotiated cost of this contract. Agreements may be amended by the Government during the performance of this contract.
 6. The PTES Contractor shall enter into an Associate Contractor Agreement (ACA) with the following contractors with whom agreements are required:
 - i. PATS, Commercial SATCOM, and Protected Tactical SATCOM (PTS) Contractors.
 - ii. PATS Terminal and PATS TM LRU Contractors
 - iii. WSTARS
Northrop Grumman
2721 Discovery Drive
Suite 100
Orlando, FL 32826
(321) 235-3800
 - iv. Others - To Be Provided (TBP)
 - c. The PTES Contractor shall establish necessary subcontracts and oversee the administration of subcontracts, purchase orders with subcontractors and interdivisional agreements.
 1. The PTES Contractor shall provide guidance to subcontractors for development and administration of subcontract agreements, purchase orders and interdivisional agreements to ensure proper flow-down of Government PTES Program Office requirements.
-

-
2. The PTES Contractor shall place priority attention on subcontractor software process planning and management and on test philosophy and planning.
 3. The PTES Contractor shall ensure that subcontractor data available to the PTES Contractor is also available to the Government PTES Program Office.
- d. The PTES Contractor shall:
 1. Employ close technical, programmatic and administrative management of subcontractors to ensure adherence to all standards and approved practices;
 2. Include Government PTES Program Office personnel in all major subcontractor reviews.
 - e. The PTES Contractor shall perform all necessary contract and pricing management activities, including:
 1. Proposal development, negotiation, administration and implementation of the contract and contract changes.
 2. Responses to “what if” exercises initiated by Government PTES Program Office.
 3. Responses to below threshold contract changes.
 - f. The PTES Contractor shall manage and track small business subcontractor performance including cost per CLIN.
 - g. The PTES Contractor shall maintain a core team (Prime and Subcontractors) with appropriate relationships, roles and responsibilities. Positions shall be staffed with personnel possessing appropriate expertise, breadth of experience and domain knowledge required to execute the program.
 - h. Small Business Participation
 1. The PTES Contractor shall submit semiannually an Individual Subcontract Report (ISR) and Summary Subcontract Report (SSR) at <http://esrs.gov>, IAW FAR 52.219-09, Small Business Subcontracting Plan (Jan 2017)

1.1.3.6 Government Federally Funded Research and Development Center (FFRDC) Contracts

- a. The PTES Contractor shall cooperate with the Aerospace Corporation IAW Appendix C (SMC-Enabling Clause For Government Program Contracts Requiring Interface With Aerospace Federally Funded Research and Development Center (FFRDC) Contract Support (Nov 2017)).

1.1.3.7 Support to Government PTES Program Management Effort

- a. The PTES Contractor shall provide Contractor status information for Government PTES Program Office reviews, executive reviews, independent program reviews and assessments, inspections, milestone events, budget excursions and user conferences.

1.1.4 Support Equipment and Product Support Planning

Includes the design, development and production of support equipment and associated software required to build, assemble, integrate and support and maintain at the system and intersegment level, including interfaces with external systems and organizations. This also pertains to testing and measurement equipment that allows an operator or maintenance personnel to evaluate operational conditions of a system or equipment by performing specific diagnostics, screening, or quality assurance efforts.

1.1.4.1 Support Equipment

- a. The PTES Contractor shall identify necessary Support Equipment items including the build and version numbers of test equipment, required for the operation of the PTES system. The PTES Contractor shall document required Support Equipment in the Product Support Plan (PSP). [A059], [B059], [C059]

1.1.4.2 Product Support Program

- a. The PTES Contractor shall develop and implement a Product Support Program IAW SAE TA-STD-0017 (Product Support Analysis) (tailored) and is consistent with MIL-HDBK-502A (product Support Analysis) and documented in the PSP. [A059], [B059], [C059]
 1. The PSP shall address sustainment processes, technical data, facilities, spares, personnel and training required to ensure a smooth transition from development to Interim Contractor Support (ICS) to sustainment.
 2. The PTES Contractor shall perform analysis of manpower and personnel required for operations and maintenance of PTES prime mission products including time for training to reduce manning levels.
 3. Prior to System level SRR, the PTES Contractor shall conduct a Logistics and sustainment requirements review with the Government PTES Program Office. (This subparagraph only applies to CLIN 0001)
 4. The PTES Contractor shall conduct a Product Support Analysis (PSA) and deliver the associated data products IAW the tailored SAE TA-STD-0017 (Product Support Analysis) (tailored). [A062], [B062], [C062]

1.1.4.3 Reliability, Maintainability and Testability (RM&T)

- a. The PTES Contractor shall describe the Reliability, Maintainability, and Testability process in the PTES SEMP. [A001], [B001], [C001]
- b. The PTES Contractor shall develop, implement and maintain a Reliability and Maintainability (R&M) Program Plan compliant with MIL-STD-785B (including Notices 1 & 2) (Reliability Program For Systems and Equipment) (tailored) and MIL-STD-470B (Maintainability Program For Systems and Equipment) for hardware and software components. [A060], [B060], [C060]
 1. The plan shall establish a R&M strategy to include a reliability growth program for hardware and software components.
 2. The plan shall demonstrate that the R&M requirements (hardware and software) are clearly understood, establish a process to satisfy the requirements and provide progressive assurance that the requirements shall be satisfied.
 3. The PTES Contractor's R&M program plan shall include but not be limited to Fault Tree Analysis FMECA and Damage Modes analysis and Failure Reporting, Analysis and Correction system.
 4. The PTES Contractor shall develop and deliver an R&M Prediction Report IAW MIL-STD-785B tasks 201, 202, and 203 as tailored for hardware and software components as part of the System PDR and System CDR DRIP package. [A008] (This subparagraph only applies to CLIN 0001)

- c. The results of modeling, simulation, testing, and analysis shall be documented and delivered IAW the R&M Block Diagrams and Mathematical Model Report. [A116], [B116], [C116]
- d. The PTES Contractor's Cost as an Independent Variable (CAIV) and Life Cycle Cost (LCC) activities shall include Reliability and Maintainability tradeoffs.

1.1.4.4 FMECA/Damage Modes Analysis

- a. The PTES Contractor shall describe the Failures Mode, Effects and Criticality Analysis (FMECA) process in the PTES SEMP IAW MIL-STD 785B task 204 as tailored for hardware and software components. [A001], [B001], [C001]
- b. The PTES Contractor shall conduct FMECA for all items listed on the Government PTES Program Office approved candidate item list to the lowest indenture level to satisfy system recovery and maintenance planning and analysis input requirements. Damage modes shall be developed and documented for mechanical components included in the analysis, such as antennas, plenums, chassis, etc. Results of these analyses shall be documented in the Combined Logistics Analysis Report [A061], [B061], and [C061]. Analysis shall include:
 - 1. Definition of how the hardware or software item can be expected to fail or be damaged (failure mode and damage mode).
 - 2. How the hardware or software failure or damage is detected.
 - 3. Identification of the tasks needed to fault isolate the failure or damage mode to a defective lower level executable software component or repairable assembly/component and ambiguity group assemblies.
 - 4. Identification of the task necessary to restore a software failure or test and repair failure/damage mode hardware items.
 - 5. Identification of the task necessary to test and repair failure/damage modes in hardware or software items shall consider all assemblies/components indentured to the item that could result in the failure/damage mode under analysis and the ability to test the failure/damage mode to a specific ambiguity group.
- c. In addition to the submitting FMECA data per [A061], [B061], and [C061], the PTES Contractor shall identified all hazard causes and document them in the Hazard Tracking System (HTS).
 - 1. When an appropriate HTS entry was not identified during a Safety Hazard Analyses efforts, new FMECA identified hazards shall be tracked under a new HTS entry using System Safety Program Plan (SSPP) methodologies. [A061], [B061], [C061]

1.1.4.5 Failure Analysis and Corrective Action Report (FACAR)

- a. The PTES Contractor shall describe the Failure Analysis and Corrective Action Report (FACAR) process in the PTES SEMP. [A001], [B001], [C001]
- b. The PTES Contractor shall implement a closed loop FACAR for both hardware and software items in IAW MIL-STD 785B Task 104. [A061], [B061], [C061]
 - 1. The FACAR shall be capable of transferring all records and data into a PTES program database that is accessible via the Web given proper authorization.

2. Test Incident Reports (TIR) shall be generated by the contractor for selected developmental tests, not conducted at Government facilities, determined by the contractor to provide relevant data for RM&T analyses and evaluations. [A061], [B061], [C061]
3. Types of testing shall include, as a minimum, stress screening tests, RM&T tests and environmental, acceptance and qualification (hardware and software) development tests, failure/recovery testing, and stability testing.
4. The PTES Contractor shall use the RM&T efforts and activities as defined in the R&M program plan as the means to make appropriate corrective actions to the design. [A060], [B060], [C060]
5. The PTES Contractor shall manage, chair and convene a Failure Review Board (FRB) to provide a technical forum and process for review and resolution of all hardware and software failures IAW MIL-STD 785B Task 105.
 - i. The PTES Contractor shall invite the Government PTES Program Office to all FRB. The Government PTES Program Office has final authority over the disposition of matters before the FRB.

1.1.4.6 Mission Critical Fault Analysis (MCFA)

- a. The PTES Contractor shall conduct and deliver a Mission Critical Fault Analysis (MCFA) IAW SMC-T-006 of the PTES system. [A061], [B061], [C061]

1.1.4.7 Product Support Analysis (PSA)

- a. The PTES Contractor shall perform PSA of the operation and maintenance for the system or subsystem.
- b. The PTES Contractor shall identify logistics support resources, both qualitatively and quantitatively, to define and document the detailed support resources necessary to field and support the system or subsystem for both hardware and software.
- c. The PTES Contractor shall plan and perform PSA of the product designs and provide associated PSA data products. [A062], [B062], [C062]
 1. The PSA process shall identify the supportability implications of a system, addressing each of the following logistics elements in performance terms. They constitute the support infrastructure that needs to be addressed (including hardware and software) over the system's life cycle.
 2. The PTES Contractor shall conduct level of repair and maintenance tasks analysis on hardware and software elements of the product designs and the results documented in Level of Repair Analysis (LORA) Report. [A063], [B063], [C063]
 3. The PTES Contractor's process shall address/consider the following logistics requirements:
 - i. Maintenance Planning
 - ii. Support and Test Equipment
 - iii. Supply Support
 - iv. Packaging, Handling, Storage and Transportation (consistent with MIL-STD-2073-1E w/change 1 (DoD Standard Practice For Military Packaging))

- v. Technical Data
 - vi. Manpower and Personnel
 - vii. Training and Training Support
 - viii. Facilities
 - ix. Computer Resources Support including Testbeds and associated resources for integration testing of updates or replacement of hardware or software externally developed components (i.e., NDI)
 - x. Design Interface
4. The PTES Contractor shall use the PSA database (Logistics Product Data) to integrate systems engineering data and logistics elements to ensure the same data values are used for calculations and data products. [A062], [B062], [C062]
 5. Task analysis results shall be used to provide the following data to document each identified operation or maintenance task:
 - i. Task description/procedures including, safety recommendations, frequency of performance
 - ii. Man-hours required and elapsed time to accomplish the task
 - iii. Maintenance levels to be used
 - iv. Personnel required by number, skill specialty and level
 - v. Spares, repair parts and consumables, required
 - vi. Tools and support equipment, test measurement and diagnostic equipment
 - vii. Training requirements materials, recommended locations and rationale
 - viii. Facility requirements
 - ix. Transportation and transportability requirements
 - x. Technical data
 - xi. Baselining an operational configuration for software as components (hardware and software) are updated or external support is discontinued
 - xii. Planning for compatibility and integration testing as new versions of externally developed (i.e., NDI) replacement components necessary for system sustainment.
 - d. The PTES Contractor shall develop and deliver Commercial Drawings, Models and Associated Lists. [A064], [B064], [C064]

1.1.4.8 Supportability and Related Design Factors

- a. The PTES Contractor shall identify and define reasonable and attainable support related design goals and constraints for the system.
- b. The PTES Contractor shall transform the results from previous analyses into specific requirements for design, support, and externally developed (i.e., NDI) components.

-
- c. The PTES Contractor shall also define the planned approach for accomplishing this task in the PSP. [A059], [B059], [C059]
 - d. The PTES Contractor shall develop a metrics based Performance Based Logistics (PBL) analysis of the prime mission products to reduce LCCs to include externally developed (i.e., NDI) components.
 - e. The PTES Contractor shall establish an Operations and Maintenance (O&M) cost management and reduction program that supports the mitigation of O&M cost drivers and enables a continuing reduction of LCC for the prime mission products.
 - f. The PTES Contractor shall identify cost drivers, risks and assumptions associated with the mitigation or reduction of these costs and document in the PSP to include externally developed (i.e., NDI) components. [A059], [B059], [C059]
 - 1. The PTES Contractor shall identify and conduct appropriate trades and analyses aimed at reducing O&M drivers and costs (product designs, operations and maintenance concepts, program changes, etc.). The trades and analysis shall be deposited in the Contractor's secure IDE, and listed in the DAL. (DAL submission) [A004], [B004], [C004]
 - 2. The PTES Contractor shall identify alternatives to the initial proposed designs, including alternative operations and maintenance concepts and deployment strategies aimed at reducing O&M costs for the prime mission products. The alternatives shall be deposited in the Contractor's secure IDE, and listed in the DAL. (DAL submission) [A004], [B004], [C004]
 - 3. The PTES Contractor shall recommend requirements changes and other program changes that are estimated to result in lower O&M costs. Recommended changes shall be deposited in the Contractor's secure IDE, and listed in the DAL. (DAL submission) [A004], [B004], [C004]
 - 4. The PTES Contractor shall identify and track the impacts of prime mission product trades and analyses on the product's estimated lifecycle costs. These shall be deposited in the Contractor's secure IDE, and listed in the DAL. (DAL submission) [A004], [B004], [C004]

1.1.4.9 Other Support Equipment & Product Support Planning

- a. The PTES Contractor shall ensure that the PTES hardware and software are supportable by two (2) levels of maintenance; organizational and depot to include establishing and managing Service Level Agreements (SLA) with vendors.
- b. The PTES Contractor shall implement an Item Unique Identification (IUID) process for PTES IAW MIL-STD-130N (Identification Marking of U.S. Military Property) and document in the SEMP for both hardware and software. [A001], [B001], [C001]
- c. The PTES Contractor shall develop a PTES Maintenance Data Documentation process using USAF Technical Order 00-20-2 Maintenance Data Documentation Technical Manual as reference and documented in the PSP. [A059], [B059], [C059]
- d. The PTES Contractor shall develop, update and maintain a Priced Bill of Materials (BOM) needed to fabricate, assemble and integrate PTES. [A065], [B065], [C065]
- e. The PTES Contractor shall implement corrosion protection IAW MIL-DTL-14072F (Finishes For Ground Based Electronic Equipment) and MIL-DTL-55302F (Connectors, Printed Circuit Subassembly and Accessories).

-
- f. The PTES contractor shall describe the process by which externally developed (i.e., NDI) components will be integrated into the system baseline due to end of life, obsolescence, cybersecurity, or other reasons.

1.2 Space Vehicle – N/A

1.3 PTES Ground Operations and Processing Center (GOPC)

The PTES Ground Operations and Processing Center (GOPC) includes all activities associated with the design and development of the MMS, crypto KMS, and KLIF.

1.3.1 SEIT/PM and Support Equipment

This includes the overall ground planning effort when there are multiple separate segments in the GOPC.

1.3.1.1 System Engineering

1.3.1.1.1 General Planning

The PTES Contractor shall design and deliver the MMS and KMS and KLIF segments that meets all PTES functional and performance requirements for IOC and FOC as defined in the PTES specifications, ICDs, Cybersecurity controls, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD.

- a. The PTES Contractor shall use an Agile Project Management approach, as outlined in Appendix A (Agile Product Management), to set processes and ensure the software is compliant with contract and system requirements including: system engineering, software development, Cybersecurity, supportability, documentation, training and logistics.
- b. The PTES Contractor shall use the MMS, KMS and KLIF TRDs and ICDs (PTES-8183, 8220, 8283, 8300, 8310, 8370, 8383, 8384, 8385, 8386, 8400, 8420, and 8500) to aid in developing segment specifications. [A066], [B066], [C066], [A067], [B067], [C067], [A068], [B068], [C068]

1.3.1.1.2 Agile Software Builds

- a. The PTES Contractor shall develop a schedule that includes a Build 0 (System Architecture development and Software Development planning) and two (2) releases; Release v1.0 (IOC) and Release v2.0 (FOC).
 - 1. Each Release shall consist of four (4) Builds
- b. During Build 0, the PTES Contractor shall:
 - 1. Develop the PTES Software Architecture through FOC.
 - 2. Refine requirements through FOC.
 - 3. Develop Product Roadmap through the FOC that contains:
 - i. All features needed for IOC developed in Build 1 through 3.
 - ii. Build 4 to refine requirements, addresses technical debt and closes deficiencies for Release 1.
 - iii. All remaining features needed for FOC developed in Builds 5 through 7.

- iv. Build 8 to refine requirements, addresses technical debt and closes deficiencies for Release 2.
 4. Develop User Stories through the Build 1.
 5. Develop Product Backlog (Capabilities and Features) through the FOC.
 6. Define, design and establish the infrastructure for MMS, KMS and KLIF to include COTS and NDI software, RMF, cybersecurity, DISA CDC environments (Integration, Demonstration & Test, and training; and Operational).
 7. Implement a secure software development process, including: secure development environment (see section 1.1.1.13.a.3 above); automated build scripts, automated integration and test tools; schedule, requirements and management tools; and training through FOC.
 8. Support major PTES technical reviews and provide plans and status of Agile software development efforts during system-level SRR.
 9. Complete BDR 1 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
- c. During Build 1, the PTES Contractor shall:
1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 2. Plan, develop, test and deliver the PTES MMS, KMS, and KLIF Build 1 software for Government PTES Program Office testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 3. Develop the software for User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and identify Use Cases that are outlined in the PTES SVP for testing of Build 1. [A049], [B049], [C049]
 4. Test (including integration and regression testing) at the end of every Sprint using automated tools and before demonstrating Build 1 software.
 5. Complete BDR 2 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
 6. Support major PTES technical reviews and provide plans and status of Agile software development efforts.
- d. During Build 2, the PTES Contractor shall:
-

1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
2. Plan, develop, test and deliver the PTES Build 2 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
3. Develop the software for User Stories according to the Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES SVP for testing of Build 2. [A049], [B049], [C049]
4. Test (including integration, qualification and regression testing) at end of every Sprint using automated tools before demonstrating Build 2 software.
5. Conduct RRD.
6. Support Government RRT for Build 1.
7. Support Government EOA.
8. Complete BDR 3 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
9. Support major PTES technical reviews and provide plans and status of Agile software development efforts.

1.3.2 PTES Mission Management System (MMS)

The MMS includes the overall effort for mission planning and configuration of user terminal modems and PTES Joint Hubs. This CLIN includes activities associated with the design, development, integration and test of the MMS segment.

1.3.2.1 SEIT/PM and Support Equipment

The MMS SEIT/PM & support equipment includes the overall planning effort and controls to guide and execute the engineering, integration, testing and program management level activities towards accomplishing MMS segment objectives. This effort includes establishment and implementation of IPT, sub-contractor management, customer status reviews, management of contract resources, business management, configuration, data management, risk management, integrated schedule, critical path management, anomaly detection and resolution and studies.

1.3.2.1.1 MMS Systems Engineering

1.3.2.1.1.1 MMS General Planning

The PTES Contractor shall plan, for the design, development, build, test and delivery of an MMS segment that meets all PTES functional and performance requirements as defined in the MMS Specification, ICDs, Cybersecurity Controls, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD for the PTES hardware and software for IOC and FOC.

- a. The PTES Contractor shall use an Agile Project Management approach as outlined in Appendix A (Agile Product Management) to develop the MMS.
- b. All PTES MMS segment markings shall be IAW MIL-STD-130N (Identification Marking of U.S. Military Property).

1.3.2.1.1.2 MMS Requirements and Interfaces

- a. The PTES Contractor shall develop, derive, allocate and control the PTES requirements baseline per section 1.1.1.4 and from this baseline develop Features and User Stories, MMS specifications and MMS external, PTES internal (segment to segment), and MMS subsystem ICDs.
 1. The PTES Contractor shall develop and maintain the MMS Specification. [A066], [B066], [C066]
 - i. The PTES Contractor shall break out each MMS subsystem specification separately within the MMS specification.
 - ii. The PTES Contractor shall add an Appendix to the MMS Specification to provide differences between the MMS TRD (PTES-8300 - reference document) and Contractor specifications.
 2. The PTES Contractor shall develop and maintain the PTES internal (segment to segment), and MMS subsystem ICDs.
 - i. The PTES Contractor shall support the Government PTES Program Office in the development and maintenance of external ICDs between MMS and external interfaces.
 - ii. The PTES Contractor shall develop and maintain ICDs between MMS and other PTES segments (internal). [A029], [B029], [C029], [A030], [B030], [C030], [A031], [B031], [C031]
 - iii. The PTES Contractor shall develop and maintain ICDs for each of the MMS subsystem (intra) (Contractor defined). [A034.x], [B034.x], [C034.x]
- b. The PTES Contractor shall participate in activities to assess and incorporate new or modified segment requirements. This includes, but not limited to:
 1. Supporting the accommodation of changes to PTES requirement documents and external, internal, and subsystem ICDs proposed by the PTES Contractor and the Government PTES Program Office.
 2. Participating in the Government PTES Program Office configuration management process for changes to PTES requirements and ICDs.
 3. Determining PTES Contractor impacts of proposed changes, including developing and providing cost estimates. (DAL submission) [A004], [B004], [C004]

-
- c. The PTES Contractor shall use tools and processes in an integrated manner to provide visibility into program problems and progress and provide insight into cost and schedule impacts of proposed requirements changes.

1.3.2.1.1.3 MMS Segment Design/Development

- a. The PTES Contractor shall design and develop a MMS (to include software for IOC and FOC) segment that:
 - 1. Meets all requirements of the MMS specification, ICDs, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD.
 - 2. Meets DoD Cybersecurity (DODI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) controls tailored for PTES including the current quarterly DISA STIG requirements.
 - 3. Uses server virtualization and virtual operating environments to run all application software.
- b. The PTES Contractor shall develop and maintain a PTES MMS Architecture and design that is documented in the PTES SSDD with supporting rationale and meets all PTES requirements, including alignment with the PTES GRA. [A006], [B006], [C006]
- c. As part of the MOSA compliance, the PTES Contractor shall provide a design architecture for the MMS that uses a minimum of ten (10) subsystems which include Database Management, WGS Mission Planning, External Input/Output Manager, and Classified Portal Manager, Unclassified Portal Manager, and additional contractor-defined subsystems.
 - 1. As part of the External Input/Output subsystem, the PTES Contractor shall include interfaces for all communications among the subsystems as well as external systems.
- d. The PTES Contractor shall document technical decisions and trades, including trade studies requested by the Government PTES Program Office, deposit it in the Contractor's secure IDE, update the DAL, and present the findings to the Government PTES Program Office as requested. (DAL submission) [A004], [B004], [C004]
- e. The PTES Contractor shall ensure the design and installation of the MMS segment complies with federal, state, and local Environment, Safety & Occupational Health (ESOH) codes, statutes, regulations, and Presidential Executive Orders.
- f. The PTES Contractor shall employ M&S capabilities for the development, test and validation of the MMS segment.

1.3.2.1.2 MMS Assembly, Integration and Test

- a. The PTES Contractor shall manage the assembly and integration of MMS segment (intra-segment) to verify the segment level functionality described in the OCD. [A002], [B002], [C002]
- b. The PTES Contractor shall conduct MMS segment (intra-segment), inter-segment, and external interface risk reduction activities.
- c. The PTES Contractor shall identify, conduct and develop trade studies and prototypes to support risk reduction testing. (DAL submission) [A004], [B004], [C004]
- d. The PTES Contractor shall identify, design and plan for the development of test tools needed to verify requirements in the MMS Specification. [A066], [B066], [C066]

1.3.2.1.2.1 MMS Verification, Certification and Test

- a. The PTES Contractor shall develop and maintain a MMS verification program in compliance with the PTES SVP. [A049], [B049], [C049]
- b. The PTES Contractor shall develop and maintain a MMS test program in compliance with the PTES SITP. [A005], [B005], [C005]
- c. The PTES Contractor shall provide access to all formal and informal MMS verification artifacts, verification data and deficiency reports as requested by Government PTES Program Office.
- d. The PTES Contractor shall document and maintain MMS requirements traceability and provide as a DOORSv9 compatible database data, to document bi-directional traceability between the Government PTES Program Office controlled TRDs, ICDs and PTES Contractor developed MMS specification and MMS ICDs in a RTM. [A027], [B027], [C027]
 1. The PTES Contractor shall develop and maintain the MMS Specification traceability down to the Feature and User Story in the RTM. [A066], [B066], [C066], [A027], [B027], [C027]
- e. The PTES Contractor shall develop and maintain a MMS VCRM for requirements included in the MMS specification that support the PTES System, KMS ECU, Joint Hub ECU, and Joint Hub specifications. [A066], [B066], [C066], [A026], [B026], [C026], [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]
 1. The PTES Contractor shall include the MMS VCRM in the MMS Specification. [A066], [B066], [C066]
- f. The PTES Contractor shall verify MMS intra-segment interfaces (between MMS subsystems).
- g. The PTES Contractor shall verify PTES inter-segment (segment to segment) interfaces to MMS.
- h. The PTES Contractor shall verify PTES external interfaces to MMS.
- i. The PTES Contractor shall develop MMS test plans, procedures and reports for all segment verification and operational site tests IAW the Contractor PTES SITP. [A014], [B014], [C014], [A015], [B015], [C015], [A016], [B016], [C016], [A005], [B005], [C005]
- j. The PTES Contractor shall verify all requirements in the MMS Specification and verify traceability down to the Feature and User Story in the RTM. [A066], [B066], [C066], [A027], [B027], [C027]
- k. The PTES Contractor shall develop test tools needed to verify MMS requirements.
 1. The PTES Contractor shall ensure that all test software, test drivers; models, emulators and simulators are validated (consistent with AFI 63-101/20-101 (Integrated Life Cycle Management) and DoDI 5000.61 (Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A))), and documented prior to the start of formal verification testing.

1.3.2.1.3 MMS Program Management

- a. The PTES Contractor shall conduct Program Management IAW section 1.1.3 and Appendix A (Agile Product Management).

1.3.2.1.4 MMS Support Equipment & Product Support Planning

Product Support Planning is conducted at the system level and not at the segment level (see section 1.1.4).

1.3.2.2 COTS Hardware – N/A**1.3.2.3 Custom Hardware – N/A****1.3.2.4 MMS Software**

The MMS software items includes all resources required to design, develop, code, test, document, install, integrate, verify, and operate software for performing MMS functions.

1.3.2.4.1 MMS Software Design, Development and Test

- a. The PTES Contractor shall design, develop and test software for the MMS segment, following the processes and plans defined in Appendix A (Agile Product Management) and section 1.1.1.3.
- b. The PTES Contractor shall develop and deliver detailed software artifacts for the MMS software, following the processes and plans defined in Appendix A (Agile Product Management) and section 1.1.1.3.

1.3.2.5 Pre-Operations Mission Support – N/A**1.3.3 PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)**

The KMS and KLIF includes the overall effort for cryptographic key management planning. This CLIN includes all activities associated with the design, development, integration and test of the KMS and KLIF segment.

1.3.3.1 SEIT/PM and Support Equipment

The KMS and KLIF SEIT/PM and support equipment includes the overall planning effort and controls to guide and execute the engineering, integration, testing and program management level activities towards accomplishing KMS and KLIF segment objectives. This effort includes establishment and implementation of IPTs, sub-contractor management, customer status reviews, management of contract resources, business management, configuration, data management, risk management, integrated schedule, critical path management, anomaly detection and resolution and studies.

1.3.3.1.1 KMS and KLIF Systems Engineering**1.3.3.1.1.1 KMS and KLIF General Planning**

The PTES Contractor shall plan, design, develop, build, test and deliver a KMS and KLIF segment that meets all PTES functional and performance requirements as defined in the KMS and KLIF Specifications, ICDs, Cybersecurity Controls, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD for the PTES hardware and software for IOC and FOC.

- a. The PTES Contractor shall use an Agile Project Management approach as outlined in Appendix A (Agile Product Management) to develop the KMS and KLIF.
- b. All PTES KMS and KLIF segment markings shall be IAW MIL-STD-130N (Identification Marking of U.S. Military Property).

1.3.3.1.1.2 KMS and KLIF Requirements and Interfaces

- a. The PTES Contractor shall develop, derive, allocate and control the PTES requirements baseline per section 1.1.1.4 and from this baseline develop Features and User Stories, KMS and KLIF specifications and KMS and KLIF external, internal (segment to segment), and KMS and KLIF subsystem ICDs.
 1. The PTES Contractor shall develop and maintain the KMS and KLIF Specifications. [A067], [B067], [C067], [A068], [B068], [C068]
 - i. The PTES Contractor shall break out each KMS and KLIF module specification separately within the KMS and KLIF specifications.
 - ii. The PTES Contractor shall add an Appendix to the KMS and KLIF Specifications to provide differences between the KMS (PTES-8400) and KLIF (PTES-8500) TRDs (reference documents) and Contractor specifications.
 2. The PTES Contractor shall develop and maintain the KMS and KLIF internal (segment to segment), and subsystem ICDs.
 - i. The PTES Contractor shall support the Government PTES Program Office in the development and maintenance of external ICDs between KMS and KLIF and external interfaces.
 - ii. The PTES Contractor shall develop and maintain ICDs between KMS and KLIF and other PTES segments (internal). [A029], [B029], [C029], [A031], [B031], [C031], [A032], [B032], [C032]
 - iii. The PTES Contractor shall develop and maintain ICDs for each of the KMS and KLIF subsystems (intra) (Contractor defined). [A034.x], [B034.x], [C034.x]
 - iv. The PTES Contractor shall develop and maintain a Key Loading and Initialization Facility (KLIF) Host (KHOST) to Token Writer ICD. [A034.x], [B034.x], [C034.x]
- b. The PTES Contractor shall participate in activities to assess and incorporate new or modified segment requirements. This includes, but not limited to:
 1. Supporting the accommodation of changes to PTES requirement documents and external, internal, and subsystem ICDs proposed by the PTES Contractor and the Government PTES Program Office.
 2. Participating in the Government PTES Program Office configuration management process for changes to PTES requirements and ICDs.
 3. Determining PTES Contractor impacts of proposed changes, including developing and providing cost estimates. (DAL submission) [A004], [B004], [C004]
- c. The PTES Contractor shall use tools and processes in an integrated manner to provide visibility into program problems and progress and provide insight into cost and schedule impacts of proposed requirements changes.

1.3.3.1.1.3 KMS and KLIF Segment Design/Development

- a. The PTES Contractor shall design and develop a KMS and KLIF (to include software/hardware for IOC and FOC) segment that:

1. Meets all requirements of the KMS and KLIF specifications, ICDs, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD.
 2. Meets DoD Cybersecurity (DODI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) controls tailored for PTES including the current quarterly DISA STIG requirements.
- b. The PTES Contractor shall develop and maintain a PTES KMS and KLIF Architecture and design that is documented in the PTES SSDD with supporting rationale and meets all PTES requirements, including alignment with the PTES GRA. [A006], [B006], [C006]
 - c. As part of the MOSA compliance, the PTES Contractor shall provide a design architecture for the KMS and KLIF that uses a minimum of six subsystems which include input/output and contractor-defined subsystems.
 1. As part of the Input/output subsystem, the PTES Contractor shall include interfaces for all communications among subsystems as well as external systems.
 - d. The PTES Contractor shall document technical decisions and trades, including trade studies requested by the Government PTES Program Office, deposit it in the Contractor's secure IDE, update the DAL, and present the findings to the Government PTES Program Office as requested. (DAL submission) [A004], [B004], [C004]
 - e. The PTES Contractor shall ensure the design and installation of the KMS and KLIF segment complies with federal, state, and local ESOH codes, statutes, regulations, and Presidential Executive Orders.
 - f. The PTES Contractor shall employ M&S capabilities for the development, test and validation of the KMS and KLIF segment.

1.3.3.1.2 KMS and KLIF Assembly, Integration and Test

- a. The PTES Contractor shall manage the assembly and integration of KMS and KLIF segment (intra-segment) to verify the segment level functionality described in the OCD.
- b. The PTES Contractor shall conduct KMS and KLIF segment (intra-segment), inter-segment, and external interface risk reduction activities with applicable GFP to provide for problem detection and resolution. (Attachment 6: Government Furnished Property (GFP))
- c. The PTES Contractor shall identify, conduct and develop trade studies and prototypes to support early confidence testing. (DAL submission) [A004], [B004], [C004]
- d. The PTES Contractor shall identify, design and plan for the development of test tools needed to verify requirements in the KMS and KLIF Specifications.

1.3.3.1.2.1 KMS and KLIF Verification, Certification and Test

- a. The PTES Contractor shall develop and maintain a KMS and KLIF verification program in compliance with the PTES SVP. [A049], [B049], [C049]
- b. The PTES Contractor shall develop and maintain a KMS and KLIF test program in compliance with the PTES SITP. [A005], [B005], [C005]

-
- c. The PTES Contractor shall provide access to all formal and informal KMS and KLIF verification artifacts, verification data and deficiency reports as requested by Government PTES Program Office.
 - d. The PTES Contractor shall document and maintain KMS and KLIF requirements traceability, and provide as a DOORSv9 compatible database data, to document bi-directional traceability between the Government PTES Program Office controlled TRDs, ICDs and PTES Contractor developed KMS and KLIF specifications and KMS and KLIF ICDs in a RTM. [A027], [B027], [C027]
 - 1. The PTES Contractor shall develop and maintain the KMS and KLIF specification traceability down to the Feature and User Story in the RTM. [A067], [B067], [C067], [A068], [B068], [C068], [A027], [B027], [C027]
 - e. The PTES Contractor shall develop and maintain a KMS and KLIF Verification Cross Reference Matrix (VCRM) for requirements included in the KMS and KLIF specifications that support the PTES System, KMS ECU, Joint Hub ECU, and Joint Hub specifications. [A067], [B067], [C067], [A068], [B068], [C068], [A026], [B026], [C026], [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]
 - 1. The PTES Contractor shall include the KMS and KLIF VCRMs in their respective Specification. [A067], [B067], [C067], [A068], [B068], [C068]
 - f. The PTES Contractor shall verify all KMS and KLIF intra-segment interfaces (between subsystems).
 - g. The PTES Contractor shall verify all PTES inter-segment (segment to segment) interfaces.
 - h. The PTES Contractor shall verify all PTES external interfaces to the KMS and KLIF.
 - i. The PTES Contractor shall develop KMS and KLIF test plans, procedures and reports for all segment verification and operational site tests IAW the Contractor PTES SITP. [A014], [B014], [C014], [A015], [B015], [C015], [A016], [B016], [C016], [A005], [B005], [C005]
 - j. The PTES Contractor shall verify all requirements in the KMS and KLIF Specifications and obtain Government PTES Program Manager concurrence at exit reviews of segment verification tests.
 - k. The PTES Contractor shall develop test tools needed to verify KMS and KLIF requirements.
 - 1. The PTES Contractor shall ensure that all test software, test drivers; models, emulators and simulators are validated, approved and documented prior to the start of formal verification testing.

1.3.3.1.3 KMS and KLIF Program Management

- a. The PTES Contractor shall conduct Program Management IAW section 1.1.3 and Appendix A (Agile Product Management).

1.3.3.1.4 KMS and KLIF Support Equipment and Product Support Planning

Product Support Planning is conducted at the system level and not at the segment level (see section 1.1.4).

1.3.3.2 KLIF COTS Hardware

- a. The PTES Contractor shall procure COTS and GOTS hardware for the design and development of the KLIF.
- b. The PTES Contractor shall evaluate and acquire Information Assurance GOTS and COTS hardware components IAW National Security Telecommunications Information System Security Policy (NSTISSP) No. 11.
- c. The PTES Contractor shall assemble COTS hardware and construct hardware prototypes to ensure the design will meet requirements. [A023], [B023], [C023], [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]

1.3.3.3 KLIF Custom Hardware

- a. The PTES Contractor shall design and develop custom hardware for the KLIF.

1.3.3.4 KMS and KLIF Software

The KMS and KLIF software items include all resources required to design, develop, code, test, document, install, integrate and verify software for performing KMS and KLIF functions.

1.3.3.4.1 KMS and KLIF Software Design, Development and Test

- a. The PTES Contractor shall design, develop and test software for the KMS and KLIF segment, following the processes and plans defined in Appendix A (Agile Product Management) and section 1.1.1.3.
- b. The PTES Contractor shall develop and deliver detailed software artifacts for the KMS and KLIF software, following the processes and plans defined in Appendix A (Agile Product Management) and section 1.1.1.3.

1.3.3.5 KMS and KLIF Pre-Operations Mission Support –N/A

1.4 Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/PTES Joint HUB

1.4.1 SEIT/PM and Support Equipment

This includes the overall planning effort and controls to guide and execute the engineering, integration, testing, and program management level activities towards accomplishing PTES ECU (for KMS and Joint Hub) and Joint Hub segment objectives. This effort includes establishment and implementation of Integrated Product Teams, sub-contractor management, customer status reviews, management of contract resources, business management, configuration, data management, risk management, integrated schedule, critical path management, anomaly detection and resolution and studies.

1.4.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Systems Engineering

1.4.1.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub General Planning

The PTES Contractor shall plan, design, develop, build and deliver an ECU for the KMS, an ECU for the Joint Hub, and a SATCOM Gateway PTES Joint Hub that meets all PTES functional and performance requirements as defined in the PTES KMS ECU, Joint Hub ECU, and Joint Hub specifications, ICDs, Cybersecurity Controls, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD for the PTES hardware and software for IOC and FOC.

- a. The PTES Contractor shall comply with section 1.1 as it applies to the design and development of the PTES KMS ECU, Joint Hub ECU, and Joint Hub segment in support of the overall PTES system.
- b. The PTES Contractor shall mark all PTES ECUs (for KMS and Joint Hub) and Joint Hub segment IAW MIL-STD-130N (Identification Marking of U.S. Military Property).
- c. The PTES Contractor shall develop all required hardware and software to fully implement the PTW ICD security critical functions IAW NSA certification requirements in the NSA-tailored Telecommunications Security Requirements Document (TSRD). The PTES Contractor shall provide a KMS ECU and Joint Hub ECU which implement all cryptographic security critical functions IAW their respective NSA-tailored Information Assurance System Requirements Document (IASRD) (NSA-tailored IASRD – PTES KMS ECU and NSA-tailored IASRD – PTES Joint Hub ECU) to the ECU architecture and acceptable to NSA Risk Assessment Panel (RAP).
- d. The PTES Contractor shall develop and deliver documentation for each ECU (KMS ECU, Joint Hub ECU) to support the NSA certification process as defined in the NSA-tailored Telecommunications Security Requirements Document (TSRD) to include:
 1. Security Evaluation Document (SED) - KMS ECU [A069]
 2. Security Evaluation Document (SED) - Joint Hub ECU [A070]
 3. Security Verification Plan and Procedures (SVPP) - KMS ECU [A071]
 4. Security Verification Plan and Procedures (SVPP) - Joint Hub ECU [A072]
 5. Software Development Process Description Document (SDPDD - KMS ECU) [A075]
 6. Software Development Process Description Document (SDPDD) - Joint Hub ECU [A076]
 7. Software/Hardware Requirements Specification (SHRS) - KMS ECU [A077]
 8. Software/Hardware Requirements Specification (SHRS) - Joint Hub ECU [A078]
 9. Software/Hardware Design Description (SHDD) - KMS ECU [A079]
 10. Software/Hardware Design Description (SHDD) - Joint Hub ECU [A080]
 11. Software and Programmable Logic Evaluation Report (SPLER) - KMS ECU [A081]
 12. Software and Programmable Logic Evaluation Report (SPLER) - Joint Hub ECU [A082]
 13. Product Drawings/Models and Associated Lists - KMS ECU [A097]
 14. Product Drawings/Models and Associated Lists - Joint Hub ECU [A098]
 15. Information Security (INFOSEC) Anonymity Plan - KMS ECU [A101]
 16. Information Security (INFOSEC) Anonymity Plan - Joint Hub ECU [A102]

1.4.1.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Requirements and Interfaces

- a. The PTES Contractor shall develop, derive, allocate and control the PTES requirements baseline per section 1.1.1.4 and from this baseline develop the KMS ECU, Joint Hub ECU, and Joint Hub

specifications and Joint Hub external, internal (segment to segment), and Joint Hub subsystem ICDs.

1. The PTES Contractor shall develop and maintain the KMS ECU, Joint Hub ECU, and Joint Hub Specifications. [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]
 - i. The PTES Contractor shall define, develop, and maintain a KMS ECU Specification that fully complies with the Government KMS ECU TRD (PTES-8420) and the KMS ECU IASRD.
 - ii. The PTES Contractor shall define, develop, and maintain a Joint Hub ECU Specification that fully complies with the Government Joint Hub ECU TRD (PTES-8220) and the Joint Hub ECU IASRD.
 - iii. The PTES Contractor shall define, develop, and maintain a Hub Specification that fully complies with the Government Joint Hub TRD (PTES-8200).
 - iv. The PTES Contractor shall break out each Joint Hub module specification separately within the Joint Hub specification.
2. The PTES Contractor shall develop and maintain the PTES Joint Hub SRS - only for non-Agile software development. [A013], [B013], [C013]
3. The PTES Contractor shall develop and maintain the KMS ECU, Joint Hub ECU, and Joint Hub internal (segment to segment), and Joint Hub subsystem ICDs.
 - i. The PTES Contractor shall develop and maintain external ICDs between Joint Hub and external interfaces.
 - ii. The PTES Contractor shall develop and maintain ICDs between KMS ECU, Joint Hub ECU, and Joint Hub and other PTES segments (internal). [A030], [B030], [C030], [A032], [B032], [C032], [A033], [B033], [C033]
 - iii. The PTES Contractor shall develop and maintain ICDs for each of the Joint Hub subsystems (intra). [A034.x], [B034.x], [C034.x]
- b. The PTES Contractor shall participate in activities to assess and incorporate new or modified segment requirements. This includes, but not limited to:
 1. Supporting the accommodation of changes to PTES requirement documents and external, internal, and subsystem ICDs proposed by the PTES Contractor and the Government PTES Program Office.
 2. Participating in the Government PTES Program Office configuration management process for changes to PTES requirements and ICDs.
 3. Determining PTES Contractor impacts of proposed changes, including developing and providing cost estimates. (DAL submission) [A004], [B004], [C004]
- c. The PTES Contractor shall use tools and processes in an integrated manner to provide visibility into program problems and progress and provide insight into cost and schedule impacts of proposed requirements changes.

1.4.1.1.3 SATCOM Gateway/PTES ECU (KMS and Joint HUB)/Joint Hub Segment Design

- a. The PTES Contractor shall design and develop the KMS ECU, Joint Hub ECU and Joint Hub (to include software and hardware for IOC and FOC) segment that:
 1. Meets all requirements of the specifications, ICDs, compliance documents (Attachment 2, Compliance and Reference Documents, Table 1) and OCD.
 2. Meets DoD Cybersecurity (DODI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) controls tailored for PTES including the current quarterly DISA STIG requirements.
- b. The PTES Contractor shall develop and maintain a KMS ECU, Joint Hub ECU and Joint Hub Architecture and design that is documented in the PTES SSDD with supporting rationale and meets all PTES requirements, including alignment with the PTES GRA. [A006], [B006], [C006]
- c. As part of the MOSA compliance, the PTES Contractor shall provide a design architecture for the Joint Hub that uses a minimum of six subsystems which include input/output and contractor-defined subsystems.
 1. As part of the Input/output subsystem, the PTES Contractor shall include interfaces for all communications among the subsystems as well as external systems.
- d. The PTES Contractor shall document and maintain the Joint Hub planning constraints for the MMS to implement in the PTES SSDD as an Appendix to SSDD. [A006], [B006], [C006]
- e. The PTES Contractor shall document the design and operation of KMS ECU, Joint Hub ECU, and Joint Hub hardware to include, but not be limited to, circuit diagrams; subsystem, board and rack level assembly drawings; inter- and intra- assembly wiring diagrams; blueprints; and assembly instructions and manuals. [A064], [B064], [C064]
- f. The PTES Contractor shall document technical decisions and trades, including trade studies requested by the Government PTES Program Office, deposit it in the Contractor's secure IDE, update the DAL, and present the findings to the Government PTES Program Office as requested. (DAL submission) [A004], [B004], [C004]
- g. The PTES Contractor shall ensure the design, development, and installation of the KMS ECU, Joint Hub ECU, and Joint Hub segment complies with federal, state, and local ESOH codes, statutes, regulations, and Presidential Executive Orders.
- h. The PTES Contractor shall employ M&S capabilities for the development, test and validation of the KMS ECU, Joint Hub ECU and Joint Hub segment.

1.4.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Assembly, Integration and Test

- a. The PTES Contractor shall manage the assembly and integration of KMS ECU, Joint Hub ECU, and Joint Hub segment (intra-segment) hardware and software to verify the segment level functionality described in the OCD. [A002], [B002], [C002]
- b. The PTES Contractor shall conduct KMS ECU, Joint Hub ECU, and Joint Hub segment (intra-segment), inter-segment, and external interface risk reduction activities with applicable GFP to provide for problem detection and resolution. (Attachment 6: Government Furnished Property (GFP))

-
- c. The PTES Contractor shall identify, conduct and develop trade studies and prototypes to support early confidence testing. (DAL submission) [A004], [B004], [C004]
 - d. The PTES Contractor shall identify, design and plan for the development of test tools needed to verify requirements in the KMS ECU, Joint Hub ECU, and Joint Hub Specifications. [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]

1.4.1.2.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Verification, Certification and Test

- a. The PTES Contractor shall develop and maintain a KMS ECU, Joint Hub ECU, and Joint Hub verification program in compliance with the PTES SVP. [A049], [B049], [C049]
- b. The PTES Contractor shall develop and maintain a KMS ECU, Joint Hub ECU, and Joint Hub test program in compliance with the PTES SITP. [A005], [B005], [C005]
- c. The PTES Contractor shall deliver production representative model of KMS ECU and Joint Hub ECU for an NSA QUADRANT analysis.
- d. The PTES Contractor shall provide access to all formal and informal KMS ECU, Joint Hub ECU, and Joint Hub verification artifacts, verification data and deficiency reports as requested by Government PTES Program Office.
- e. The PTES Contractor shall document and maintain KMS ECU, Joint Hub ECU, and Joint Hub requirements traceability, and provide as a DOORSv9 compatible database data, to document bi-directional traceability between the Government PTES Program Office controlled TRDs, ICDs and PTES Contractor developed specifications and ICDs in a RTM. [A027], [B027], [C027]
- f. The PTES Contractor shall develop and maintain a VCRM (included in the respective KMS ECU, Joint Hub ECU and Joint Hub specifications) and shall contain every requirement in the KMS ECU, Joint Hub ECU and Joint Hub specification. [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]
- g. The PTES Contractor shall develop and maintain a RVP, documented in the PTES SVP, and generate verification artifacts for every requirement in the KMS ECU, Joint Hub ECU and Joint Hub specifications. [A049], [B049], [C049]
- h. The PTES Contractor shall provide VCRM development and requirement verification status at the Technical Reviews and Audits (e.g. System PDR, System CDR, TRRs, SVR/FCA, PCA).
- i. The PTES Contractor shall ensure that all test software, test drivers; models, emulators and simulators are validated, approved and documented prior to the start of formal verification testing.

1.4.1.3 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Program Management

- a. The PTES Contractor shall conduct Program Management IAW section 1.1.3.

1.4.1.4 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Support Equipment & Product Support Planning – N/A

Product Support Planning is conducted at the system level and not at the segment level (see section 1.1.4).

1.4.2 Antenna – N/A**1.4.3 Optical Communication Assembly – N/A****1.4.4 RF Electronics – N/A****1.4.5 Timing – N/A****1.4.6 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Baseband-Network**

The baseband network section includes the resources to design and develop the baseband network, including interfaces with the terrestrial networks.

1.4.7 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware

The hardware section includes the resources to develop, produce, procure, assemble and test the hardware for the KMS ECU, Joint Hub ECU and Joint Hub.

1.4.7.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub COTS Hardware

- a. The PTES Contractor shall procure COTS and GOTS hardware for the design and development of the KMS ECU, Joint Hub ECU, and Joint Hub Segment.
- b. The PTES Contractor shall evaluate and acquire Information Assurance GOTS and COTS hardware components IAW National Security Telecommunications Information System Security Policy (NSTISSP) No. 11.
- c. The PTES Contractor shall assemble COTS hardware and construct hardware prototypes to ensure the design will meet requirements. [A023], [B023], [C023], [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]

1.4.7.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Custom Hardware

- a. The PTES Contractor shall design and develop custom hardware for the KMS ECU, Joint Hub ECU, and Joint Hub.

1.4.8 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software

The KMS ECU, Joint Hub ECU, and Joint Hub software items includes all the resources required to design, develop, code, test, document, install, integrate, and verify software for performing KMS ECU, Joint Hub ECU and Joint Hub functions.

1.4.8.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software Design and Development

- a. The PTES Contractor shall design and develop software for the PTES KMS ECU, Joint Hub ECU, and Joint Hub segment, following the processes and plans defined in section 1.1.1.3.
- b. The PTES Contractor shall develop KMS ECU, Joint Hub ECU and Joint Hub software requirements that are traceable to and compliant with KMS ECU, Joint Hub ECU and Joint Hub specifications. [A103], [B103], [C103], [A104], [B104], [C104], [A105], [B105], [C105]

1.4.9 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – N/A

The pre-operations maintenance element contains all the resources related to the pre-operations maintenance (hardware repair and software updates) of the PTES KMS ECU, Joint Hub ECU, and Joint

Hub equipment and software. This function begins with the acceptance of the PTES ECU and Joint Hub segment and ends with the start of operations (IOC). Not required for CLIN 0001.

1.4.10 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support

The pre-operations mission support element contains all the resources required for the operation of the PTES ECU (for KMS and Joint Hub) and Joint Hub prior to turnover (DD Form 250). It includes testing; routine monitoring of equipment health and status; fault detection; and anomaly investigation and resolution. Not required for CLIN 0001.

1.5 External Network (T-COMM)

The external network (T-COMM) element includes the resources to design external communication. External communications refer to hardware (equipment, lines or circuits) and software effort required for a system that moves data along external communications paths between required points.

1.5.1 SEIT/PM and Support Equipment

- a. The PTES Contractor shall participate in and provide technical input to the DISA IPT, led by the Government PTES Program Office, to establish requirements for the Government furnished data connectivity between the PTES equipment at the operational PATS Satellite Operations Center (PATSO), DISA CDCs, the PTES equipment at SATCOM Gateway sites and the WGS ground system.

1.5.2 Leased Circuits/Data Connectivity

- a. The PTES Contractor shall identify Lease circuits and Data Connectivity requirements, to include connectors and cabling needed to connect PTES equipment with DISA-provided communication links.
- b. The PTES Contractor shall participate in working groups with the Government PTES Program Office and DISA to define the DISA communication links needed for PTES.
- c. The PTES Contractor shall plan for and integrate DISA communication links with PTES hardware and software.

1.5.3 Purchased Circuits

- a. The PTES Contractor shall identify requirements for Purchased Circuits.
- b. The PTES Contractor shall participate in working groups with the Government PTES Program Office and DISA to define the DISA communication links needed for PTES.
- c. The PTES Contractor shall plan for the integration of DISA communication links with PTES hardware and software.

1.6 User Equipment – N/A

1.7 Facilities

The facilities element encompasses the entire physical infrastructure required to access, house and support the PTES Joint Hub, GOPC and external network equipment and personnel.

- 1.7.1 SEIT/PM & Support Equipment – TBD**
- 1.7.2 Site Preparation – TBD**
- 1.7.3 Landscape – N/A**
- 1.7.4 Buildings – N/A**
- 1.7.5 Equipment and Building Fit Out – N/A**
- 1.7.6 Facility Pre-Ops Maintenance – N/A**
- 1.8 Vehicles and Shelters – N/A**
- 1.9 Insurance – N/A**
- 1.10 Task Orders – N/A**
- 1.11 Orbital Transfer Vehicle (OTV) – N/A**
- 1.12 Launch Vehicle – N/A**

1 CLIN 0002 (Option): Protected Tactical Enterprise Service (PTES) – PTES System and Segment Initial Operational Capability (IOC) Development

CLIN 0002 includes activities required to oversee the system level development, integration, test, and fielding of the hardware and software for the PTES Initial Operational Capability (IOC). CLIN 0002 covers the period from completion of System CDR through IOC.

All of the requirements under CLIN 0001 apply to CLIN 0002 unless CLIN 0001 directs otherwise. The following sections are in addition to or modified to be specific requirements to CLIN 0002.

1.1 System Level SEIT/PM and Support Equipment

See CLIN 0001 Section 1.1 requirements.

1.1.1 Systems Engineering

1.1.1.1 General Planning

The PTES Contractor shall develop, install, test and deliver a ground system that meets all PTES functional and performance requirements for IOC hardware and software in support of two (2) DISA CDCs (Note: assume DISA CDC sites are located at Mechanicsburg PA and Oklahoma City OK) and two (2) SATCOM Gateway sites (Note: assume SATCOM Gateway sites are located at Wahiawa, HI and Geraldton, Australia) as defined in the PTES specifications, Interface Control Documents (ICD), Cybersecurity Controls, compliance documents (Government Reference Document (Attachment 2, Compliance and Reference Documents, Table 1) and Operational Concept Description (OCD). (See CLIN 0001 Section 1.1.1.1 requirements.)

1.1.1.1.1 Support to the Government PTES Program Office

See CLIN 0001 Section 1.1.1.1.1 requirements.

1.1.1.1.2 Support to External Organizations

See CLIN 0001 Section 1.1.1.1.2 requirements.

1.1.1.2 PTES System Level Development

See CLIN 0001 Section 1.1.1.2 requirements.

1.1.1.3 Software Development

See CLIN 0001 Section 1.1.1.3 requirements.

1.1.1.4 Requirements and Interfaces

See CLIN 0001 Section 1.1.1.4 requirements.

1.1.1.5 System Safety Program

See CLIN 0001 Section 1.1.1.5 requirements.

1.1.1.6 Quality Assurance Program

See CLIN 0001 Section 1.1.1.6 requirements.

1.1.1.7 Risk Management

See CLIN 0001 Section 1.1.1.7 requirements.

1.1.1.8 Human Engineering

See CLIN 0001 Section 1.1.1.8 requirements.

1.1.1.9 Technical Performance Measures and Margin Planning

See CLIN 0001 Section 1.1.1.9 requirements.

1.1.1.10 Configuration Management

- a. See CLIN 0001 Section 1.1.1.10 requirements.
- b. The PTES Contractor shall plan, document, execute, schedule and conduct jointly with the Government PTES Program Office a Security Verification Review (SVR)/Functional Configuration Audit (FCA) and a Physical Configuration Audit (PCA) in compliance with 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored).
 1. The PTES Contractor shall conduct the SVR/FCA and PCA using IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored).
 2. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES SVR/FCA. [B008]
 3. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES PCA. [B008]
- c. The PTES Contractor shall maintain a functional baseline after SVR/FCA and product baselines after PCA. The Government PTES Program Office has veto rights over the Contractors Class II changes.

1.1.1.11 Data Management

See CLIN 0001 Section 1.1.1.11 requirements.

1.1.1.12 Data Rights

See CLIN 0001 Section 1.1.1.12 requirements.

1.1.1.13 Software Assurance

See CLIN 0001 Section 1.1.1.13 requirements.

1.1.1.14 Cybersecurity

See CLIN 0001 Section 1.1.1.14 requirements.

1.1.1.15 Program Protection

See CLIN 0001 Section 1.1.1.15 requirements.

1.1.1.16 Cryptology

- a. See CLIN 0001 Section 1.1.1.16 requirements.
- b. The PTES Contractor shall deliver one (1) PTES Joint Hub ECU and one (1) PTES KMS ECU as part of the ECU NSA certification effort.

1.1.2 Assembly, Integration and Test

- a. See CLIN 0001 Section 1.1.2 requirements.
- b. The PTES Contractor shall support RRT, DT&E, IT&E, OT&E, Multi-Service Operational Test & Evaluation (MOT&E) test events and request for test data. [B050], [B051], [B052]

1.1.2.1 Contractor Led DT&E

See CLIN 0001 Section 1.1.2.1 requirements.

1.1.2.2 Government Led DT&E, IT&E and OT&E

See CLIN 0001 Section 1.1.2.2 requirements.

1.1.2.3 Verification and Certification

- a. See CLIN 0001 Section 1.1.2.3 requirements.
- b. The PTES Contractor shall provide access to all formal and informal PTES verification artifacts, verification data and deficiency reports as requested by Government PTES Program Office.
- c. The PTES Contractor shall verify all requirements in the PTES specifications and obtain Government PTES Program Office concurrence. [B049]
- d. The PTES Contractor shall invite the Government PTES Program Office to witness verification testing of PTES requirements and interfaces and to witness PTES testing at the operational site(s).
- e. The PTES Contractor shall support certification of system readiness for OT&E activities (AFMAN 63-119) and Program Executive Office (PEO) Certification, including participation in system-level Certification Readiness Reviews.

1.1.2.4 Development of Test Plans and Procedures

- a. See CLIN 0001 Section 1.1.2.4 requirements.
- b. The PTES Contractor shall conduct a Test Readiness Review (TRR) prior to each test activity intending to verify requirements in the PTES specifications. [B106], [B026]
- c. The PTES Contractor shall develop and submit Test Reports after each test activity intending to verify requirements in PTES specifications. [B052]
- d. The PTES Contractor shall develop and submit a Modem Certification Data Package. [B107]
- e. The PTES Contractor shall support the development of key Test and Evaluation documentation developed within the Government PTES Program Office Integrated Product Teams (IPT). (Assume weekly teleconferences through IOC)
- f. The PTES Contractor shall conduct security testing to address the confidentiality, integrity and availability requirements that provide the protections as described in CNSSI 1253 (Security Categorization and Control Selection for National Security Systems).
- g. The PTES Contractor shall conduct Site Acceptance testing to include:
 1. Validating PTES functionality at the operational site.
 2. Validating functional compatibility of the interfaces between the PTES equipment at the operational sites.

3. Conducting a Site Acceptance TRR and Test Exit Brief for Government PTES Program Office approval. [B106]
 4. Supporting the Government's role as witness and approval authority for TRR, discrepancy report priority, closure plans and Test Exit Brief. [B106]
- h. The PTES Contractor shall conduct the following test activities and make records available to the Government PTES Program Office:
1. Stress Tests
 2. Performance Tests
 3. Stability Tests
 4. Failure and Recovery Tests
- i. The PTES Contractor shall plan and conduct operationally realistic testing, with scenarios defined by the Government PTES Program Office and Operational Test Agency (OTA) (assume six weeks of total test time). The Government is to witness and approve Discrepancy Reporting, discrepancy closure plans and successful test completion. The PTES Contractor shall close discrepancies and regression test per Government approved plan. Testing shall be completed at:
1. The PTES Contractor's facility
 2. The PTES operational sites

1.1.2.5 Acceptance Criteria

- a. The PTES Contractor shall deliver the PTES IOC system for Government PTES Program Office acceptance through the DD Form 250, to include the following criteria:
1. Government PTES Program Office acceptance of the verification of the IOC system requirements in the PTES System, KMS ECU, Joint Hub ECU, and Joint Hub Specifications. [B026], [B103], [B104], [B105]
 2. Site Acceptance defined as Government PTES Program Office approval (i.e., DISA CDC, PATSOC, two (2) Gateway sites).
 3. Completion of Government PTES Program Office defined testing as outlined in Deficiency Report (DR) definitions in Technical Order (TO) 0035D-54a:
 - i. All Category I Emergency (IE) or Urgent (IU) and Category II Urgent (IIU) DRs shall be closed.
 - ii. All Category II Routine DRs shall be closed unless waived by the Government PTES Program Office.
 4. Completion of SVR/FCA and PCA with Government PTES Program Office acceptance. [B008]
 5. Completion of MOT&E 1 activities.
 6. Acceptable AFSPC DAA DoDI 8500.2 (Information Assurance Implementation) and DoDI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) Government review of the PTES system with manageable residual risk

resulting in the Government PTES Program Office obtaining an Authority to Operate (ATO) for the PTES System.

1.1.2.6 Development of Test Equipment

See CLIN 0001 Section 1.1.2.5 requirements.

1.1.2.7 Risk Reduction

See CLIN 0001 Section 1.1.2.6 requirements.

1.1.2.8 Support to Government PTES Program Office

- a. See CLIN 0001 Section 1.1.2.7 requirements
- b. The PTES Contractor shall participate in System Test IPT meetings. (Assume bi-weekly (every two (2) weeks) teleconference)
- c. The PTES Contractor shall participate in System Integration Meetings; review and comment on PTES integration activities. (Assume monthly teleconference)
- d. Provide support activities post OT&E to include:
 1. Resolving deficiencies and anomalies
 2. Supporting the Government in root cause analyses
 3. Closing findings necessary to achieve IOC and FOC
 4. Delivering test reports
- e. The PTES Contractor shall lead the System Test Events listed in Table 1-1.

Table 1-1. System Test Events Led by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start
RRD	030	Risk Reduction Demonstration (RRD)	Lead	Factory	End of Build 3
RRD	040	Risk Reduction Demonstration (RRD)	Lead	Factory	End of Build 4
FT	2XX	Factory Test Events	Lead	Factory	TBR
RRD	1XX, 2XX	Risk Reduction Demos (RRD)	Lead	TBR	TBR
RRD	25X, 28X	WGS OTA Tests	Lead	TBR	TBR
RRD	3XX	Site Installation Events	Lead	Sites	TBR
DT	4XX	Contractor Site Acceptance Test (SAT) Events	Lead	Sites	TBR

- f. Support the System Test Events listed in Table 1-2.

Table 1-2. System Test Events Supported by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start
RRT	030	Risk Reduction Test (RRT)	Support	Factory	End of Build 3
RRT	3XX	Cybersecurity Events	Support	TBR	TBR
DT	5XX	Adversarial Cybersecurity DT&E	Support	TBR	TBR
RRT	100	PHEC Test	Support	APG	During Build 4
DT	XXX	Development Test Events	Support	Various	RRTs
OT	XXX	Operational Test Events	Support	Various	MOT&E

1.1.2.9 Coordination with External Organizations

See CLIN 0001 Section 1.1.2.8 requirements.

1.1.3 Program Management

The PTES Contractor shall provide resources necessary to plan, manage, direct, control and report all activities contributing to the development, installation and testing of IOC hardware and software of the PTES System and its interfaces to external systems and organizations.

1.1.3.1 General Management

- a. See CLIN 0001 Section 1.1.3.1 requirements.
- b. The PTES Contractor shall conduct a Kick-off Meeting to include as a minimum special topics, schedule review, and risk and risk mitigation plans. (within thirty (30) calendar days (CD) of CLIN 0002 award)
 1. The PTES Contractor shall develop post-review minutes and respond to post-review action items. (DAL submission) [B004]

1.1.3.2 Project Management

- a. See CLIN 0001 Section 1.1.3.3 requirements.
- b. The PTES Contractor shall update the CWBS within thirty (30) CD of CLIN 0002 award and when a change is made to the CWBS. [B007]

1.1.3.3 Business Management/Program Control

- a. See CLIN 0001 Section 1.1.3.4 requirements.
- b. The PTES Contractor shall conduct an Integrated Baseline Review (IBR).
 1. See CLIN 0001 Section 1.1.3.4.e requirements.

1.1.3.4 Contract/Subcontract Management

See CLIN 0001 Section 1.1.3.5 requirements.

1.1.3.5 Government Federally Funded Research and Development Center (FFRDC) Contracts

See CLIN 0001 Section 1.1.3.6 requirements.

1.1.3.6 Support to Government PTES Program Management Effort

See CLIN 0001 Section 1.1.3.7 requirements.

1.1.4 Support Equipment and Product Support Planning

See CLIN 0001 Section 1.1.4 requirements.

1.1.4.1 Support Equipment

See CLIN 0001 Section 1.1.4.1 requirements.

1.1.4.2 Product Support Program

See CLIN 0001 Section 1.1.4.2 requirements.

1.1.4.3 Reliability, Maintainability and Testability (RM&T)

See CLIN 0001 Section 1.1.4.3 requirements.

1.1.4.4 FMECA/Damage Modes Analysis

See CLIN 0001 Section 1.1.4.4 requirements.

1.1.4.5 Failure Analysis and Corrective Action Report (FACAR)

See CLIN 0001 Section 1.1.4.5 requirements.

1.1.4.6 Mission Critical Fault Analysis (MCFA)

See CLIN 0001 Section 1.1.4.6 requirements.

1.1.4.7 Product Support Analysis (PSA)

See CLIN 0001 Section 1.1.4.7 requirements.

1.1.4.8 Supportability and Related Design Factors

See CLIN 0001 Section 1.1.4.8 requirements.

1.1.4.9 Product Support Development

- a. The PTES Contractor shall periodically update the PSP that clearly identifies the contractor's plan for completing the requirements of the statement of work. [B059]
 1. The support plan shall also address requirements that may arise under the production program.
 2. The Government PTES Program Office approved support plan shall be used by the contractor's personnel to conduct and manage the technical effort related to satisfying logistics requirements.
 3. Major revisions to the data contained in the support plan shall result in a revision, which shall be provided IAW the PSP. [B059]
- b. Required revisions or changes to contractor schedules, milestones, or data deliveries shall be submitted in the Logistics Product Data. [B062]
- c. The PTES Contractor shall update and deliver Installation, Operations, Support, and Maintenance Manuals. [B110]

- d. The PTES Contractor shall deliver Commercial-of-the-Shelf (COTS) Manuals and Associated Supplemental Data. [B111]
- e. The PTES Contractor shall perform all efforts required to develop a PTES training approach that meets the needs and skill levels of operator and maintenance personnel.
 - 1. The PTES Contractor shall develop and deliver training materials. [B112]
- f. The PTES Contractor shall conduct training for operators, maintainers, and support personnel and include standard training processes including Train-the-Trainer. Type 1 training is required for OT personnel prior to MOT&E.

1.1.4.10 Supportability Test, Evaluation and Verification

- a. The PTES Contractor shall perform Supportability, Test, Evaluation and Verification assessments to assess specified supportability requirements; identify reasons for deviations from projected supportability parameters and identify methods of enhancing system readiness and correcting deficiencies in the logistics support system.
- b. Assessments shall be made during early stages of development, from mock-ups, test bench set-ups and prototypes. Assessments shall continue during PTES Contractor and Government development and operational testing. The PTES Contractor shall use supportability design factors, evaluation of alternatives and trade-off analyses as sources of input data to this task.
- c. The PTES Contractor shall validate task analysis data. This effort shall be defined and documented by the contractor in the Maintainability and Built in Test Demonstration Test Report. [B052]

1.1.4.11 Logistics Demonstration Support

- a. The PTES Contractor shall perform all tasks necessary to support logistics demonstrations up to field and operational assessments of PTES, including efforts relating to present and future PTES development, testing and functional and performance assessments. The purpose of the Logistics Demonstration is to verify the various product support elements are fully developed, adequate and available prior to the system going operational.
- b. The PTES Contractor shall document the results in the Maintainability and Built in Test Demonstration Test Report. [B116]

1.1.4.12 Provisioning

- a. The PTES Contractor shall develop and deliver an Engineering Data for Provisioning (EDFP) data package and a Provisioning Screening Data package. [B062]
 - 1. The PTES Contractor shall support provisioning conference meetings. (approximately three (3))

1.1.4.13 Depot Transition Planning

- a. The PTES Contractor shall conduct a Depot Maintenance Study on hardware and software segments of the product designs to support the Government PTES Program Office in preparing for the Depot Source of Repair (DSOR) process and associated Cost Benefit Analysis of depot level hardware and software maintenance. The results shall be documented in the Depot Maintenance Study. [B108]

- b. The PTES Contractor shall develop a depot strategy that ensures affordable long-term sustainment of the PTES system as well as compliance with all Title 10 requirements (Section 2464, 2466 and 2474). Final depot strategy will be approved through the DMAWG process.
- c. The PTES Contractor shall develop and deliver a Software Transition Plan (STrP) [B023] for depot sustainment of the PTES system. The transition plan shall include meaningful depot involvement in software maintenance capabilities to include:
 - 1. Depot Workload
 - 2. Depot Investment
 - 3. Commitment to Establishing a Partnering Agreement
- d. The PTES Contractor shall ensure Government PTES Program Office access to all software and hardware artifacts, including those with limited data rights, for anomaly resolution, studies and issuance of technical repair data, information and safety assurance and sustainment of system.
- e. The PTES Contractor shall participate in all DMAWG and Depot Planning meetings. (four meetings per year)

1.1.4.14 Other Support Equipment & Product Support Planning

- a. See CLIN 0001 Section 1.1.4.9 requirements.
- b. The PTES Contractor shall submit Request for Nomenclature. First request for Nomenclature occurs 180 CD after System CDR. [B109]
- c. The PTES Contractor shall provide PTES technical manuals, installation, operations and maintenance manuals, operator and maintenance personnel training materials and a description of the contractor training system used to prepare replacement contractor operators and maintainers in electronic format, including TO verification events, per AFD TO-00-5-1. [B110], [B111], [B112] (Note: Technical Manuals are first delivered 90 CD after PTES Build Testing)
- d. The PTES Contractor shall provide preliminary site installation drawings and as-built drawings and redline updates IAW ASME Y14.24 and Appendix B of Para 9.1 of ASME Y14.100-2000 [B064] (Note: Final facility drawings and wiring diagrams are first delivered 90 CD after site installation)
- e. The PTES Contractor shall perform preliminary facilities site planning and preparation activities necessary for PTES installation at the operational site(s). [B064] (Note: Facility drawings and wiring diagrams are first delivered 90 CD after site installation)
- f. Warranties:
 - 1. The PTES Contractor shall provide customary commercial warranties notwithstanding anything to the contrary, the full duration of such warranties shall commence at the time of system turnover (DD Form 250).
 - 2. The PTES Contractor shall track by item and serial number, manage and enforce open warranties on all failed items. [B113]
 - 3. The PTES Contractor shall provide copies of all warranties for PTES Contractor furnished equipment and materials delivered under this Delivery Order. [B025]

-
4. At system turnover (DD Form 250), the PTES Contractor shall transfer all OEM warranty coverage to the Government (See Appendix D (Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005))).

1.1.5 Pre-Operational Support

Pre-Operational Support consists of activities to implement and perform logistics support functions after product acceptance by the Government PTES Program Office (through declaration of IOC). The PTES Contractor shall support the Government PTES Program Office in the preparation and execution for a smooth transition to operations after declaration of IOC.

- a. The PTES Contractor shall maintain the PTES specifications, ICDs, operational and maintenance technical manuals and associated drawings. [B026], [B029], [B030], [B031], [B032], [B033], [B034.x], [B064], [B066], [B067], [B068], [B103], [B104], [B105], [B110], [B111], [B112]
- b. The PTES Contractor shall ensure the operation and sustainment of PTES complies with federal, state, and local Environment Safety & Occupational Health (ESOH) codes, statutes, regulations and Presidential Executive Orders.
- c. The PTES Contractor shall operate and maintain PTES IAW the PTES PSP. [B059]
- d. The PTES Contractor shall provide the programmatic, technical, managerial and administrative services required to operate and sustain PTES during the Pre-Operational Support period.
- e. The PTES Contractor shall provide sufficient staffing to support maintenance of PTES during the Pre-Operational Support period.
- f. PTES Contractor shall maintain a Government PTES Program Office-approved operational baseline for PTES for supporting anomaly resolution during the Pre-Operational Support period.
- g. The PTES Contractor shall establish a process, during the Pre-Operational Support period, to allow Government visibility into individual item repair costs and to seek Government PTES Program Office approval for instances where the cost exceeds 75% of estimated replacement cost or \$25,000.
- h. The PTES Contractor shall establish and maintain a failure tracking and investigation program during the Pre-Operational Support period and incorporate the findings into Hardware Failure Reporting. [B116]
- i. The PTES Contractor shall maintain a Bill of Materials (BOM) needed to fabricate, assemble and integrate PTES. [B065]
- j. The PTES Contractor shall maintain approved controlled segment and facility drawings and wiring diagrams. [B064]
- k. The PTES Contractor shall maintain a PTES Site As-Built Configuration List. The PTES Contractor shall plan for the logistics support during the transition to operations and the turn-over to sustainment. (DAL submission) [B004]
- l. The PTES Contractor shall ensure compliance with Cybersecurity and Program Protection requirements during the Pre-Operational Support period. Once a quarter, the PTES Contractor shall:
 1. Conduct automated scans on the system equipment.

-
2. Conduct manual scans on the system equipment.
 3. Write-up findings in a Plan of Action & Milestone and submit as a DAL. [B004]
 4. Remediate, and re-conduct steps 1, 2, and 3 above.

1.1.5.1 Hardware Pre-Operational Support

This section applies to Hardware Pre-Operational Support.

- a. The PTES Contractor shall maintain all PTES hardware during the Pre-Operational Support period, including updating manuals and training materials to reflect actual operational use, investigating and correcting issues that arise during testing and pre-operations, supporting teleconferences and meetings, traveling to support the investigation and correction of issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support.
- b. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports. (DAL submission) [B004]
- c. The PTES Contractor shall perform maintenance data collection and documentation per Hardware Failure Reporting. [B116]
- d. The PTES Contractor shall develop and maintain a PTES Restoration Plan detailing the procedures to restore the system to the last known functional/operational condition following an outage of hardware. (DAL submission) [B004]
- e. The PTES Contractor shall perform organizational and depot level spares and hardware support, maintenance and repair.
- f. The PTES Contractor shall report deficiencies discovered during the Pre-Operational Support period as outlined in the DR definitions in Technical Order (TO) 0035D-54a:
 1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed.
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
- g. The PTES Contractor shall develop a sparing concept to provide spares at sufficient levels to avoid critically impacting mission accomplishment or system and mission level requirements.
- h. The PTES Contractor shall perform, as-needed, PTES hardware upgrade development, integration and test during the Pre-Operational Support period.
- i. The PTES Contractor shall perform spares repair and testing.
- j. The PTES Contractor shall perform all preventive or scheduled tasks required to maintain PTES during the Pre-Operational Support period.

1.1.5.2 Software Pre-Operational Support

This section applies to PTES Software Pre-Operational Support.

- a. The PTES Contractor shall collect and analyze all PTES software problems that occur during the contract period of performance and report failures. [B116]
- b. The PTES Contractor shall report deficiencies discovered during the Pre-Operational Support period as outlined in the DR definitions in Technical Order (TO) 0035D-54a:

-
1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed for test completion.
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
 - c. The PTES Contractor shall develop and maintain a PTES Restoration Plan detailing the procedures to restore the system to the last known functional/operational condition following an outage of software. (DAL submission) [B004]
 1. The PTES software shall be restored (rebuilt) within 1 hour.
 - d. The PTES Contractor shall maintain PTES software throughout the Pre-Operational Support period, including: updating manuals and training materials to reflect actual operational use investigating and correcting issues that arise during testing and pre-operations, supporting teleconferences and meetings, traveling as to support the investigation and correction of problems or issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support. [B063], [B110], [B112], [B116]
 - e. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports. [B116]
 - f. The PTES Contractor shall perform PTES software upgrade development, integration and test during the Pre-Operational Support period.

1.1.5.3 Pre-operations Mission Support

Pre-Operations Mission support includes all the resources required to support the operation of PTES prior to IOC.

- a. The PTES Contractor shall support operations of the PTES site during test events between installation and formal site turnover (DD Form 250) to AFSPC.
- b. The PTES Contractor shall provide 24 hour per day on call support.
 1. The PTES Contractor shall respond to calls within 30 minutes.
- c. The PTES Contractor shall provide onsite support at the PATSOC.
 1. Onsite support shall include 8 hours per day, 5 days per week.

1.2 Space Vehicle – N/A

1.3 PTES Ground Operations and Processing Center (GOPC)

See CLIN 0001 Section 1.3 requirements.

1.3.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.1 requirements.

1.3.1.1 System Engineering

1.3.1.1.1 General Planning

See CLIN 0001 Section 1.3.1.1.1 requirements.

1.3.1.1.2 Agile Software Builds

- a. The PTES Contractor shall maintain the schedule for Release v1.0 (IOC) and Release v2.0 (FOC).
 1. Each Release shall consist of 4 Builds.
- b. During Build 3, the PTES Contractor shall:
 1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 2. Plan, develop, test and deliver the PTES Build 3 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 3. Develop the software for User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES System Verification Plan (SVP) for testing of Build 3. [B049]
 4. Test (including integration, qualification testing and regression testing) at end of every Sprint using automated tools before demonstrating Build 3 software.
 5. Conduct Risk Reduction Demonstration (RRD).
 6. Support Government Risk Reduction Test (RRT) for Build 2.
 7. Support preparations for Development Test (DT) and OA for Build 3
 8. Support certifications listed in the current Government PTES SITP (PTES-8950).
 9. Complete Build Decision Review (BDR) 4 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
 10. Support major PTES technical reviews and provide plans and status of Agile software development efforts.
- c. During Build 4, the PTES Contractor shall:
 1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.

- iii. Tasking to all functional teams.
2. Plan, develop, test and deliver the PTES Build 4 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 - iii. Update user manuals and training materials such that they are ready for verification.
 - iv. All CAT IE, IU, IIU DRs fixed and verified.
 - v. Additional features completed.
 - vi. Complete PTES System TRD (PTES-8000) verification and validation.
3. Develop the software for the User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES SVP for testing of Build 4. [B049]
4. Test (including integration, qualification testing and regression testing), using automated tools before demonstrating Build 4 software.
5. Conduct Risk Reduction Demonstration (RRD).
6. Support Government Risk Reduction Test (RRT) for Build 3.
7. Support DT&E and OA for Release v1.0. Build 4 shall address issues identified during DT and OA of Build 3.
8. Support certifications listed in the current Government PTES SITP (PTES-8950).
9. Complete BDR 5 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
10. Support major PTES technical reviews and provide plans and status of Agile software development efforts.

1.3.2 PTES Mission Management System (MMS)

See CLIN 0001 Section 1.3.2 requirements.

1.3.2.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.2.1 requirements.

1.3.2.1.1 MMS Systems Engineering

1.3.2.1.1.1 MMS General Planning

See CLIN 0001 Section 1.3.2.1.1.1 requirements.

1.3.2.1.1.2 MMS Requirements and Interfaces

See CLIN 0001 Section 1.3.2.1.1.2 requirements.

1.3.2.1.1.3 MMS Segment Design/Development

See CLIN 0001 Section 1.3.2.1.1.3 requirements.

1.3.2.1.2 MMS Assembly, Integration and Test

See CLIN 0001 Section 1.3.2.1.2 requirements.

1.3.2.1.2.1 MMS Verification, Certification and Test

See CLIN 0001 Section 1.3.2.1.2.1 requirements.

1.3.2.1.3 MMS Program Management

See CLIN 0001 Section 1.3.2.1.3 requirements.

1.3.2.1.4 MMS Support Equipment & Product Support Planning

See CLIN 0001 Section 1.3.2.1.4 requirements.

1.3.2.2 COTS Hardware – N/A**1.3.2.3 Custom Hardware – N/A****1.3.2.4 MMS Software**

See CLIN 0001 Section 1.3.2.4 requirements.

1.3.2.4.1 MMS Software Design, Development and Test

See CLIN 0001 Section 1.3.2.4.1 requirements.

1.3.2.5 Pre-Operations Mission Support – N/A**1.3.3 PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)**

See CLIN 0001 Section 1.3.3 requirements.

1.3.3.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.3.1 requirements.

1.3.3.1.1 KMS and KLIF Systems Engineering**1.3.3.1.1.1 KMS and KLIF General Planning**

See CLIN 0001 Section 1.3.3.1.1.1 requirements.

1.3.3.1.1.2 KMS and KLIF Requirements and Interfaces

See CLIN 0001 Section 1.3.3.1.1.2 requirements.

1.3.3.1.1.3 KMS and KLIF Segment Design/Development

See CLIN 0001 Section 1.3.3.1.1.3 requirements.

1.3.3.1.2 KMS and KLIF Assembly, Integration and Test

See CLIN 0001 Section 1.3.3.1.2 requirements.

1.3.3.1.2.1 KMS and KLIF Verification, Certification and Test

See CLIN 0001 Section 1.3.3.1.2.1 requirements.

1.3.3.1.3 KMS and KLIF Program Management

See CLIN 0001 Section 1.3.3.1.3 requirements.

1.3.3.1.4 KMS and KLIF Support Equipment and Product Support Planning

See CLIN 0001 Section 1.3.3.1.4 requirements.

1.3.3.2 COTS Hardware – N/A**1.3.3.3 Custom Hardware – N/A****1.3.3.4 KMS and KLIF Software**

See CLIN 0001 Section 1.3.3.4 requirements.

1.3.3.4.1 KMS and KLIF Software Design, Development and Test

See CLIN 0001 Section 1.3.3.4.1 requirements.

1.3.3.5 KMS and KLIF Pre-Operations Mission Support – N/A**1.4 Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/PTES Joint HUB****1.4.1 SEIT/PM and Support Equipment**

See CLIN 0001 Section 1.4.1 requirements.

1.4.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Systems Engineering**1.4.1.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub General Planning**

- a. See CLIN 0001 Section 1.4.1.1.1 requirements.
- b. The PTES Contractor shall develop and deliver documentation for each ECU (KMS ECU, Joint Hub ECU) to support the NSA certification process as defined in the NSA Telecommunications Security Requirements Document (TSRD) to include:
 1. Security Evaluation Document (SED) - KMS ECU [B069]
 2. Security Evaluation Document (SED) - Joint Hub ECU [B070]
 3. Security Verification Plan and Procedures (SVPP) - KMS ECU [B071]
 4. Security Verification Plan and Procedures (SVPP) - Joint Hub ECU [B072]
 5. Security Verification Report (SVR) - KMS ECU [B073]
 6. Security Verification Report (SVR) - Joint Hub ECU [B074]
 7. Software Development Process Description Document (SDPDD - KMS ECU) [B075]
 8. Software Development Process Description Document (SDPDD) - Joint Hub ECU [B076]
 9. Software/Hardware Requirements Specification (SHRS) - KMS ECU [B077]
 10. Software/Hardware Requirements Specification (SHRS) - Joint Hub ECU [B078]
 11. Software/Hardware Design Description (SHDD) - KMS ECU [B079]
 12. Software/Hardware Design Description (SHDD) - Joint Hub ECU [B080]

13. Software and Programmable Logic Evaluation Report (SPLER) - KMS ECU [B081]
14. Software and Programmable Logic Evaluation Report (SPLER) - Joint Hub ECU [B082]
15. Physical Configuration Audit Plan (PCAP) - KMS ECU [B083]
16. Physical Configuration Audit Plan (PCAP) - Joint Hub ECU [B084]
17. Physical Configuration Audit Report (PCAR) - KMS ECU [B085]
18. Physical Configuration Audit Report (PCAR) - Joint Hub ECU [B086]
19. TEMPEST Test Plan - KMS ECU [B089]
20. TEMPEST Test Plan - Joint Hub ECU [B090]
21. TEMPEST Test Report - KMS ECU [B091]
22. TEMPEST Test Report - Joint Hub ECU [B092]
23. In-Process Accounting Procedures - KMS ECU [B093]
24. In-Process Accounting Procedures - Joint Hub ECU [B094]
25. Security Production Assurance (SPA) Description - KMS ECU [B095]
26. Security Production Assurance (SPA) Description - Joint Hub ECU [B096]
27. Product Drawings/Models and Associated Lists - KMS ECU [B097]
28. Product Drawings/Models and Associated Lists - Joint Hub ECU [B098]
29. Information Security (INFOSEC) Anonymity Plan - KMS ECU [B101]
30. Information Security (INFOSEC) Anonymity Plan - Joint Hub ECU [B102]

1.4.1.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Requirements and Interfaces

- a. See CLIN 0001 Section 1.4.1.1.2 requirements.
- b. PTES Contractor shall be responsible for the initialization of the PTES ECUs (KMS and Joint Hub) prior to Site installation.
 1. The PTES Contractor shall coordinate with the Air Force Life Cycle Management Center (ALCMC), Cryptologic & Cyber Systems Division at Lackland AFB, San Antonio Texas to initialize the ECUs

1.4.1.1.3 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Segment Development

See CLIN 0001 Section 1.4.1.1.3 requirements.

1.4.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Assembly, Integration and Test

- a. See CLIN 0001 Section 1.4.1.2 requirements.
- b. PTES Contractor shall be responsible for the initialization of the PTES ECUs (KMS and Joint Hub) prior to Site installation.

1. The PTES Contractor shall coordinate with the Air Force Life Cycle Management Center (ALCMC), Cryptologic & Cyber Systems Division at Lackland AFB, San Antonio Texas to initialize the ECUs.

1.4.1.2.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Verification Certification and Test

- a. See CLIN 0001 Section 1.4.1.2.1 requirements.
- b. The PTES Contractor shall develop KMS ECU, Joint Hub ECU and Joint Hub test plans/procedures and PTES test reports for all segment verification and operational site tests. [B050], [B051], [B052]
- c. The PTES Contractor shall conduct TRR IAW IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) and meets the intent of AFMAN 63-119 prior to KMS ECU, Joint Hub ECU and Joint Hub segment verification tests. [B106]
- d. The PTES Contractor shall invite the Government PTES Program Office to witness verification testing of KMS ECU, Joint Hub ECU and Joint Hub requirements and interfaces and to witness PTES testing at the operational site(s).
- e. The PTES Contractor shall develop test tools needed to verify KMS ECU, Joint Hub ECU and Joint Hub requirements.

1.4.1.3 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Program Management

See CLIN 0001 Section 1.4.1.3 requirements.

1.4.1.4 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Support Equipment & Product Support Planning

See CLIN 0001 Section 1.1.4 requirements.

1.4.2 Antenna – N/A

1.4.3 Optical Communication Assembly – N/A

1.4.4 RF Electronics – N/A

1.4.5 Timing – N/A

1.4.6 SATCOM Gateway/PTES ECU (for KMS and Joint Hub)/Joint Hub Baseband-Network - Reserved

The baseband network section includes the resources to develop the baseband network, including interfaces with the terrestrial networks.

1.4.7 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware

See CLIN 0001 Section 1.4.7 requirements.

1.4.7.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub COTS Hardware

See CLIN 0001 Section 1.4.7.1 requirements.

1.4.7.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Custom Hardware

See CLIN 0001 Section 1.4.7.2 requirements.

1.4.8 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software

See CLIN 0001 Section 1.4.8 requirements.

1.4.8.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software Development

See CLIN 0001 Section 1.4.8.1 requirements.

1.4.9 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – Reserved

The pre-operations maintenance section contains all the resources related to the pre-operations maintenance (hardware repair and software updates) of the KMS ECU, Joint Hub ECU and Joint Hub equipment and software. This function begins with the acceptance of the KMS ECU, Joint Hub ECU and Joint Hub segment and ends with the start of operations (IOC).

1.4.10 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support – Reserved

The pre-operations mission support contains all the resources required for the operation of the KMS ECU, Joint Hub ECU and Joint Hub prior to turnover (DD Form 250). It includes testing; routine monitoring of equipment health and status; fault detection; and anomaly investigation and resolution.

1.5 External Network (T-COMM)

See CLIN 0001 Section 1.5 requirements.

1.5.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.5.1 requirements.

1.5.2 Leased Circuits/Data Connectivity

See CLIN 0001 Section 1.5.2 requirements.

1.5.3 Purchased Circuits

See CLIN 0001 Section 1.5.3 requirements.

1.6 User Equipment – N/A**1.7 Facilities**

The facilities element encompasses the entire physical infrastructure required to access, house and support the PTES Joint Hub, GOPC and external network equipment and personnel.

1.7.1 SEIT/PM & Support Equipment

- a. The PTES Contractor shall perform the facilities site planning and preparation activities necessary for the integration of PTES at the operational site(s).
- b. The PTES Contractor shall coordinate with the operational SATCOM Gateway Facility for the installation of PTES equipment at the SATCOM Gateway sites.

- c. The PTES Contractor shall coordinate with the operational PATS Satellite Operations Center (PATSOC) Facility for the installation of PTES equipment at the operational PATSOC.
- d. The PTES Contractor shall coordinate with the DISA CDC for the installation of PTES equipment at the CDC.
- e. The PTES Contractor shall prepare a PTES Site As-Built Configuration List.

1.7.2 Site Preparation

- a. The PTES Contractor shall coordinate with the Government PTES Program Office and operational PATSOC authorities and perform site preparation for PTES equipment at the operational PATSOC, to include space, power, environmental controls and network connectivity.
- b. The PTES Contractor shall coordinate with the Government PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for PTES equipment at the operational SATCOM Gateways, to include space, power, environmental controls and network connectivity.
- c. The PTES Contractor shall coordinate with the Government PTES Program Office and DISA authorities and perform site preparation for the PTES equipment at the DISA CDCs to include space, power, environmental controls and network connectivity.
- d. The PTES Contractor shall coordinate with the Government PTES Program Office and operational PATSOC authorities and perform site preparation for the interface equipment between PTES at the operational PATSOC and GFP connections to the operational SATCOM Gateways, to include space, power and environmental controls.
- e. The PTES Contractor shall coordinate with the Government PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for the interface equipment between PTES at the operational SATCOM Gateways and GFP connections between the operational SATCOM Gateways and operational PATSOC, to include space, power and environmental controls.
- f. The PTES Contractor shall coordinate with the Government PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for the interface equipment between PTES at the operational SATCOM Gateways and GFP connections between the operational SATCOM Gateways and terrestrial data backhaul networks, to include space, power and environmental controls.
- g. The PTES Contractor shall coordinate with the Government PTES Program Office and DISA and perform site preparation for the interface equipment between PTES at the DISA CDCs and GFP connections between the CDCs and terrestrial data backhaul networks, to include space, power and environmental controls.
- h. The PTES Contractor shall coordinate with the Government PTES Program Office and operational PATSOC authorities to arrange for NIPRNet and SIPRNet connectivity for PTES at the operational PATSOC.
- i. The PTES Contractor shall coordinate with the Government PTES Program Office and the operational PATSOC authorities for the installation of , secure telephone (STE), unsecure telephone (both commercial and DSN), secure fax, unsecure fax, unsecure and secure printers/scanners, safe for storage of classified material as well as unclassified material.

- j. The PTES Contractor shall coordinate the development of Project Support Agreements at the following sites for site visits and surveys:
 - 1. SATCOM Gateway sites
 - 2. PATSOC
 - 3. DISA CDC

1.7.3 Landscape – N/A

1.7.4 Buildings – N/A

1.7.5 Equipment and Building Fit Out

- a. The PTES Contractor shall coordinate with the Government PTES Program Office for the integration of PTES with the Government-supplied access the data connection among the operational PATSOC, DISA CDC, and the SATCOM Gateway sites.
- b. The PTES Contractor shall coordinate with the Government PTES Program Office for the integration of PTES with the Government-supplied access the terrestrial data backhaul network connections at the SATCOM Gateway sites.
- c. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the operational PATSOC.
- d. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the SATCOM Gateway site.
- e. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the DISA CDCs.
- f. The PTES Contractor shall coordinate with the Government PTES Program Office and the SATCOM Gateway site for access to timing reference signals, equipment and distribution at the SATCOM Gateway site for PTES.
- g. The PTES Contractor shall coordinate with the Government PTES Program Office for the installation and activation of the data connection among the DISA CDC, SATCOM Gateway sites, and the operational PATSOC by the Government PTES Program Office.
- h. The PTES Contractor shall prepare a PTES Site As-Built Configuration List.

1.7.6 Facility Pre-Ops Maintenance – Reserved

1.8 Vehicles and Shelters – N/A

1.9 Insurance N/A

1.10 Task Orders – N/A

1.11 Orbital Transfer Vehicle (OTV) – N/A

1.12 Launch Vehicle – N/A

1 CLIN 0003 (Option): Protected Tactical Enterprise Service (PTES) – PTES System/Segment Full Operational Capability (FOC) Development

CLIN 0003 includes all activities required to oversee the system level development, integration, test, and fielding of the hardware and software for the PTES Full Operational Capability (FOC). CLIN 0003 covers the period from Milestone C through FOC.

All of the requirements listed under CLIN 0001 apply to CLIN 0003 unless CLIN 0001 directs otherwise. The following sections are in addition to or modified to be specific requirements to CLIN 0003.

1.1 System Level SEIT/PM and Support Equipment

See CLIN 0001 Section 1.1 requirements.

1.1.1 Systems Engineering

1.1.1.1 General Planning

See CLIN 0001 Section 1.1.1.1 requirements.

1.1.1.1.1 Support to the Government PTES Program Office

See CLIN 0001 Section 1.1.1.1.1 requirements.

1.1.1.1.2 Support to External Organizations

See CLIN 0001 Section 1.1.1.1.2 requirements.

1.1.1.2 PTES System Level Development

a. See CLIN 0001 Section 1.1.1.2 requirements.

b. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES Production Readiness Review (PRR). [C008]

1. The PTES Contractor shall coordinate with the Government PTES Program Office to agree on the content, format, and acceptance criteria of the PRR, including tailoring of specific criteria specified in IEEE 15288.2 (Technical Reviews and Audits on Defense Systems) (tailored).

1.1.1.3 Software Development

See CLIN 0001 Section 1.1.1.3 requirements.

1.1.1.4 Requirements and Interfaces

See CLIN 0001 Section 1.1.1.4 requirements.

1.1.1.5 System Safety Program

See CLIN 0001 Section 1.1.1.5 requirements.

1.1.1.6 Quality Assurance Program

See CLIN 0001 Section 1.1.1.6 requirements.

1.1.1.7 Risk Management

See CLIN 0001 Section 1.1.1.7 requirements.

1.1.1.8 Human Engineering

See CLIN 0001 Section 1.1.1.8 requirements.

1.1.1.9 Technical Performance Measures and Margin Planning

See CLIN 0001 Section 1.1.1.9 requirements.

1.1.1.10 Configuration Management

- a. See CLIN 0001 Section 1.1.1.10 requirements.
- b. The PTES Contractor shall plan, document, execute, schedule and conduct jointly with the Government PTES Program Office a System Verification Review (SVR)/Functional Configuration Audit (FCA) and a Physical Configuration Audit (PCA) in compliance with IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored).
 1. The PTES Contractor shall conduct the SVR/FCA and PCA using IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored).
 2. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES SVR/FCA. [C008]
 3. The PTES Contractor shall develop and deliver a DRIP that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) for the PTES PCA. [C008]
- c. The PTES Contractor shall maintain the final Product Baseline established at the completion of the PCA. All changes to the Product Baseline shall be processed as a Class I change. The Government PTES Program Office has veto rights over the Contractors Class II changes.

1.1.1.11 Data Management

- a. See CLIN 0001 Section 1.1.1.11.
- b. The PTES Contractor shall deliver all data developed on the program that is stored in the Integrated Digital Environment (IDE). [C115]

1.1.1.12 Data Rights

See CLIN 0001 Section 1.1.1.12 requirements.

1.1.1.13 Software Assurance

See CLIN 0001 Section 1.1.1.13 requirements.

1.1.1.14 Cybersecurity

See CLIN 0001 Section 1.1.1.14 requirements.

1.1.1.15 Program Protection

See CLIN 0001 Section 1.1.1.15 requirements.

1.1.1.16 Cryptology

See CLIN 0001 Section 1.1.1.16 requirements.

1.1.2 Assembly, Integration and Test

- a. See CLIN 0001 Section 1.1.2 requirements.
- b. The PTES Contractor shall support RRT, DT&E, OT&E, Multi-service Operational Test and Evaluations (MOT&E) 2 test events and request for test data. [C050], [C051], [C052]

1.1.2.1 Contractor Led DT&E

See CLIN 0001 Section 1.1.2.1 requirements.

1.1.2.2 Government Led DT&E, IT&E, and OT&E

See CLIN 0001 Section 1.1.2.2 requirements.

1.1.2.3 Verification and Certification

- a. See CLIN 0001 Section 1.1.2.3 requirements.
- b. The PTES Contractor shall provide access to all formal and informal PTES verification artifacts, verification data and deficiency reports as requested by Government PTES Program Office.
- c. The PTES Contractor shall verify all requirements in the PTES specifications and obtain Government PTES Program Office concurrence. [C049]
- d. The PTES Contractor shall invite the PTES Program Office to witness verification testing of PTES requirements and interfaces and to witness PTES testing at the operational site(s).
- e. The PTES Contractor shall support certification of system readiness for OT&E activities, including participation in system-level Certification Readiness Reviews.

1.1.2.4 Development of Test Plans and Procedures

- a. See CLIN 0001 Section 1.1.2.4 requirements.
- b. The PTES Contractor shall conduct a Test Readiness Review (TRR) prior to each test activity intending to verify requirements in the PTES specifications. [C106], [C026]
- c. The PTES Contractor shall develop and submit Test Reports after each test activity intending to verify requirements in PTES specifications. [C052]
- d. The PTES Contractor shall develop and submit a Modem Certification Data Package. [C107]
- e. The PTES Contractor shall support the development of key Test and Evaluation documentation developed within the Government PTES Program Office Integrated Product Teams (IPT). (Assume weekly teleconferences through FOC)
- f. The PTES Contractor shall conduct security testing to address the confidentiality, integrity and availability requirements that provide the protections as described CNSSI 1253.
- g. The PTES Contractor shall conduct Site Acceptance testing to include:
 1. Validating PTES functionality at the operational site.
 2. Validating functional compatibility of the interfaces between the PTES equipment at the operational sites.

3. Conducting a Site Acceptance TRR and Test Exit Briefing for Government PTES Program Office approval. [C106]
4. Supporting the Government's role as witness and approval authority for TRR, discrepancy report priority, closure plans and Test Exit Brief. [C106]
- h. The PTES Contractor shall conduct the following test activities and make records available to the Government PTES Program Office:
 1. Stress Tests
 2. Performance Tests
 3. Stability Tests
 4. Failure and Recovery Tests

1.1.2.5 Acceptance Criteria

- a. The PTES Contractor shall deliver the PTES FOC system for Government PTES Program Office acceptance through the DD Form 250, to include the following criteria:
 1. Government PTES Program Office acceptance of the verification of FOC system requirements in the PTES System, KMS ECU, Joint Hub ECU, and Joint Hub Specifications [C026], [C103], [C104], [C105]
 2. Site Acceptance defined as Government PTES Program Office approval (i.e., DISA CDC, PATSOC, operational Gateway sites).
 3. Completion of Government PTES Program Office defined testing as outlined in Deficiency Report (DR) definitions in Technical Order (TO) 0035D-54a:
 - i. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed;
 - ii. All Category II Routine DRs shall be closed unless waived by the PTES Program Office.
 4. Completion of SVR/FCA and PCA with Government PTES Program Office acceptance [C008]
 - i. All Joint Hubs (including Joint Hub ECU) shall have functionally equivalent hardware configurations and identical software and computational configurations prior to MOT&E 2.
 - ii. All Joint Hubs (including Joint Hub ECU) shall be capable of operating on the same software Build and environment configuration.
 5. Completion of MOT&E 2 activities.
 6. Government acceptance of five (5) ground strings.
 7. Acceptable AFSPC DAA DoDI 8500.2 (Information Assurance Implementation) and DoDI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) Government review of the PTES system with manageable residual risk resulting in the Government PTES Program Office obtaining an Authority to Operate (ATO) for the PTES System.

1.1.2.6 Development of Test Equipment

See CLIN 0001 Section 1.1.2.5 requirements.

1.1.2.7 Risk Reduction

See CLIN 0001 Section 1.1.2.6 requirements.

1.1.2.8 Support to Government PTES Program Office

- a. See CLIN 0001 Section 1.1.2.7 requirements.
- b. Provide support activities post OT to include:
 1. Resolving deficiencies and anomalies
 2. Supporting the Government PTES Program Office in root cause analyses
 3. Closing findings necessary to achieve FOC
- c. The PTES Contractor shall lead the System Test Events listed in Table 1-1.

Table 1-1. System Test Events Led by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start
RRD	310	Joint Hub Site Installations	Lead	Sites	TBR
DT	410	Joint Hub Site Acceptance Test (SAT) Events	Lead	Sites	TBR
RRD	5XX	Build 5, 6, 7, and 8 Demos	Lead	Factory	TBR
RRD	59X	System Integration Demos	Lead	TBR	TBR
RRD	8XX	WGS OTA Tests	Lead	TBR	TBR
FT	3XX	Post-IOC Joint Hub Factory Tests	Lead	Factory	TBR
RRD	6XX	Post-IOC Installation Events	Lead	Sites	TBR
DT	67X	Post-IOC Site Acceptance Test (SAT) Events	Lead	Sites	TBR

- d. Support the System Test Events listed in Table 1-2.

Table 1-2. System Test Events Supported by PTES Contractor

Test Group	Test ID	Test Name	Role (Lead/Support)	Location	Nominal Start (TBR)
RRT	3XX	Cybersecurity Events	Support	TBR	TBR
DT	5XX	Adversarial Cybersecurity DT&E	Support	TBR	TBR
DT	XXX	Development Test Events	Support	TBR	TBR
OT	XXX	Operational Test Events	Support	TBR	TBR

1.1.2.9 Coordination with External Organizations

See CLIN 0001 Section 1.1.2.8 requirements.

1.1.3 Program Management

The PTES Contractor shall provide resources necessary to plan, manage, direct, control and report on all activities contributing to the development, installation and testing of the FOC hardware and software of the PTES System and its interfaces to external systems and organizations.

1.1.3.1 General Management

- a. See CLIN 0001 Section 1.1.3.1 requirements.
- b. The PTES Contractor shall conduct a Kick-off Meeting to include as a minimum special topics, schedule review, risk and risk mitigation plans (deliver within thirty (30) calendar days (CD) of CLIN 0003 award).
 1. The PTES Contractor shall develop post-review minutes and respond to post-review action items. (DAL submission) [C004]

1.1.3.2 Project Management

See CLIN 0001 Section 1.1.3.3 requirements.

1.1.3.3 Business Management/Program Control

- a. See CLIN 0001 Section 1.1.3.4 requirements.
- b. The PTES Contractor shall conduct an Integrated Baseline Review (IBR).
 1. See CLIN 0001 Section 1.1.3.4.e requirements.

1.1.3.4 Contract/Subcontract Management

See CLIN 0001 Section 1.1.3.5 requirements.

1.1.3.5 Government Federally Funded Research and Development Center (FFRDC) Contracts

See CLIN 0001 Section 1.1.3.6 requirements.

1.1.3.6 Support to Government PTES Program Management Effort

See CLIN 0001 Section 1.1.3.7 requirements.

1.1.4 Support Equipment and Product Support Planning

See CLIN 0001 Section 1.1.4 requirements.

1.1.4.1 Support Equipment

See CLIN 0001 Section 1.1.4.1 requirements.

1.1.4.2 Product Support Program

See CLIN 0001 Section 1.1.4.2 requirements.

1.1.4.3 Reliability, Maintainability and Testability (RM&T)

See CLIN 0001 Section 1.1.4.3 requirements.

1.1.4.4 FMECA/Damage Modes Analysis

See CLIN 0001 Section 1.1.4.4 requirements.

1.1.4.5 Failure Analysis and Corrective Action Report (FACAR)

See CLIN 0001 Section 1.1.4.5 requirements.

1.1.4.6 Mission Critical Fault Analysis (MCFA)

See CLIN 0001 Section 1.1.4.6 requirements.

1.1.4.7 Product Support Analysis (PSA)

See CLIN 0001 Section 1.1.4.7 requirements.

1.1.4.8 Supportability and Related Design Factors

See CLIN 0001 Section 1.1.4.8 requirements.

1.1.4.9 Product Support Development

- a. The PTES Contractor shall periodically update the PSP that clearly identifies the contractor's plan for completing the requirements of the statement of work. [C059]
 1. The support plan shall also address requirements that may arise under the production program.
 2. The Government PTES Program Office approved support plan shall be used by the contractor's personnel to conduct and manage the technical effort related to satisfying logistics requirements.
 3. Major revisions to the data contained in the support plan shall result in a revision, which shall be provided IAW the PSP. [C059]
- b. Required revisions or changes to contractor schedules, milestones, or data deliveries shall be submitted in the Logistics Product Data. [C062]
- c. The PTES Contractor shall update and deliver Installation, Operations, Support, and Maintenance Manuals. [C110]
- d. The PTES Contractor shall deliver Commercial-of-the-Shelf (COTS) Manuals and Associated Supplemental Data. [C111]
- e. The PTES Contractor shall perform all efforts required to develop a PTES training approach that meets the needs and skill levels of operator and maintenance personnel.
 1. The PTES Contractor shall develop and deliver training materials. [C112]
 2. The PTES Contractor shall conduct initial and follow-on (to support software changes) training for operators and maintainers.

1.1.4.10 Supportability Test, Evaluation and Verification

- a. The PTES Contractor shall perform Supportability, Test, Evaluation and Verification assessments to assess specified supportability requirements; identify reasons for deviations from projected supportability parameters and identify methods of enhancing system readiness and correcting deficiencies in the logistics support system.

- b. Assessments shall be made during early stages of development, from mock-ups, test bench set-ups and prototypes. Assessments shall continue during PTES Contractor and Government development and operational testing. The PTES Contractor shall use supportability design factors, evaluation of alternatives and trade-off analyses as sources of input data to this task.
- c. The PTES contractor shall validate task analysis data. This effort shall be defined and documented by the contractor in the Maintainability and Built in Test Demonstration Test Report. [C116]

1.1.4.11 Logistics Demonstration Support

- a. The PTES Contractor shall perform all tasks necessary to support logistics demonstrations up to field and operational assessments of PTES, including efforts relating to present and future PTES development, testing and functional and performance assessments. The purpose of the Logistics Demonstration is to verify the various product support elements are fully developed, adequate and available prior to the system going operational.
- b. The PTES Contractor shall document the results in the Maintainability and Built in Test Demonstration Test Report. [C116]

1.1.4.12 Provisioning

- a. The PTES Contractor shall develop and deliver an Engineering Data for Provisioning (EDFP) data package and a Provisioning Screening Data package. [C062]
 - 1. The PTES Contractor shall support provisioning conference meetings. (approximately three (3))

1.1.4.13 Depot Transition Planning

- a. The PTES Contractor shall conduct a Depot Maintenance Study on hardware and software segments of the product designs to support the Government PTES Program Office in preparing for the Depot Source of Repair (DSOR) process and associated Cost Benefit Analysis of depot level hardware and software maintenance. The results shall be documented in the Depot Maintenance Study. [C108]
- b. The PTES Contractor shall develop a depot strategy that ensures affordable long-term sustainment of the PTES system as well as compliance with all Title 10 requirements (Section 2464, 2466 and 2474). Final depot strategy will be approved through the DMAWG process.
- c. The PTES Contractor shall develop and deliver a Software Transition Plan (STrP) [C023] for depot sustainment of the PTES system. The transition plan shall include meaningful depot involvement in software and hardware maintenance capabilities to include:
 - 1. Depot Workload
 - 2. Depot Investment
 - 3. Commitment to Establishing a Partnering Agreement
- d. The PTES Contractor shall ensure Government PTES Program Office access to all software and hardware artifacts, including those with limited data rights, for anomaly resolution, studies and issuance of technical repair data, information and safety assurance and sustainment of system.

-
- e. The PTES Contractor shall participate in all DMAWG and Depot Planning meetings. (four meetings per year)

1.1.4.14 Warranty Performance

- a. The PTES Contractor shall conduct warranty planning (See Appendix D (Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005))) for post-production support of the PTES prime mission products and provide Warranty Performance Reports. [C113]

1.1.4.15 Diminishing Manufacturing Sources Material Shortages (DMSMS)

- a. The PTES Contractor shall perform analysis and document obsolescence issues utilizing a Diminishing Manufacturing Sources Material Shortages (DMSMS) management plan. [C062]

1.1.4.16 Other Support Equipment & Product Support Planning

- a. See CLIN 0001 Section 1.1.4.9 requirements.
- b. The PTES Contractor shall accomplish all necessary ILS close-out IAW the FAR and contractor established best practices.
- c. The PTES Contractor shall submit Request for Nomenclature. [C109]
- d. The PTES Contractor shall provide PTES technical manuals, installation, operations and maintenance manuals, operator and maintenance personnel training materials and a description of the contractor training system used to prepare replacement contractor operators and maintainers in electronic format. [C110], [C111], [C112] (Note: Technical Manuals are first delivered 90 CD after PTES Build Testing).
- e. The PTES Contractor shall provide preliminary site installation drawings and as-built drawings and redline updates IAW ASME Y14.24 and Appendix B of Para 9.1 of ASME Y14.100-2000 [C064] (Note: Final facility drawings and wiring diagrams are first delivered 90 CD after site installation).
- f. The PTES Contractor shall perform preliminary facilities site planning and preparation activities necessary for PTES installation at the operational site(s). (Note: Facility drawings and wiring diagrams [C064] are first delivered 90 CD after site installation).
- g. Warranties:
 - 1. The PTES Contractor shall provide customary commercial warranties notwithstanding anything to the contrary, the full duration of such warranties shall commence at the time of system turnover (DD Form 250).
 - 2. The PTES Contractor shall track by item and serial number, manage and enforce open warranties on all failed items. [C113]
 - 3. The PTES Contractor shall provide copies of all warranties for PTES Contractor furnished equipment and materials delivered under this DO. [C025]
 - 4. At system turnover (DD Form 250), the PTES Contractor shall transfer all OEM warranty coverage to the Government (See Appendix D (Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005))).

1.2 Space Vehicle – N/A**1.3 Ground Operations and Processing Center (GOPC)**

See CLIN 0001 Section 1.3 requirements.

1.3.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.1 requirements.

1.3.1.1 System Engineering**1.3.1.1.1 General Planning**

See CLIN 0001 Section 1.3.1.1.1 requirements.

1.3.1.1.2 Agile Software Builds

- a. The PTES Contractor shall maintain the schedule for Release v2.0 (FOC).
 1. Release v2.0 shall consist of 4 Builds
- b. During Build 5, the PTES Contractor shall:
 1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 2. Plan, develop, test and deliver the PTES Build 5 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 - iii. Updated user manuals and training materials ready for verification.
 - iv. All CAT IE, IU, IIU DRs fixed and verified.
 - v. Additional features completed.
 - vi. PTES System TRD (PTES-8000) verification and validation completed.
 3. Develop the software for the User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES SVP) for testing of Build 5. [C049]
 4. Test (including integration, qualification testing and regression testing) at end of every Sprint using automated tools before demonstrating Build 5 software.
 5. Conduct Risk Reduction Demonstration (RRD).

6. Support Government DT and OT events for Build 4.
 7. Support DT&E, IT&E and prepare for MOT&E for Release 1 (Build 4). Build 5 shall address issues identified during DT&E and OA of Build 4 to include:
 - i. STIG updates to Build 4 until Build 5 becomes operational.
 - ii. All CAT IE, IU, IIU DRs fixed and verified until Build 5 becomes operational.
 8. Support certifications listed in the current Government PTES SITP (PTES-8950).
 9. Complete Build Decision Review (BDR) 6 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
- c. During Build 6, the PTES Contractor shall:
1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 2. Plan, develop, test and deliver the PTES Build 6 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 - iii. Updated user manuals and training materials ready for verification.
 - iv. All CAT IE, IU, IIU DRs fixed and verified.
 - v. Additional features completed.
 - vi. PTES System TRD (PTES-8000) verification and validation completed.
 3. Develop the software for the User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES System Verification Plan (SVP) for testing of Build 6. [C049]
 4. Test (including integration, qualification testing and regression testing) at end of every Sprint using automated tools before demonstrating Build 6 software.
 5. Conduct Risk Reduction Demonstration (RRD).
 6. Support MOT&E (Release 1). Build 6 shall continue to address issues identified during MOT&E to include:
 - i. STIG updates to Build 4 until Build 5 becomes operational.
 - ii. All CAT IE, IU, IIU DRs fixed and verified until Build 5 becomes operational.

7. Support Government DT and OT events for Build 5. Build 6 shall address issues identified during DT and OT of Build 5 to include:
 - i. STIG updates to Build 5 until Build 6 becomes operational.
 - ii. All CAT IE, IU, IIU DRs fixed and verified until Build 6 becomes operational.
 8. Support certifications listed in the current Government SITP (PTES-8950).
 9. Complete BDR 7 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office
- d. During Build 7, the PTES Contractor shall:
1. Include all FOC features.
 2. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 3. Plan, develop, test and deliver the PTES Build 7 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 - iii. Updated user manuals and training materials ready for verification.
 - iv. All CAT IE, IU, IIU DRs fixed and verified.
 - v. Additional features completed.
 - vi. PTES System TRD (PTES-8000) verification and validation completed.
 4. Develop the software for the User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES SVP for testing of Build 7. [C049]
 5. Test (including integration, qualification testing and regression testing) at end of every Sprint using automated tools before demonstrating Build 7 software.
 6. Conduct Risk Reduction Demonstration (RRD).
 7. Support Government DT and OT events for Build 6. Build 7 shall address issues identified during DT and OT of Build 6 to include:
 - i. STIG updates to Build 6 until Build 7 becomes operational.

- ii. All CAT IE, IU, IIU Deficiency Reports (DR) fixed and verified until Build 7 becomes operational.
 - 8. Support certifications listed in the current Government SITP (PTES-8950).
 - 9. Complete BDR 8 (see Entrance/Exit criteria in Appendix A (Agile Product Management)) chaired by the Government PTES Program Office.
- e. During Build 8, the PTES Contractor shall:
 - 1. Develop the following in Sprint 0:
 - i. Sprint Backlogs for a minimum of the next three (3) Sprints with Product Backlog Grooming expected to continue throughout the Build.
 - ii. Detailed User Stories for first two (2) Sprints meeting Definition of Ready for User Stories.
 - iii. Tasking to all functional teams.
 - 2. Plan, develop, test and deliver the PTES Build 8 software for Government testing on the DISA CDC environment.
 - i. At the end of each Sprint, the PTES Contractor shall upload and demonstrate (virtual) completed work into the Integration, Demonstration & Test, and Training environment (DISA CDC).
 - ii. Every two months, the PTES Contractor shall conduct a System Demonstration (integrated) to coincide with the PMR hosted at the PTES Contractor facility.
 - iii. Updated user manuals and training materials ready for verification.
 - iv. All CAT IE, IU, IIU DRs fixed and verified.
 - v. Additional features completed.
 - vi. PTES System TRD (PTES-8000) verification and validation completed.
 - 3. Develop the software for the User Stories according to the User Story Definition of Done in Appendix A (Agile Product Management) and provide Use Cases that are outlined in the PTES SVP for testing of Build 8. [C049]
 - 4. Test (including integration, qualification testing and regression testing) using automated tools before demonstrating Build 8 software.
 - 5. Conduct Risk Reduction Demonstration (RRD).
 - 6. Support Government DT and OT events for Build 7. Build 8 shall address issues identified during DT and OT of Build 7 to include:
 - i. STIG updates to Build 7 until Build 8 becomes operational.
 - ii. All CAT IE, IU, IIU DRs fixed and verified until Build 8 becomes operational.
 - 7. Support MOT&E-2 of Release 2. Build 8 shall address issues identified during MOT&E-2 to include:
 - i. STIGs current through last quarterly update.

-
- ii. All CAT IE, IU, IIU DRs fixed and verified.
 - iii. Support certifications listed in the Government SITP (PTES-8950).

1.3.1.1.3 Acceptance Criteria

- a. The PTES Contractor shall deliver Operational Builds (Builds 5 thru 7) for Government PTES Program Office acceptance through the DD Form 250, to include the following criteria:
 - 1. Government PTES Program Office acceptance of the verification of Operational Builds 5 thru 7 system requirements in the PTES System Specification. [C026]
 - 2. Site Acceptance defined as Government PTES Program Office approval (i.e., DISA CDC).
 - 3. Completion of Government PTES Program Office defined testing as outlined in Deficiency Report (DR) definitions in Technical Order (TO) 0035D-54a:
 - i. All Category I Emergency (IE) or Urgent (IU) and Category II Urgent (IIU) DRs shall be closed;
 - ii. All Category II Routine DRs shall be closed unless waived by the Government PTES Program Office.
 - 4. Completion of SVR/FCA and PCA with Government PTES Program Office acceptance. [C008]
 - 5. Completion of OT activities.
 - 6. Acceptable AFSPC DAA DoDI 8500.2 (Information Assurance Implementation) and DoDI 8510.01 (Risk Management Framework (RMF) for DoD Information Technology (IT)) (latest version) Government review of the PTES system with manageable residual risk resulting in the Government PTES Program Office obtaining an Authority to Operate (ATO) for the PTES System.

1.3.2 PTES Mission Management System (MMS)

See CLIN 0001 Section 1.3.2 requirements.

1.3.2.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.2.1 requirements.

1.3.2.1.1 MMS Systems Engineering

1.3.2.1.1.1 MMS General Planning

See CLIN 0001 Section 1.3.2.1.1.1 requirements.

1.3.2.1.1.2 MMS Requirements and Interfaces

See CLIN 0001 Section 1.3.2.1.1.2 requirements.

1.3.2.1.1.3 MMS Segment Design/Development

See CLIN 0001 Section 1.3.2.1.1.3 requirements.

1.3.2.1.2 MMS Assembly, Integration and Test

See CLIN 0001 Section 1.3.2.1.2 requirements.

1.3.2.1.2.1 MMS Verification, Certification and Test

See CLIN 0001 Section 1.3.2.1.2.1 requirements.

1.3.2.1.3 MMS Program Management

See CLIN 0001 Section 1.3.2.1.3 requirements.

1.3.2.1.4 MMS Support Equipment & Product Support Planning

See CLIN 0001 Section 1.3.2.1.4 requirements.

1.3.2.2 COTS Hardware – N/A

1.3.2.3 Custom Hardware – N/A

1.3.2.4 MMS Software

See CLIN 0001 Section 1.3.2.4 requirements.

1.3.2.4.1 MMS Software Design, Development and Test

See CLIN 0001 Section 1.3.2.4.1 requirements.

1.3.2.4.2 MMS Software Maintenance Support

- a. This section applies to PTES MMS software maintenance support for the current software Operational Release.
- b. The PTES Contractor shall collect and analyze all PTES software problems that occur for all software Operational Releases and report failures. (DAL submission) [C004]
- c. The PTES Contractor shall disposition DRs consistent with the DR definitions in Technical Order (TO) 0035D-54a:
 1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed for test completion;
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
 3. DRs shall be prioritized and added to the Sprint and Product Backlogs.
- d. The PTES Contractor shall develop and maintain a plan for restoring PTES to a fully functional condition following an outage of software.
- e. The PTES Contractor shall maintain PTES software for the current Operational Release throughout CLIN 0003 and facilitate transition to depot support, including: updating manuals and training materials to reflect actual operational use investigating and correcting issues that arise during testing and pre- operations, supporting teleconferences and meetings, traveling to support the investigation and correction of problems or issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support. [C063], [C110], [C112], [C116]
- f. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports.

1.3.2.5 Pre-Operations Mission Support – N/A**1.3.3 PTES Key Management System (KMS) and Key Loading and Initialization Facility (KLIF)**

See CLIN 0001 Section 1.3.3 requirements.

1.3.3.1 SEIT/PM and Support Equipment

See CLIN 0001 Section 1.3.3.1 requirements.

1.3.3.1.1 KMS and KLIF Systems Engineering**1.3.3.1.1.1 KMS and KLIF General Planning**

See CLIN 0001 Section 1.3.3.1.1.1 requirements.

1.3.3.1.1.2 KMS and KLIF Requirements and Interfaces

See CLIN 0001 Section 1.3.3.1.1.2 requirements.

1.3.3.1.1.3 KMS and KLIF Segment Design/Development

See CLIN 0001 Section 1.3.3.1.1.3 requirements.

1.3.3.1.2 KMS and KLIF Assembly, Integration and Test

See CLIN 0001 Section 1.3.3.1.2 requirements.

1.3.3.1.2.1 KMS and KLIF Verification, Certification and Test

See CLIN 0001 Section 1.3.3.1.2.1 requirements.

1.3.3.1.3 KMS and KLIF Program Management

See CLIN 0001 Section 1.3.3.1.3 requirements.

1.3.3.1.4 KMS and KLIF Support Equipment and Product Support Planning

See CLIN 0001 Section 1.1.4 requirements.

1.3.3.2 COTS Hardware – N/A**1.3.3.3 Custom Hardware – N/A****1.3.3.4 KMS and KLIF Software**

See CLIN 0001 Section 1.3.3.4 requirements.

1.3.3.4.1 KMS and KLIF Software Design, Development and Test

See CLIN 0001 Section 1.3.3.4.1 requirements.

1.3.3.4.2 KMS and KLIF Software Maintenance Support

This section applies to PTES KMS and KLIF software maintenance support for the current software Operational Release.

- a. The PTES Contractor shall collect and analyze all PTES software problems that occur for all software Operational Releases and report failures. (DAL submission) [C004]
- b. The PTES Contractor shall disposition DRs consistent with the DR definitions in Technical Order (TO) 0035D-54a:

-
1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed for test completion;
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
 3. DRs shall be prioritized and added to the Sprint and Product Backlogs.
- c. The PTES Contractor shall develop and maintain a plan for restoring PTES to a fully functional condition following an outage of software.
 - d. The PTES Contractor shall maintain PTES software for the current Operational Release throughout CLIN 0003 and facilitate transition to depot support, including: updating manuals and training materials to reflect actual operational use investigating and correcting issues that arise during testing and pre- operations, supporting teleconferences and meetings, traveling to support the investigation and correction of problems or issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support. [C063], [C110], [C112], [C116]
 - e. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports.

1.3.3.5 KMS and KLIF Pre-Operations Mission Support – N/A

1.4 Ground Terminal (GT)/SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub

1.4.1 SEIT/PM and Support

See CLIN 0001 Section 1.4.1 requirements.

1.4.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Systems Engineering

1.4.1.1.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub General Planning

- a. See CLIN 0001 Section 1.4.1.1.1 requirements.
- b. The PTES Contractor shall identify and develop updates (software and/or hardware) required to update the Joint Hub (including Joint Hub ECU) to the FOC configuration that were developed in CLIN 0002.
- c. The PTES Contractor shall develop and deliver documentation for each ECU (KMS ECU, Joint Hub ECU) to support the NSA certification process as defined in the NSA Telecommunications Security Requirements Document (TSRD) to include:
 1. Security Evaluation Document (SED) - KMS ECU [C069]
 2. Security Evaluation Document (SED) - Joint Hub ECU [C070]
 3. Security Verification Plan and Procedures (SVPP) - KMS ECU [C071]
 4. Security Verification Plan and Procedures (SVPP) - Joint Hub ECU [C072]
 5. Security Verification Report (SVR) - KMS ECU [C073]
 6. Security Verification Report (SVR) - Joint Hub ECU [C074]
 7. Software Development Process Description Document (SDPDD - KMS ECU) [C075]

-
8. Software Development Process Description Document (SDPDD) - Joint Hub ECU [C076]
 9. Software/Hardware Requirements Specification (SHRS) - KMS ECU [C077]
 10. Software/Hardware Requirements Specification (SHRS) - Joint Hub ECU [C078]
 11. Software/Hardware Design Description (SHDD) - KMS ECU [C079]
 12. Software/Hardware Design Description (SHDD) - Joint Hub ECU [C080]
 13. Software and Programmable Logic Evaluation Report (SPLER) - KMS ECU [C081]
 14. Software and Programmable Logic Evaluation Report (SPLER) - Joint Hub ECU [C082]
 15. Physical Configuration Audit Plan (PCAP) - KMS ECU [C083]
 16. Physical Configuration Audit Plan (PCAP) - Joint Hub ECU [C084]
 17. Physical Configuration Audit Report (PCAR) - KMS ECU [C085]
 18. Physical Configuration Audit Report (PCAR) - Joint Hub ECU [C086]
 19. TEMPEST Test Plan - KMS ECU [C089]
 20. TEMPEST Test Plan - Joint Hub ECU [C090]
 21. TEMPEST Test Report - KMS ECU [C091]
 22. TEMPEST Test Report - Joint Hub ECU [C092]
 23. In-Process Accounting Procedures - KMS ECU [C093]
 24. In-Process Accounting Procedures - Joint Hub ECU [C094]
 25. Security Production Assurance (SPA) Description - KMS ECU [C095]
 26. Security Production Assurance (SPA) Description - Joint Hub ECU [C096]
 27. Product Drawings/Models and Associated Lists - KMS ECU [C097]
 28. Product Drawings/Models and Associated Lists - Joint Hub ECU [C098]
 29. Information Security (INFOSEC) Anonymity Plan - KMS ECU [C101]
 30. Information Security (INFOSEC) Anonymity Plan - Joint Hub ECU [C102]

1.4.1.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Requirements and Interfaces

See CLIN 0001 Section 1.4.1.1.2 requirements.

1.4.1.1.3 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Segment Updates

See CLIN 0001 Section 1.4.1.1.3 requirements.

1.4.1.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Assembly, Integration and Test

- a. See CLIN 0001 Section 1.4.1.2 requirements.
- b. The PTES Contractor shall refresh Joint Hubs (including Joint Hub ECU) installed in CLIN 0002 with the latest hardware and software updates prior to MOT&E 2.

1.4.1.2.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Verification, Certification and Test

- a. See CLIN 0001 Section 1.4.1.2.1 requirements.
- b. The PTES Contractor shall develop KMS ECU, Joint Hub ECU and Joint Hub test plans, procedures, and PTES test reports for all segment verification and operational site tests. [C050], [C051], [C052]
- c. The PTES Contractor shall conduct Test Readiness Reviews (TRR) IAW IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) and meets the intent of AFMAN 63-119 prior to KMS ECU, Joint Hub ECU and Joint Hub segment verification tests. [C106]
- d. The PTES Contractor shall invite the Government PTES Program Office to witness verification testing of KMS ECU, Joint Hub ECU and Joint Hub requirements and interfaces and to witness PTES testing at the operational site(s).
- e. The PTES Contractor shall develop test tools needed to verify KMS ECU, Joint Hub ECU and Joint Hub requirements.

1.4.1.3 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Program Management

See CLIN 0001 Section 1.4.1.3 requirements.

1.4.1.4 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Support Equipment & Product Support Planning

See CLIN 0001 Section 1.1.4 requirements.

1.4.2 Antenna – N/A**1.4.3 Optical Communication Assembly – N/A****1.4.4 RF Electronics – N/A****1.4.5 Timing – N/A****1.4.6 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Baseband-Network**

See CLIN 0001 Section 1.4.6 requirements.

1.4.7 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Hardware

See CLIN 0001 Section 1.4.7 requirements.

1.4.7.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub COTS Hardware

See CLIN 0001 Section 1.4.7.1 requirements.

1.4.7.2 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Custom Hardware

See CLIN 0001 Section 1.4.7.2 requirements.

1.4.8 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software

See CLIN 0001 Section 1.4.8 requirements.

1.4.8.1 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Software Development

See CLIN 0001 Section 1.4.8.1 requirements.

- 1.4.9 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Maintenance – N/A**
- 1.4.10 SATCOM Gateway/PTES ECU (KMS and Joint Hub)/Joint Hub Pre-Operations Mission Support – N/A**
- 1.5 External Network (T-COMM) – N/A**
- 1.6 User Equipment – N/A**
- 1.7 Facilities – N/A**
- 1.8 Vehicles and Shelters – N/A**
- 1.9 Insurance – N/A**
- 1.10 Task Orders – N/A**
- 1.11 Orbital Transfer Vehicle (OTV) – N/A**
- 1.12 Launch Vehicle – N/A**

1 CLIN 0004 (Option): Protected Tactical Enterprise Service (PTES) – PTES Joint Hub End Cryptographic Unit (ECU)/Joint Hub Procurement Full Operational Capability (FOC)

CLIN 0004 includes all activities required for the full procurement and production of the Joint Hub ECUs and Joint Hubs for the Full Operational Capability (FOC). CLIN 0004 covers the period from completion of Production Readiness Review (PRR) to FOC. Installation and delivery will be conducted in CLIN 0005.

- 1.1 System Level SEIT/PM and Support Equipment**
 - 1.1.1 System Engineering – N/A**
 - 1.1.2 Assembly, Integration and Test – N/A**
 - 1.1.3 Program Management – N/A**
 - 1.1.4 Support Equipment and Product Support Planning**
 - 1.1.4.1 Support Equipment – N/A**
 - 1.1.4.2 Product Support Program – N/A**
 - 1.1.4.3 Reliability, Maintainability and Testability (RM&T) – N/A**
 - 1.1.4.4 FMECA/Damage Modes Analysis – N/A**
 - 1.1.4.5 Failure Analysis and Corrective Action Report (FACAR) – N/A**
 - 1.1.4.6 Mission Critical Fault Analysis (MCFA) – N/A**
 - 1.1.4.7 Product Support Analysis (PSA) – N/A**
 - 1.1.4.8 Supportability and Related Design Factors – N/A**
 - 1.1.4.9 Product Support Development – N/A**
 - 1.1.4.10 Supportability Test, Evaluation and Verification – N/A**
 - 1.1.4.11 Logistics Demonstration Support – N/A**
 - 1.1.4.12 Provisioning – N/A**
 - 1.1.4.13 Depot Transition Planning – N/A**
 - 1.1.4.14 Warranty Performance**

See Appendix D (Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005)).

1.1.4.15 Diminishing Manufacturing Sources Material Shortages (DMSMS) – N/A**1.1.4.16 Other Support Equipment & Product Support Planning – N/A****1.1.5 Pre-Operational Support – N/A****1.2 Space Vehicle – N/A****1.3 PTES Ground Operations and Processing Center (GOPC) – N/A****1.4 Ground Terminal (GT)/SATCOM Gateway/PTES Joint Hub ECU/PTES Joint HUB****1.4.1 SEIT/PM and Support Equipment**

The PTES Joint Hub SEIT/PM and support equipment section includes the overall planning effort and controls to guide and execute the procurement and production of Joint Hub ECUs and Joint Hubs to meet FOC objectives.

1.4.1.1 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Systems Engineering**1.4.1.1.1 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub General Planning**

The PTES Contractor shall produce and store ECUs and Joint Hubs that were designed and developed in CLIN 0001 and CLIN 0002, and upgraded in CLIN 0003.

- a. The PTES Contractor shall ensure that the most current operational software and hardware upgrades are installed prior to shipping the Joint Hub ECU and Joint Hub (see CLIN 0005).
- b. The PTES Contractor shall conduct as-needed, Technical Interchange Meetings (TIM) and engineering tag-up teleconferences and produce meeting minutes.
- c. All PTES Joint Hub ECU and Joint Hub segment markings shall be in accordance with (IAW) MIL-STD-130N (Identification Marking of U.S. Military Property).
- d. The PTES Contractor shall ensure that all required hardware and software fully implements the PTW ICD security critical functions IAW National Security Agency (NSA) certification requirements in the Telecommunications Security Requirements Document (TSRD).
- e. The PTES Contractor shall implement the following:
 1. System Engineering Management Plan (SEMP) [C001]
 2. System Safety Program Plan (SSPP) [C035]
 3. Contractor's Risk Management Plan (RMP) [C037]
 4. Human Engineering Program Plan (HEPP) [C039]
 5. Contractor's Configuration and Data Management Plan [C040]

1.4.1.1.2 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Requirements and Interfaces – N/A**1.4.1.1.3 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Segment Development - N/A****1.4.1.2 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Assembly, Integration and Test**

- a. The PTES Contractor shall manage and conduct the assembly, integration, and test of PTES Joint Hub ECU and Joint Hub segment hardware and software to verify the segment level functionality described in the Operational Concept Description.

b. The PTES Contractor shall be responsible for the initialization of the PTES Joint Hub ECU prior to Site Acceptance.

1. The PTES Contractor shall coordinate with the Air Force Life Cycle Management Center (ALCMC) Cryptologic & Cyber Systems Division at Lackland AFB, San Antonio Texas to initialize the ECUs.

1.4.1.2.1 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Verification and Certification – N/A

1.4.1.2.2 Acceptance Criteria

a. The PTES Contractor shall deliver PTES Joint Hubs (includes Joint Hub ECU) for Government PTES Program Office acceptance through the Interim DD Form 250 (for transportation purposes only), to include the following criteria:

1. Government PTES Program Office acceptance of the verification of the PTES Joint Hub (to include Joint Hub ECU) requirements in the PTES Joint Hub and Joint Hub ECU Specifications. [C104], [C105]
2. Acceptance defined as Government PTES Program Office approval at the Factory.

1.4.1.3 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Program Management

a. The PTES Contractor shall conduct Program Management IAW CLIN 0001, Section 1.4.1.3.

1.4.1.4 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Support Equipment & Product Support Planning

Product Support Planning shall be at the System level (see CLIN 0001, section 1.1.4)

1.4.2 Antenna – N/A

1.4.3 Optical Communication Assembly – N/A

1.4.4 RF Electronics – N/A

1.4.5 Timing – N/A

1.4.6 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Baseband-Network – N/A

1.4.7 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Hardware

This hardware includes the resources to develop, produce, procure, assemble and test the hardware for the PTES Joint Hub ECU and Joint Hub.

1.4.7.1 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub COTS Hardware

- a. The PTES Contractor shall procure Commercial-of-the-Shelf (COTS) and Government Off-The-Shelf (GOTS) hardware for the production of the PTES Joint Hub ECUs and Joint Hubs.
- b. The PTES Contractor shall evaluate and acquire Information Assurance COTS and GOTS hardware components IAW National Security Telecommunications Information System Security Policy (NSTISSP) No. 11.
- c. The PTES Contractor shall assemble COTS hardware for production of the PTES Joint Hub ECUs and Joint Hubs.

1.4.7.2 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Custom Hardware

- a. The PTES Contractor shall produce custom hardware for the production of the PTES Joint Hub ECUs and Joint Hubs.

1.4.8 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Software

The PTES Joint Hub software includes all the resources required to install, integrate and verify the latest software for performing PTES Joint Hub functions.

- a. The PTES Contractor shall install the latest PTES Joint Hub software (firmware).

1.4.8.1 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Software Development – N/A**1.4.9 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Pre-Operations Maintenance – N/A****1.4.10 SATCOM Gateway/PTES Joint Hub ECU/Joint Hub Pre-Operations Mission Support – N/A****1.5 External Network (T-COMM) – N/A****1.6 User Equipment – N/A****1.7 Facilities – N/A****1.8 Vehicles and Shelters – N/A****1.9 Insurance – N/A****1.10 Task Orders – N/A****1.11 Orbital Transfer Vehicle (OTV) – N/A****1.12 Launch Vehicle – N/A**

1 CLIN 0005 (Option): Protected Tactical Enterprise Service (PTES) -- PTES Joint Hub (w/End Cryptographic Unit (ECU) Installation and Deployment (Full Operational Capability (FOC))

CLIN 0005 includes the PTES Joint Hub (w/ECU) installation activities at up to 13 SATCOM Gateway sites (CONUS and OCONUS). CLIN 0005 covers the period from Initial Operational Capability (IOC) to Full Operational Capability (FOC). CLIN 0005 includes procurement of installation materials, associated labor for installation, checkout, acceptance testing, site surveys, shipping of ECU/Joint Hubs and travel and labor expenses required for installation.

1.1 System Level SEIT/PM and Support Equipment**1.1.1 Support Equipment and Product Support Planning****1.1.1.1 Support Equipment – N/A****1.1.1.2 Product Support Program – N/A****1.1.1.3 Reliability, Maintainability and Testability (RM&T) – N/A****1.1.1.4 FMECA/Damage Modes Analysis – N/A****1.1.1.5 Failure Analysis and Corrective Action Report (FACAR) – N/A****1.1.1.6 Mission Critical Fault Analysis (MCFA) – N/A****1.1.1.7 Product Support Analysis (PSA) – N/A****1.1.1.8 Supportability and Related Design Factors – N/A****1.1.1.9 Product Support Development – N/A****1.1.1.10 Supportability Test, Evaluation and Verification – N/A****1.1.1.11 Logistics Demonstration Support – N/A****1.1.1.12 Provisioning – N/A****1.1.1.13 Depot Transition Planning – N/A****1.1.1.14 Warranty Performance**

See Appendix D (Rework, Replacement, or Correction Due to CAT 1 Emergency and CAT 1 Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005)).

1.1.1.15 Diminishing Manufacturing Sources Material Shortages (DMSMS) – N/A**1.1.1.16 Other Support Equipment & Product Support Planning – N/A**

1.2 Space Vehicle – N/A**1.3 PTES Ground Operations and Processing Center (GOPC) – N/A****1.4 Ground Terminal/SATCOM Gateway/PTES Joint Hub (w/ECU)****1.4.1 SEIT/PM and Support Equipment**

The PTES Joint Hub (w/ECU) SEIT/PM and support equipment section includes the overall planning effort and controls to guide and execute site surveys, shipping, installation and checkout of production Joint Hubs (w/ECU).

1.4.1.1 SATCOM Gateway/PTES Joint Hub (w/ECU) Systems Engineering**1.4.1.1.1 SATCOM Gateway/PTES Joint Hub (w/ECU) General Planning**

- a. The PTES Contractor shall ensure that the most current operational software and hardware upgrades are installed prior to shipping the Joint Hub (w/ECU).
- b. The PTES Contractor shall conduct as-needed, Technical Interchange Meetings (TIM) and engineering tag-up teleconferences and produce meeting minutes. [E004]
- c. The PTES Contractor shall develop, manage, control and make available approved controlled segment and facility drawings and wiring diagrams. [E064]
- d. PTES Contractor shall implement the following:
 1. System Engineering Management Plan (SEMP) [C001]
 2. System Safety Program Plan (SSPP) [C035]
 3. Contractor's Risk Management Plan (RMP) [C037]
 4. Human Engineering Program Plan (HEPP) [C039]
 5. Contractor's Configuration and Data Management Plan [C040]

1.4.1.1.2 SATCOM Gateway/PTES Joint Hub (w/ECU) Requirements and Interfaces – N/A**1.4.1.1.3 SATCOM Gateway/PTES Joint Hub (w/ECU) Segment Installation**

- a. The PTES Contractor shall ensure the installation of the PTES Joint Hubs (w/ECU) complies with federal, state, and local Environment, Safety & Occupational Health (ESOH) codes, statutes, regulations, and Executive Orders.

1.4.1.2 SATCOM Gateway/PTES Joint Hub (w/ECU) Assembly, Integration and Test

- a. The PTES Contractor shall manage and conduct the assembly and integration of PTES Joint Hub (w/ECU) segment and segment hardware and software to verify the segment level functionality described in the Operational Concept Description.

1.4.1.2.1 SATCOM Gateway/PTES Joint Hub (w/ECU) Verification and Certification

- a. The PTES Contractor shall maintain the PTES Joint Hub (w/ECU) verification program in compliance with the PTES System Verification Plan (SVP). [C049]
- b. The PTES Contractor shall implement the PTES Joint Hub (w/ECU) checkout program in compliance with the PTES System Integration and Test Plan (SITP). [C005]

-
- c. The PTES Contractor shall provide access to all formal and informal PTES Joint Hub (w/ECU) verification artifacts, verification data and deficiency reports as requested by PTES Program Office.
 - d. The PTES Contractor shall verify all requirements in the Joint Hub ECU and Joint Hub Specification and obtain Government PTES Program Office concurrence at exit reviews of segment verification tests. [C103], [C104], [C105]
 - e. The PTES Contractor shall verify all PTES internal (segment to segment) interfaces.
 - f. The PTES Contractor shall develop PTES Joint Hub (w/ECU) test plans, procedures and PTES test reports for all segment verification and operational site tests. [E050], [E051], [E052]
 - g. The PTES Contractor shall conduct Test Readiness Reviews (TRR) IAW IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored) and meets the intent of AFMAN 63-119 prior to PTES Joint Hub (w/ECU) segment verification tests. [E106]
 - h. The PTES Contractor shall invite the PTES Program Office to witness verification testing of PTES Joint Hub (w/ECU) requirements and interfaces and to witness PTES testing at the operational site(s).

1.4.1.3 SATCOM Gateway/PTES Joint Hub (w/ECU) Program Management

- a. The PTES Contractor shall:
 1. Employ close technical, programmatic and administrative management of PTES Joint Hub segment subcontractors to ensure adherence to all standards and approved practices.
 2. Invite Government PTES Program Office personnel to all subcontractor reviews.
 3. Manage and track small business subcontractor performance including cost per CLIN.
 4. Incorporate PTES Joint Hub segment activities into the overall PTES Integrated Master Schedule (IMS).

1.4.1.4 SATCOM Gateway/PTES Joint Hub (w/ECU) Support Equipment & Product Support Planning

Product Support Planning shall be at the System level (CLIN 0001, Section 1.1.4)

1.4.2 Antenna – N/A

1.4.3 Optical Communication Assembly – N/A

1.4.4 RF Electronics – N/A

1.4.5 Timing – N/A

1.4.6 SATCOM Gateway/PTES Joint Hub Baseband-Network

The baseband network includes the resources to develop the baseband network, including interfaces with the terrestrial networks.

1.4.7 SATCOM Gateway/ECU/PTES Joint Hub Installation Hardware

The installation hardware element includes the resources to develop, produce, procure, assemble, and checkout the installation hardware.

1.4.7.1 SATCOM Gateway/ECU/PTES Joint Hub COTS Hardware

- a. The PTES Contractor shall procure Commercial-Off-The-Shelf (COTS) and Government Off-The-Shelf (GOTS) installation hardware for the installation of the ECU/PTES Joint Hub Segment.
- b. The PTES Contractor shall evaluate and acquire Information Assurance COTS and COTS hardware components IAW National Security Telecommunications Information System Security Policy (NSTISSP) No. 11.
- c. The PTES Contractor shall assemble COTS installation hardware.

1.4.7.2 SATCOM Gateway/ECU/PTES Joint Hub Custom Hardware

- a. The PTES Contractor shall install custom hardware for the installation of the PTES Joint Hub (w/ECU).

1.4.8 SATCOM Gateway/PTES Joint Hub Software – N/A**1.4.9 SATCOM Gateway/PTES Joint Hub Pre-Operations Maintenance – N/A****1.4.10 SATCOM Gateway/PTES Joint Hub Pre-Operations Mission Support – Reserved**

The pre-operations mission support contains all the resources required for the operation of the PTES Joint Hub prior to turnover (DD Form 250). It includes testing; routine monitoring of equipment health and status; fault detection; and anomaly investigation and resolution.

1.5 External Network (T-COMM)

The external network includes the resources to develop external communication. External communications refer to hardware (equipment, lines or circuits) and software effort required for a system that moves data along external communications paths between required points.

1.5.1 SEIT/PM and Support Equipment

- a. The PTES Contractor shall participate in and provide technical input to the Defense Information Systems Agency (DISA) Working Integrated Product Team (IPT), led by the Government PTES Program Office, to establish requirements for the Government furnished data connectivity between the PTES equipment at the operational PAT SOC, DISA Core Data Centers (CDC), the PTES equipment at SATCOM Gateway sites and the WGS ground system.

1.5.2 Leased Circuits/Data Connectivity

- a. The PTES Contractor shall identify Lease Circuits/Data Connectivity requirements, to include connectors and cabling needed to connect PTES equipment with DISA-provided communication links.
- b. The PTES Contractor shall participate in working groups with the program office and DISA to define the DISA communication links needed for PTES.
- c. The PTES Contractor shall plan for and integrate DISA communication links with PTES hardware and software.

1.5.3 Purchased Circuits

- a. The PTES Contractor shall identify requirements for Purchased Circuits.

- b. The PTES Contractor shall participate in working groups with the program office and DISA to define the DISA communication links needed for PTES.
- c. The PTES Contractor shall plan for and integrate DISA communication links with PTES hardware and software.

1.6 User Equipment – N/A

1.7 Facilities

The facilities element encompasses the entire physical infrastructure required to access, house and support the PTES Joint Hub, GOPC and external network equipment and personnel.

1.7.1 SEIT/PM & Support Equipment

- a. The PTES contractor shall perform the facilities site planning and preparation activities necessary for the integration of PTES at the operational site(s).
- b. The PTES Contractor shall coordinate with the operational SATCOM Gateway Facility for the installation of PTES equipment at the SATCOM Gateway sites.
- c. The PTES Contractor shall coordinate with the operational PATS Satellite Operations Center (PATSOCC) Facility for the installation of PTES equipment at the operational PATSOCC.
- d. The PTES Contractor shall coordinate with the DISA CDC for the installation of PTES equipment at the CDC.
- e. The PTES Contractor shall prepare a PTES Site As-Built Configuration List.
- f. The PTES Contractor shall verify that the installed equipment, systems, interfaces with existing systems, and systems impacted by the installation are properly installed and do operate as intended at the specific location and environment.
 - 1. The PTES Contractor shall conduct a configuration audit of installed equipment.
 - 2. The PTES Contractor shall conduct cold-check test of installed equipment to verify the power distribution system, the ground connection, and the cable connections are all functioning within allowed tolerances and specifications.
 - 3. The PTES Contractor shall conduct equipment tests to verify the installed equipment is functioning correctly.
 - i. The equipment test consists of powering up equipment, confirming that expected startup condition are satisfied, performing configuration setup procedures to include any applicable cybersecurity related tests that may be required, and running “offline” diagnostics or conducting tests on individual components to determine if those components are exhibiting specifically required characteristics and/or functions.
 - 4. The PTES Contractor shall conduct intra-system test to verify the internal interfaces and functions of the installed system and equipment.
- g. The PTES Contractor shall conduct inter-system test to verify the external interfaces between the installed system and other systems external to PTES boundary and verify all remaining functions that can non-intrusively be tested “offline” with the add-on of functional external interfaces.

1.7.2 Site Preparation

- a. The PTES Contractor shall coordinate with the PTES Program Office and operational PATSOC authorities and perform site preparation for PTES equipment at the operational PATSOC, to include space, power, environmental controls and network connectivity.
- b. The PTES Contractor shall coordinate with the PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for PTES equipment at the operational SATCOM Gateways, to include space, power, environmental controls and network connectivity.
- c. The PTES Contractor shall coordinate with the PTES Program Office and DISA authorities and perform site preparation for the PTES equipment at the DISA CDCs to include space, power, environmental controls and network connectivity.
- d. The PTES Contractor shall coordinate with the PTES Program Office and operational PATSOC authorities and perform site preparation for the interface equipment between PTES at the operational PATSOC and GFP connections to the operational SATCOM Gateways, to include space, power and environmental controls.
- e. The PTES Contractor shall coordinate with the PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for the interface equipment between PTES at the operational SATCOM Gateways and GFP connections between the operational SATCOM Gateways and operational PATSOC, to include space, power and environmental controls.
- f. The PTES Contractor shall coordinate with the PTES Program Office and operational SATCOM Gateway authorities and perform site preparation for the interface equipment between PTES at the operational SATCOM Gateways and GFP connections between the operational SATCOM Gateways and terrestrial data backhaul networks, to include space, power and environmental controls.
- g. The PTES Contractor shall coordinate with the PTES Program Office and DISA and perform site preparation for the interface equipment between PTES at the DISA CDCs and GFP connections between the CDCs and terrestrial data backhaul networks, to include space, power and environmental controls.
- h. The PTES Contractor shall coordinate with the PTES Program Office and operational PATSOC authorities to arrange for NIPRNet and SIPRNet connectivity for PTES at the operational PATSOC.
- i. The PTES Contractor shall coordinate with the PTES Program Office and the operational PATSOC authorities for the installation of scanner and telephone.
- j. The PTES Contractor shall coordinate the development of Project Support Agreements at the following sites for site visits and surveys:
 1. SATCOM Gateway sites
 2. PATSOC
 3. DISA CDC

1.7.3 Landscape – N/A**1.7.4 Buildings – N/A****1.7.5 Equipment and Building Fit Out – N/A**

- a. The PTES Contractor shall coordinate with the Government PTES Program Office for the integration of PTES with the Government-supplied access the data connection among the operational PATSOC, DISA CDC, and the SATCOM Gateway sites.
- b. The PTES Contractor shall coordinate with the Government PTES Program Office for the integration of PTES with the Government-supplied access the terrestrial data backhaul network connections at the SATCOM Gateway sites.
- c. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the operational PATSOC.
- d. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the SATCOM Gateway site.
- e. The PTES Contractor shall deliver, install, integrate and verify the PTES equipment at the DISA CDCs.
- f. The PTES Contractor shall coordinate with the Government PTES Program Office and the SATCOM Gateway site for access to timing reference signals, equipment and distribution at the SATCOM Gateway site for PTES.
- g. The PTES Contractor shall coordinate with the Government PTES Program Office for the installation and activation of the data connection among the DISA CDC, SATCOM Gateway sites, and the operational PATSOC by the Government PTES Program Office.
- h. The PTES Contractor shall prepare a PTES Site As-Built Configuration List.

1.8 Vehicles and Shelters – N/A**1.9 Insurance – N/A****1.10 Task Orders – N/A****1.11 Orbital Transfer Vehicle (OTV) – N/A****1.12 Launch Vehicle – N/A**

1 CLIN 0006 (Reserved): Protected Tactical Enterprise Service (PTES) – Initial Spares/Support Equipment/Interim Contractor Support

CLIN 0006 is “Reserved”. The Government intends to modify the contract at a later date to include this work. CLIN 0006 includes life cycle support activities for PTES IOC system to include software and hardware sustainment, help desk support and other Interim Contractor Support (ICS) activities as determined by the Government PTES Program Office and covers the period from IOC to FOC.

1.1 System Level SEIT/PM and Support Equipment

The system level SEIT/PM & Support Equipment provides all the common PTES elements and includes the overall program planning effort and controls to guide and execute program objectives. It includes system engineering, integration, testing and program management efforts across system level activities, intersegment level activities and interfaces with external systems and organizations.

1.1.1 Systems Engineering

1.1.1.1 Interim Contractor Support

Interim Contract Support (ICS) consists of activities to implement and perform logistics support functions after product acceptance by the Government PTES Program Office (through declaration of FOC), *if full sustainment support is not in-place at IOC*. The PTES Contractor shall support the Government PTES Program Office in the preparation and execution for a smooth transition to operations after declaration of IOC.

- a. The PTES Contractor shall ensure the operation and sustainment of PTES complies with federal, state, and local Environment, Safety & Occupational Health (ESOH) codes, statutes, regulations, and Presidential Executive Orders.
- b. The PTES Contractor shall operate and maintain PTES consistent with approved PTES Operations and Technical manuals.
- c. The PTES Contractor shall provide the programmatic, technical, managerial and administrative services required to operate and sustain PTES during the ICS period.
- d. The PTES Contractor shall provide sufficient staffing to support operations and maintenance of PTES during the ICS period.
- e. PTES Contractor shall maintain a Government PTES Program Office-approved operational baseline for PTES for supporting anomaly resolution during the ICS period.
- f. The PTES Contractor shall establish a process, during the ICS period, to allow the Government PTES Program Office visibility into individual item repair costs and to seek Government PTES Program Office approval for instances where the cost exceeds 75% of estimated replacement cost or \$25,000.
- g. The PTES Contractor shall establish and maintain a failure tracking and investigation program during the ICS period and incorporate the findings into Hardware Failure Reporting. [F116]
- h. The PTES Contractor shall maintain a Bill of Materials (BOM) needed to fabricate, assemble and integrate PTES. [F065]
- i. The PTES Contractor shall maintain approved controlled segment and facility drawings and wiring diagrams. [F064]

- j. The PTES Contractor shall maintain a PTES Site As-Built Configuration List. The PTES Contractor shall plan for the logistics support during the transition to operations and the turnover (DD Form 250) to sustainment. (DAL submission) [F004]
- k. The PTES Contractor shall ensure compliance with Information Assurance and Program Protection requirements during the ICS period.
- l. The PTES Contractor shall identify and implement efficiencies and process improvements, during the ICS period, that will reduce the cost to operate and sustain the system.

1.1.1.1.1 Help Desk Support

- b. The PTES Contractor shall provide 24 hour per day on call support.
 - 1. The PTES Contractor shall respond to calls within 30 minutes.
- c. Following IOC, the PTES Contractor shall provide onsite support at the PATSOC.
 - 1. Onsite support shall include 8 hours per day, 5 days per week for the first year.

1.1.1.1.2 COTS Hardware Interim Contractor Support

This section applies to Commercial-Of-The-Shelf (COTS) Hardware Interim Contractor Support.

- a. The PTES Contractor shall maintain all PTES COTS hardware during the ICS period, including updating manuals and training materials to reflect actual operational use, investigating and correcting issues that arise during testing and pre-operations, supporting teleconferences and meetings, traveling to support the investigation and correction of issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support.
- b. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports.
- c. The PTES Contractor shall perform maintenance data collection and documentation per Hardware Failure Reporting. [F116]
- d. The PTES Contractor shall perform organizational and depot level spares and hardware support, maintenance and repair and facilitate transition to government depot sustainment.
- e. The PTES Contractor shall disposition Deficiency Reports (DR) discovered during the ICS period consistent with the DR definitions in Technical Order (TO) 0035D-54a:
 - 1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed;
 - 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
- f. The PTES Contractor shall develop a sparing concept to provide spares at sufficient levels to avoid critically impacting mission accomplishment or system and mission level requirements.
- g. The PTES Contractor shall perform, as-needed, PTES hardware upgrade development, integration and test during the ICS period.
- h. The PTES Contractor shall perform spares repair and testing and facilitate transition to O&M contract and government depot sustainment.

- i. The PTES Contractor shall perform all preventive or scheduled tasks required to maintain PTES during the ICS period.

1.1.1.1.3 Custom Hardware Interim Contractor Support

This section applies to Custom Hardware Interim Contractor Support.

- a. The PTES Contractor shall maintain all PTES Custom hardware during the ICS period, including updating manuals and training materials to reflect actual operational use, investigating and correcting issues that arise during testing and pre-operations, supporting teleconferences and meetings, traveling to support the investigation and correction of issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support.
- b. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports. (DAL submission) [F004]
- c. The PTES Contractor shall perform maintenance data collection and documentation per Hardware Failure Reporting. [F116]
- d. The PTES Contractor shall perform organizational and depot level spares and hardware support, maintenance and repair and facilitate transition to O&M contract and government depot sustainment.
- e. The PTES Contractor shall disposition DRs discovered during the ICS period consistent with the Deficiency Report (DR) definitions in Technical Order (TO) 0035D-54a:
 1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed;
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
- f. The PTES Contractor shall develop a sparing concept to provide spares at sufficient levels to avoid critically impacting mission accomplishment or system and mission level requirements.
- g. The PTES Contractor shall perform, as-needed, PTES hardware upgrade development, integration and test during the ICS period.
- h. The PTES Contractor shall perform spares repair and testing.
- i. The PTES Contractor shall perform all preventive or scheduled tasks required to maintain PTES during the ICS period.

1.1.1.1.4 Joint Hub/ECU Software (Firmware) Interim Contractor Support

This section applies to PTES Software (Firmware) Interim Contractor Support for the Joint Hub and ECU (for the KMS and Joint Hub).

- a. The PTES Contractor shall collect and analyze all Joint Hub and ECU (for the KMS and Joint Hub) software problems that occur during the contract period of performance and report failures. (DAL submission) [F004]
- b. The PTES Contractor shall disposition DRs discovered during the ICS period consistent with the DR definitions in Technical Order (TO) 0035D-54a:

1. All Category I Emergency or Urgent and Category II Urgent DRs shall be closed for test completion;
 2. All Category II Routine DRs shall be documented in a prioritized list for Government PTES Program Office authorization and closure.
- c. The PTES Contractor shall develop and maintain a plan for restoring PTES to a fully functional condition following an outage of Joint Hub and ECU (for the KMS and Joint Hub) software.
 - d. The PTES Contractor shall maintain the PTES Joint Hub and ECU (for the KMS and Joint Hub) software throughout the ICS period and facilitate transition to depot support, including: updating manuals and training materials to reflect actual operational use investigating and correcting issues that arise during testing and pre- operations, supporting teleconferences and meetings, traveling to support the investigation and correction of problems or issues found during testing and if corrections are made, conducting regression testing and reporting on them and other tasking under life cycle support. [F063], [F110], [F112], [F116]
 - e. The PTES Contractor shall provide engineering support to develop, analyze and correct and track identified Problem Reports/Discrepancy Reports.
 - f. The PTES Contractor shall perform PTES Joint Hub and ECU (for the KMS and Joint Hub) software upgrade development, integration and test during the ICS period.

1.2 Spares

The PTES Contractor shall provide spares, materials and support equipment for support through FOC plus 12 months and facilitate transition to O&M contract and government depot sustainment.

1 CLIN 0007 (Option): Protected Tactical Enterprise Service (PTES) – Priced Training and Technical Orders Option

CLIN 0007 is a priced option that addresses additional training and technical documentation requirements for military personnel in the event military personnel are required to operate the PTES system.

1.1 Training

- a. The PTES Contractor shall design the PTES system to facilitate ease of training and system operation while reducing training costs and time IAW MIL-PRF-29612B (Training Data Products).
 1. The PTES Contractor shall include proficiency training for testing, individual and crew training, maintenance and support personnel training, initial and unit qualification training.
 2. The PTES Contractor shall develop and deliver the following:
 - i. Training Situation Document [G120]
 - ii. Instructional Media Design Package [G121]
 - iii. Training Conduct Support Package [G122]
 - iv. Test Package [G123]
 - v. Training System Support Document [G124]
 - vi. Instructional Performance Requirements Document [G125]
 - vii. Instructional Media Requirements Document [G126]
 - viii. Training Program Structure Document [G127]
 - ix. Course Conduct Information Package [G128]
 - x. Training Evaluation Document [G129]
 - xi. Instructional Media Package [G130]
- b. Using the Instructional Systems Development (ISD) process, the PTES Contractor shall produce a fully functional training system functionally separate from the operational management system or Joint Hubs.
- c. Operator Training
 1. The PTES Contractor shall include in the training system Contract Special Training (Type 1) to train test agency personnel, initial PTES operators and relevant trainers
- d. Technical Order Certification
 1. Before the start of Type 1 training, the PTES Contractor shall provide Technical Orders which have completed the Air Force Technical Order certification process (TO-00-5-Technical Order System).
- e. Operational Test Training
 1. The PTES Contractor shall provide Type 1 training prior to start of Operational Test & Evaluation (OT&E) events.

f. Cost-efficient Training

1. The PTES Contractor shall tailor the Type 1 training course(s) to meet the learning objectives of each duty position using training media, as determined by the AF ISD process.

g. Training Material Format

1. The PTES Contractor shall deliver Type 1 training course material in electronically modifiable format to applicable AFSPC units no later than thirty (30) calendar days (CD) after the completion of Type 1 training.

1.2 Technical Orders (TOs)

a. The PTES Contractor shall provide technical manual management, technical and analytical support for PTES technical manual (TMs) program.

1. The catalog of PTES TMs shall include both traditional paper publications and emerging levels of electronic TMs.
2. In order to accomplish the scope of work, the PTES Contractor shall have the expertise and ability (personnel, equipment and facilities) to furnish the required support and products

b. Management Support

1. The PTES Contractor shall analyze new and existing program requirements and engineering changes; estimate support requirements, coordinate, integrate and implement numerous tasks related to the acquisition, quality assurance, distribution, change control and integration of multi-format technical data as one (1) of the elements of Integrated Product Support.

c. Technical Manual Preparation and Publishing

1. The PTES Contractor shall include types of technical manuals, but are not limited to, those listed in the TMCR-86-01P (Air Force Technical Manual Contract Requirements (TMCR)).
2. The PTES Contractor shall prepare and update technical manuals (TMs) under the cognizance of the PTES designated technical manual management activity/activities.
 - i. The PTES Contractor shall develop, update and deliver Standard Technical Manual. [G131]
 - ii. Integrated Electronic Technical Manuals (IETMS). [G132]
3. The PTES Contractor shall incorporate technical manual source data and perform research and original writing.
4. In order to accomplish the scope of work, the PTES Contractor shall have the expertise and ability (personnel, equipment and facilities) to furnish the required services and products of the PTES technical manual program as specified.

1 CLIN 0008 (Option): Protected Tactical Enterprise (PTES) -- Special Studies

CLIN 0008 includes special studies to be conducted by the Contractor as determined by the Government PTES Program Office. This CLIN may be exercised during the contract period of performance. A separate Statement of Work (SOW) will be issued for each special study. The PTES Contractor shall provide a cost estimate based on the GSOW. The Government PTES Program Office will review the PTES Contractor proposal and place it on contract as appropriate.

1.1 Special Study Requirements

The Government PTES Program Office shall have the right to acquire special studies within the scope of the PATS Concept of Operations to evaluate new and existing requirements and issues during the period of performance of this contract.

- a. A "fully burdened labor hour" is defined as a unit of effort with a corresponding price used by the Contractor to propose technical activities pursuant to this contract that is inclusive of all costs associated with Contractor and Subcontractor technical and engineering labor, administrative assistant and secretarial labor, and labor expended by the Program Manager and other direct charge management personnel, material, travel, Other Direct Costs, General and Administrative (if applicable), and Facilities Capital Cost of Money.
- b. The process to request Special Studies is as follows:
 1. The PTES Procuring Contracting Officer (PCO) shall issue a letter to the Contractor containing a Task Statement or separate Government Statement of Work (SOW) for each technical study, which will include a description of the support requirements and objectives. Upon receipt, the PTES Contractor shall submit to the Government PTES Program Office, a proposal that shall include, at a minimum, a proposed Contractor SOW, schedule, description of how the PTES Contractor will accomplish the task, the number of fully burdened labor hours required for the special study, and the period of performance. The Government PTES Program Office will evaluate the proposal for technical acceptability.
 2. Each special study to be performed in accordance with CLIN 0008 shall be executed via a unilateral modification to the contract by the PTES PCO, using Standard Form 30 (SF 30). Each modification is subject to the terms and conditions of this contract. Such modifications shall:
 - i. Establish a contract subline item under CLIN 0008 Special Studies and make appropriate changes to other sections of the contract (inclusive of attachments and exhibits);
 - ii. Establish a period of performance for the special study;
 - iii. Establish delivery requirements, e.g. final reports, CDRL delivery;
 - iv. Incorporate the SOW for each Special Study into Section J, Attachment 13; and
 - v. Obligate the appropriate amount of funds, calculated by utilizing the applicable fully burdened labor hour rate plus fixed fee per hour as specified in the table below multiplied by the quantity of hours, and/or state that additional funding will be available pursuant to FAR 52.232-22 -- Limitation of Funds, if necessary.
 3. SF 30 signature or commencement of work by the PTES Contractor shall constitute agreement to all of the terms of the modification and agreement that such effort is within the scope of the contract.

4. The PTES Contractor shall notify the PTES PCO whenever additional hours beyond those authorized in the modification will be required for completion using the notification standards identified in the contract's clause, FAR 52.232.20, Limitation of Cost. If additional hours are required, and approved by the Government PTES Program Office, they will be added by bilateral modification and shall not be fee bearing unless the Government PTES Program Office has directed a change in writing requiring additional time and/or effort to complete the study.
5. The estimated fully burdened labor hours for Special Studies (CLIN 0008) over the contract PoP is 42,000 hours.
6. The PTES Contractor shall perform the effort using the agreed to amounts in the table below based upon the Government Fiscal Year (GFY) in which the work commences.

Period (GFY)	Fully Burdened Labor Hour Rate	Fixed Fee Per Hour	Total Cost Plus Fixed Fee Per Hour
GFY18			
GFY19			
GFY20			
GFY21			
GFY22			
GFY23			
GFY24			
GFY25			
GFY26			

*Fixed Fee per Hour shall not exceed ___% of Fully Burdened Labor Hour Rate

7. The PTES Contractor shall segregate all costs associated with Special Studies subcontract line items from the costs associated with all other CLINs.
8. The Government PTES Program Office is not obligated to order any minimum number of special study hours.

Appendix A – Agile Product Management

1. Planning

- a. For Software Builds 1-8, the PTES Contractor shall staff a minimum of [TBP-1] and maximum of [TBP-2] Agile software development teams with a minimum of [TBP-3] and maximum of [TBP-4] personnel on each team consistent with the best practices of Agile project management. (PTES Contractor propose range for number of teams and personnel in CSOW)
 1. The PTES Contractor shall manage the size of the Agile software development teams to complete work content and maintain quality of the work in a consistent, responsive manner from Sprint to Sprint, Build to Build.
 2. The PTES Contractor shall not change the number of Agile software development teams and personnel of each team outside the range of the CSOW without prior written approval of the Government PTES Procurement Contracting Officer (PCO).
 - i. PTES Contractor requests for changes in software development team composition outside the range provided in CSOW shall be documented with supporting rationale.
- b. The PTES Contractor shall create and maintain Product Roadmaps, Product Backlog and Sprint Backlog as the basis for the Contractor’s work.
- c. The PTES Contractor shall ensure all technical and management data that are required deliverables and by-products of the Agile processes and related activities are available in the secure IDE consistent with paragraph 1.1.1.1.b, including, but not limited to:
 1. Sprint Backlog
 2. Tasks to be completed to fulfill the “Definition of Done”
 3. Code quality review results
 4. Defect database
 5. Successfully completed acceptance criteria
 6. Standard Contractor compliance documentation, including, but not limited to: organization process and product standards, peer review standards by type, process and product base measures and indicators
- d. The PTES Contractor shall make accessible the current version plus its historical predecessors in the IDE.
- e. The PTES Contractor shall configuration manage all documents that are placed in the IDE.
- f. The PTES Contractor shall use Government PTES Program Office approved data storage formats for all objects placed in the IDE.
 1. The PTES Contractor shall propose recommended formats for Government PTES Program approval.

1.1. Contractor Roles and Responsibilities

1.1.1. Product Manager

- a. The PTES Contractor shall provide personnel with Agile project management and system experience to fill the Product Manager position.
 1. The Government PTES Program Office reserves the right to approve the PTES Contractor provided Product Manager.
- b. Product Manager shall develop and propose Product Backlogs and priorities in collaboration with the Government PTES Program Office.
- c. The Product Manager shall be responsible for managing the Product Owners in collaboration with the Government PTES Program Office to define measurable and testable Acceptance Criteria in the STP for the completion, test, and acceptance of Features. [A014], [B014], [C014]

1.1.2. Product Owners

- a. The PTES Contractor shall provide personnel with Agile project management and system experience to fill the Product Owner position.
- b. The Product Owners shall be responsible for collaborating with the teams and the Government PTES Program Office to define measurable and testable Acceptance Criteria in the STP for the completion of User Stories. [A014], [B014], [C014]
- c. The Product Owners shall attend all meetings with their software development teams.
- d. Product Owners shall be responsible for the Sprint Backlogs for their software development teams.
- e. The Product Owners shall be responsible for all Sprint reviews and demonstrations as described in the SDP.

1.1.3. Team Leads

- a. The Team Lead shall be accountable for identifying and removing impediments that could prevent the team from completing their deliverables and keep the team focused on the task at hand as described in the SDP.

1.2. Product Roadmap

1.2.1. Building Product Roadmap

- a. The PTES Contractor shall work in collaboration with the Government PTES Program Office to create a Product Roadmap that divides the work into iterative Sprints for the PTES system and segments.
- b. The PTES Contractor shall create the Product Roadmap for developing the PTES system and segments for IOC and FOC delivery that is consistent with the PTES Capability Development Document (CDD), and IAW PTES Technical Requirements Documents (TRD), internal and external ICDs, and Protected Anti-jam Tactical Satellite Communications (PATS) Concept of Operations (CONOP).
- c. The PTES Contractor shall ensure the Product Roadmap identifies and coordinates all PTES system dependencies with all other segments (internal and external).
- d. The PTES Contractor shall ensure the Product Roadmap is consistent with the IMS at every phase of development.

1. The PTES Contractor shall manage the critical path based on system-level critical path analysis.
 2. The PTES Contractor shall update the IMS with current build features from each team upon completion of Build Decision Review (BDR).
 3. The PTES Contractor shall conduct dependency analysis and manage dependencies between the software teams.
- e. The PTES Contractor shall provide the initial Product Roadmap to the Government PTES Program Office for review and approval at the BDR 1.

1.2.2. Maintaining Product Roadmap

- a. The PTES Contractor shall work in collaboration with the Government PTES Program Office to maintain the Product Roadmap.
- b. The PTES Contractor shall identify the Product Roadmap changes and provide documented justification to the Government PTES Program Office, deposit it in the Contractor's secure IDE within three (3) business days, and update the DAL. (DAL submission). [A004], [B004], [C004], [F004]
- c. The PTES Contractor shall implement the updated Product Roadmap upon Government PTES Program Office approval.
- d. The PTES Contractor shall provide the current Product Roadmap to the Government PTES Program Office for review and approval at each BDR.

1.3. Product Backlog

1.3.1. Building Product Backlog

- a. The PTES Contractor shall work with the Government PTES Program Office and create a Product Backlog.
 1. The PTES Contractor shall document the system and segment Capabilities, Features, Non-functional requirements, User Stories, defects, and enhancements in the Product Backlog. [A024], [B024], [C024]
 2. The PTES Contractor shall prioritize the Product Backlog.
- b. The PTES Contractor shall provide the initial prioritized Product Backlog to the Government PTES Program Office for review and approval at the BDR 1.
 1. The PTES Contractor shall implement changes directed by the Government PTES Program Office with respect to the priority or content of Features.
 2. The PTES Contractor shall revise the Product Backlog and Product Roadmap based on the Government PTES Program Office directed changes prior to each Sprint.
 3. The Product Backlog shall be approved by the Government PTES Program Manager or designee at every BDR. Once approved, the PTES Contractor shall deposit it into the Contractor's secure IDE, and update the DAL. (DAL submission) [A004], [B004], [C004], [F004]

1.3.2. Maintaining Product Backlog

- a. The PTES Contractor shall work in collaboration with the Government PTES Program Office to maintain a Product Backlog.
- b. The PTES Contractor shall identify Product Backlog changes and provide documented justification to the Government PTES Program Office within three (3) business days.
- c. The PTES Contractor shall implement the updated Product Backlog upon Government PTES Program Office approval.
 1. The PTES Contractor shall build Sprint Backlogs and conduct software development based on the priority order of the Product Backlog.
 2. The PTES Contractor shall revise the Product Backlog and Product Roadmap prior to each Sprint according to the Government PTES Program Office priority.
 3. For each change to the Product Backlog, the PTES Contractor shall submit the change to the Government PTES Program Manager or designee for approval. Once approved, the PTES Contractor shall deposit it into the Contractor's secure IDE, and update the DAL. (DAL submission) [A004], [B004], [C004], [F004]

1.3.3. Tracking Product Backlog Progress

- a. The PTES Contractor shall track and report progress by recording when each Feature is completed and approved by the Government PTES Program Office according to the 'Definition of Done' and metrics (see Appendix A, Section 2.1.8).
- b. Risk Reduction Testing (RRT) is an LDTO-led test held after an RRD to validate the integrated PTES system meets PTES TRD requirements and features completed up to and including the RRD in an operationally realistic environment using operationally relevant procedures.

1.4. Training on Processes, Tools and Databases

- a. The PTES Contractor shall conduct training for the software development teams, management teams, Government PTES Program Office and subcontractors on the PTES Contractor's Agile processes, tools and databases.

1.4.1. Time Frames for Sprints

- a. The Contractor shall ensure that each Build includes:
 1. A Sprint 0 (Sprint planning for the Build) to develop the planning, Sprint Backlogs and Product Roadmap for the Build.
 2. Structure development into time-boxed Sprints (all the same duration), including: one (1) planning Sprint (Sprint 0) and [TBP-5 (number of Sprints)] Sprints, [TBP-6 (duration of each Sprint)] weeks long, to design, code and test new capabilities to be demonstrated (virtually) at the end of each Sprint. (PTES Contractor propose in the CSOW, duration (two to four weeks) and number of Sprints to support a 9 month Build)

1.4.2. Measurements

- a. The PTES Contractor shall collect and report measurement data, IAW the Software and System Measurement Plan (SSMP) in the SDP, to the Government PTES Program Office in the Software and System Measurement Report (SSMR), at a minimum to include: [A021], [B021], [C021]

1. Software Size
 - i. Delivered Source Lines of Code (DSLOC) vs. SLOC estimated (From Proposal)
 - ii. Total Cumulative Product Backlog Items (total/open/completed)
 - iii. Total source lines of application code in Software Item (SI)
 - iv. Total number of reuse SIs
2. Software Development Effort.
 - i. Sprint Velocity (Predictable Delivery Flow)
 - ii. Total Story Points Committed and Completed for a Sprint (planned/actual)
3. Software Development Schedule and Progress
 - i. Release Burn-up Chart
 - ii. Number of User Stories accepted
4. Software Development Staffing and Turnover
 - i. Staffing FTE planned vs actual
 - ii. Staffing turnover by personnel type
5. Development Process Performance
 - i. Deployment Speed (length of time to build and install system on Defense Information Systems Agency (DISA) environment)
 - ii. Automated Unit and Integration Deployment Coverage (percentage of automated test and percentage of code covered)
6. Software Quality
 - i. Defects over Time
 - ii. Defects discovery rate by test type (e.g., automated, manual, demo, regression)
 - iii. Defects in Product Backlog
 - iv. Defects by development phase (when discovered)
 - v. System performance before and after deployment of new capabilities
 - vi. Peer Reviews (Planned vs Actual)
 - vii. Defect aging by type (NFR, user story enhancement, rework ...)
7. Technical Performance Measures (TPM) (see paragraph 1.1.1.9)
 - i. Achievement of Technical Performance Measures for Cumulative Completed Backlog Items

1.4.3. Meetings

- a. The PTES Contractor shall facilitate Government PTES Program Office participation in all meetings associated with the Agile project management process.
- b. The PTES Contractor shall issue an invitation to the Government PTES Program Office at least five business days prior to the meeting.
- c. Table A-1 outlines Government PTES Program Office participation at Agile meetings.

Table A-1. Government PTES Program Office (or Designee) Participation at Agile Meetings

Meeting	Invited	Required	Chair	Facilitator
Build Decision Reviews (BDRs)	X	X	Government	Contractor
Contractor Configuration Control Board (CCB) for Product Backlog changes	X	X	Contractor chair with Government approval of the Product Backlog	Contractor
Sprint 0 Review	X	X	Contractor	Contractor
Sprint Planning	X		Contractor	Contractor
Daily Team Standups	X		Team Lead	Contractor
Sprint Reviews	X		Product Owner	Contractor
Sprint Demonstrations (virtual)	X	X **	Product Owner	Contractor
System Demonstrations	X	X	Contractor	Contractor
Team of Team Meetings	X		Contractor	Contractor
Sprint Retrospective	*		Contractor	Contractor
Product Backlog Grooming	X		Contractor	Contractor
Defect Reviews	X***		Contractor	Contractor

Notes:

* Government PTES Program Office to attend at Contractors' request, if needed to correct problems.

** Government PTES Program Office will identify those demonstrations that require Government PTES Program Office attendance.

*** The Government PTES Program Office reserves the right to require Government participation for specific defect reviews.

2. Development and Test

2.1. Sprints

- a. The PTES Contractor shall conduct a Sprint Planning Session (Sprint 0).
- b. The PTES Contractor shall ensure changes that impact the Product Roadmap are communicated to the Government PTES Program Office.
- c. The PTES Contractor shall maintain the Sprint Backlog that is decomposed into User Stories for the team to accomplish during the Sprint. (DAL submission) [A004], [B004], [C004], [F004]

2.1.1. Sprint 0

- a. The PTES Contractor shall provide the following information by Sprint to the Government PTES Program Office for concurrence:
1. Sprint team(s) staffing assigned to User Stories
 2. Sprint Backlog story point estimate
 3. User Stories selected for each team traced to the prioritized Product Backlog
 4. Planned Story Points and Sprint velocity of each team
 5. Planned integration events and associated demonstrations
 6. User Story planning is complete.
 - i. The PTES Contractor shall use the criteria in Table A-2 to demonstrate the User Story Planning is complete.

Table A-2. User Story Definition of Ready Criteria

Written correctly in the format of “As a <type of user>, I want <to perform some task> so that I can <achieve some goal/benefit/value>.”
User Story has a measurable estimate of effort (i.e., story points)
Each User Story has defined test descriptions to verify correct operation <ul style="list-style-type: none"> • Includes acceptance criteria in the STP for possible outcomes • Test descriptions must evaluate failure cases as well as common weaknesses defined in MITRE’s Common Weakness Enumeration (CWE) at cwe.mitre.org • Failure scenarios and associated recoveries are described
Data and data sources needed to design, build and test the User Story are defined
Needed user information and feedback to aid in designing and testing of the User Story are available
Non-functional requirements (NFR), dependencies with other User Stories and system integration requirements and interfaces needed to perform the User Story are identified
No external dependencies will block the User Stories from being completed
Possible cybersecurity attack path and appropriate common weakness (check against CWE and National Institute of Standards and Technology (NIST) National Vulnerability Database that documents Common Vulnerabilities and Exposures (CVE)) are identified by automated scripts.
User story has traceability to the TRD, System/Subsystem Specification (SSS), and Use Case Activity Diagram.

2.1.2. User Story Definition of Done

- a. The PTES Contractor shall use the Definition of Done criteria in Table A-3 to demonstrate that a User Story was successfully completed.

- b. The PTES Contractor shall develop and define all User Stories for a Sprint for Product Owner approval.

Table A-3. User Story Definition of Done

Architecture and detailed design reviewed
Coding complete: secure coding standard, code commented, CM check in, peer reviewed
Unit and subsystem test scripts coded, peer reviewed, and included in integration & test environment.
End-user documentation updated
Non-functional requirements (NFR) met
Testing passed (automated): unit, cumulative, integration, regression, DISA Core Data Centers (CDC), etc.
Document all known defects for Government PTES Program Office review
Sprint artifacts in IDE updated
User story satisfies acceptance criteria in the STP
User story accepted by Product Owner
Each failure detection and recovery scenario identified in the user story has been successfully tested and accepted by the Product Owner

2.1.3. Team of Teams Meetings

- a. The PTES Contractor shall conduct Team of Teams coordination meetings, document and discuss common issues or requirements, and manage cross-team dependencies.
- b. The Team of Teams meeting may be attended in-person or virtually by the Government PTES Program Manager or designee.

2.1.4. Coding

- a. The PTES Contractor shall make the Peer review records available for review. (DAL submission) [A004], [B004], [C004], [F004]
- b. The PTES Contractor shall track the progress through steps specified in the Software Development Plan (SDP). (DAL submission) [A004], [B004], [C004], [F004]
- c. The PTES Contractor shall utilize automated configuration management of code and make records available. (DAL submission) [A004], [B004], [C004], [F004]

2.1.5. Integration and Test

- a. The PTES Contractor shall automate test scripts.
- b. The PTES Contractor shall perform the following test activities and make records available in the IDE:
1. Unit Tests

- i. Test procedures
 - ii. Test data
 - iii. Test scripts
 - iv. Test results
2. Security, Quality and Coverage Code Scans
 - i. Scan configuration
 - ii. Scan results
3. Unit Integration Tests
 - i. Test procedures
 - ii. Test data
 - iii. Test scripts
 - iv. Test results
4. Intra-segment Integration Tests
 - i. Test procedures
 - ii. Test data
 - iii. Test scripts
 - iv. Test results
5. Robustness Tests may include
 - i. Stress Tests
 - ii. Performance Tests
 - iii. Stability Tests
 - iv. Failure and Recovery Tests
6. Inter-segment Integration Tests IAW System Integration and Test Plan (SITP), System Test Descriptions. [A005], [B005], [C005]

2.1.6. Deploy

- a. The PTES Contractor shall automate deployment scripts for software builds intended for the DISA CDC environment.
 1. The PTES Contractor shall maintain configuration control of the deployment scripts in the IDE.
 2. The PTES Contractor shall maintain a record of the deployment logs in the IDE.

- b. The PTES Contractor shall deploy all working software onto the Government's Integration, Demonstration & Test, and Training environment (DISA CDC) at the end of each Sprint for the Sprint Demonstration (virtual).
- c. The PTES Contractor shall deliver software for Sprint Demonstration that conform to Cybersecurity (STIGs and monitoring) and other security requirements released in the last quarter.

2.1.7. Demonstration/Sprint Review

- a. The PTES Contractor shall demonstrate the functional software developed during the Sprint on the Government's Integration, Demonstration & Test, and Training environment (DISA CDC) at the end of each Sprint.
 1. The PTES Contractor shall conduct automated demonstrations.
 2. The PTES Contractor shall conduct a System Demonstration of the integrated system every two months and shall coincide with the PMR held at the PTES Contractor facility.
- b. The PTES Contractor shall conduct Sprint Reviews for all Sprint teams at the end of each Sprint:
 1. Demonstrate all User Stories that were successfully completed for that Sprint IAW the Sprint Definition of Done – see Table A-4.
 2. Evaluate whether the working software meets the Sprint Definition of Done by reviewing documentation from User Stories, acceptance criteria in the STP, tasks to be completed, code quality and standards compliance. [A014], [B014], [C014]
 3. Document and discuss incomplete functional task dependencies, risks and associated mitigation.
 4. Briefly introduce assigned User Stories for the next Sprint and known dependencies, risks, or associated mitigations for those User Stories.

2.1.8. Sprint Definition of Done

- a. The Product Owner shall verify that the Sprint Definition of Done for each Sprint has been met using the criteria in Table A-4.

Table A-4. Sprint Definition of Done

Code checked into current version in source control (configuration management)
Code has been peer reviewed (internally) and meets development standards
Code and comments shall be easy to read and understand without the need of extra documentation as peer reviewed
Code builds without errors* <<errors to be defined based on severity with respect to language and compiler>>
Code passes Unit tests (test descriptions described in STP)
<ul style="list-style-type: none"> • Test scripts written and automated test developed

<ul style="list-style-type: none"> Results presented against User Story acceptance criteria in the STP
Security vulnerabilities have been identified and resolved in the code
Code Scans performed for static code analysis and compliance to STIGs
Critical findings in possible cybersecurity attack path and appropriate common weakness (check against CWE and National Institute of Standards and Technology (NIST) National Vulnerability Database that documents Common Vulnerabilities and Exposures (CVE)) are adjudicated
Report progress made toward getting PTES ready for RMF certification with this build by identifying and mapping the RMF controls to the new capabilities in the build
Code meets system integration requirements and passed system tests
Code is deployed to hosting environment using automated scripts
Relevant documentation and diagrams have been produced and updated
User manuals, on-line help and training material acceptable to the Product Owner
Functions of the User Story are demonstrated to the Product Owner on an operational representative environment, to include: <ul style="list-style-type: none"> All defects found or reported are non-critical All defects are documented and added to the Product Backlog The user interfaces have been demonstrated to the Product Owner
Accepted by the Product Owner

- b. The PTES Contractor shall use the Feature Definition of Done criteria in Table A-5 to demonstrate that a Feature was successfully completed at the relevant Sprint review.

Table A-5. Feature Definition of Done

User stories completed by all teams for the Feature are CM controlled and integrated
Build and integration complete in DISA CDC Integration, Demonstration& Test, and Training environment
Testing passed (automated): cumulative, integration, regression, STIGs, etc.
NFRs met
User Stories which map to the Features IAW the RTM met their acceptance criteria in the STP
Zero known must fix defects
Verification and validation of Use Cases
Increment included in Build definition and deployment process
Increment demonstrated; feedback incorporated

Increment artifacts in IDE and DAL updated
Accepted by Product Owner and approved by the Government PTES Program Office
Features satisfies its Acceptance Criteria in the STP

- c. The PTES Contractor shall use the Definition of Done criteria in Table A-6 to demonstrate that Builds are successfully completed.

Table A-6. Build Definition of Done

User stories completed by all teams for the Build are CM controlled and integrated
All standards met
Build and integration complete in DISA CDC Integration, Demonstration & Test, and Training environment
Testing passed (automated): cumulative, integration, regression, STIGs, etc.
NFRs met
System end-to-end integration is complete
Zero known must-fix defects
Build included in Build definition, deployment and transition process
End User Documentation updated
Build artifacts in IDE and DAL updated
Build demonstrated; feedback incorporated
Accepted by the Product Manager with Government PTES Program Manager approval

- d. The PTES Contractor shall use the Definition of Done criteria in Table A-7 to demonstrate that the Release is complete.

Table A-7. Release Definition of Done

User stories completed by all teams for the Release are CM controlled and integrated
All standards met
Build and integration complete in DISA CDC Operational environment
Testing passed (automated): cumulative, integration, regression, STIGs, etc.
DT and OT recommendation to release software to the field
NFRs met
Zero known must-fix defects

Release Documentation complete
Accepted by the Program Manager with Government PTES Program Manager approval

2.1.9. Sprint Retrospective

- a. The PTES Contractor shall conduct Sprint Retrospective meetings at the end of each Sprint. During the Sprint Retrospective, each team reflects on what happened in the Sprint and identifies actions to improve processes and practices going forward.
- b. The PTES Contractor shall submit changes to the Software Development Plan (SDP) using redline changes. [A010], [B010], [C010]

3. Build Decision Review (BDR)

3.1. Conduct

- a. The PTES Contractor shall conduct a Build Decision Review (BDR) prior to each Build starting with Build 1. The Government PTES Program Office shall assess the PTES Contractor’s current progress and readiness to enter the next Build.
 - 1. The PTES Contractor shall meet all requirements outlined in the BDR Entrance/Exit criteria (see Tables A-8).
 - 2. The PTES Contractor shall propose a revised Product Roadmap, Prioritized Product Backlog, revised schedule, changes to the Architecture and associated risks.
 - 3. The PTES Contractor shall provide a Design Review Information Package (DRIP) that addresses Technical Review and Audit requirements contained in IEEE 15288.2 (Technical Reviews and Audits on Defense Programs) (tailored), one (1) month prior to the BDR. [A008], [B008], [C008]

3.2. Entrance/Exit Criteria

See Table A-8 below.

Table A-8. Build Decision Review Entrance/Exit Criteria

Build Decision Review - 1	
Purpose: This review is conducted to ensure entry and exit criteria are met and the PTES Contractor can produce a product within program budget, schedule, risk and other program and system constraints.	
Entrance Criteria	Exit Criteria
Software requirements and Features are defined	
Completed System Functional Review (SFR)	
Operational Concept Description (OCD) [A002], [B002], [C002]	Approved Product Roadmap
Software Architecture Description (SAD) [A011], [B011], [C011]	Approved and Prioritized Product Backlog

Configuration Design -- Interface Control Document (ICD) -- Database Design Description (DBDD) [A012], [B012], [C012]	Approved Software Architecture Description (SAD)
Product Roadmap	Approved SDP, DBDD, Metrics
Established Development; Integration & Test, Demonstration Environments	Approved staffing plan
Software Development Plan [A010], [B010], [C010]	Approved Build 1 Features
Proposed Staffing Plan with Team Structure (DAL) [A004], [B004], [C004], [F004]	Approved Build 1 test plan
Proposed Metrics (SSMP in SDP)	Approved test description and script template
Agile process training completed	Government approval to proceed to Build 1
Test planning to include VCRM and RTM completed [A014], [B014], [C014]	
Updated RVP [A005], [B005], [C005] for compliance	
Identify when User involvement is needed	
Product Backlog with recommended prioritization	
Program Protection Implementation Plan [A046], [B046], [C046]	
Software Risk Review	

Build Decision Reviews - 2 thru 8

Purpose: This review is conducted to ensure entry and exit criteria are met and the PTES Contractor can produce a product within program budget, schedule, risk and other program and system constraints.

Entrance Criteria	Exit Criteria
Demonstration and Test Results from previous Build	Approved updated Product Roadmap
Defects and Technical Debts (Anomalies, Deficiencies, Technical Issues and Resolutions)	Approved and Prioritized Product Backlog
Current Product Backlog with recommended prioritization	Approved updated Software Architecture Description (SAD)
Agile Measurements	Approved updated SDP, DBDD, Measurements
Updated Product Roadmap	Approved updated staffing plan
Lessons Learned (User Interaction, Demo and Test Process) from previous Build	Approved Build Features
Updated Staffing Plan with Team Structure including training records (DAL) [A004], [B004], [C004], [F004]	Approved Build test plan

Updated Test Plan to include VCRM and RTM [A014], [B014], [C014]	Government approval to proceed to next Build
Updated RVP [A005], [B005], [C005] as applicable for compliance	
Identify when User involvement is needed	
Identify satellite and external system resource needs	
Current Quarterly STIG, Original Equipment Manufacturer (OEM), OSS Status Report (DAL) [A004], [B004], [C004], [F004]	
Software Risk Review	
Established Operational Environment (BDR-4 only)	
Review MMS, KMS, and KLIF VCRMs	

4. Builds and Releases

4.1. Document

- a. The PTES Contractor shall ensure all Build and Release documentation is current in the IDE.

4.2. Test

- a. The PTES Contractor shall verify the planned and approved system capabilities, Features and User Stories have been met and submitted via test report. [A016], [B016], [C016]
- b. The PTES Contractor shall conduct Use Case tests and functional testing (e.g., nominal and off-nominal) in preparation for Government test events and deployments.
- c. The PTES Contractor shall conduct stress tests; security validation; disaster, fail-over and recovery testing in preparation for Government test events and deployments.
- d. The PTES Contractor shall conduct software tests with automated testing.
 1. The PTES Contractor shall define a waiver process for approving manual software tests in the SDP. [A010], [B010], [C010]

4.3. Deploy

- a. The PTES Contractor shall prepare and deploy the Build onto the Integration, Test and Demonstration environment for Government testing.
- b. The PTES Contractor shall prepare and support the deployment of Releases onto the Operational environment.
 1. The PTES Contractor shall develop and document a software deployment plan. [A023], [B023], [C023]
 2. The PTES Contractor shall develop, document, and test a software rollback plan. [A023], [B023], [C023]

4.4. Software Support for Government Tests

- a. The PTES Contractor shall support Government Risk Reduction Testing (RRT).
- b. The PTES Contractor shall support Government Developmental Test and Evaluation (DT&E).
- c. The PTES Contractor shall support Operational Assessments (OA) and Operational Tests (OT).
- d. The PTES Contractor shall support Multi-service Operational Test and Evaluations (MOT&E).

5. Glossary

Table A-9 is a list of terms and their definitions used for software development using the Agile methodology. This list also includes how to interpret them from a PTES point of view.

Table A-9. Agile Glossary

Term	Definition
Acceptance Criteria	Those criteria, including performance requirements and essential conditions, which must be met before project deliverables are accepted.
Acceptance Test	Test of a system or functional unit usually performed by the purchaser on his premises after installation with the participation of the vendor to ensure that the contractual requirements are met.
Agile Development	Software development approach based on iterative development, frequent inspection and adaptation and incremental deliveries, in which requirements and solutions evolve through collaboration in cross-functional teams and through continual stakeholder feedback.
Build	Process of generating an executable and testable system from source versions or baselines. (Or See Software Build)
Build Decision Review	A Government chaired Technical Review conducted to determine readiness to start software development of the next Build.
Build Version	An approved variation of an earlier or original software.
Capability	A high level solution behavior that typically spans multiple Agile releases. They are sized and split to fit within a single program increment.
Commercial off-the-shelf Software (COTS)	Means any item or supply (including construction material) that is: <ol style="list-style-type: none"> (i) A commercial item (ii) Sold in substantial quantities in the commercial marketplace (iii) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace. <p>This does not include bulk cargo, as defined in 46 U.S.C. 40102(4), such as agricultural products and petroleum products.</p>
Definition of Done	See Tables A-2 and A-3 and description on last page

Delivered Source Lines of Code (DSLOC)	The number of delivered lines of code for the operational system – Delivered Source Instructions (DSI) used in software cost model
Feature	A primary system definition element, an attribute of a software product or system that is typically implemented through one (1) or more user stories, and usually comprise many detailed (unit) requirements, or a service provided by the system that fulfills some stakeholder need. Features may be functional or non-functional; they provide the basis for organizing stories, and are maintained in a Product Backlog.
Function	See Feature.
Government off-the-Shelf (GOTS) Software	Software product or items typically developed by the technical staff of a government agency or an external entity with funding and specification from the agency.
Module	A software item that contains specific functionality, hides the internal workings of its behavior and data, and has well-defined interfaces.
Non-Developmental Item (NDI)	Previously developed Software Item, such as reuse code, Commercial-Off-The-Shelf (COTS), Government-Off-The-Shelf (GOTS), Open Source Software (OSS) including freeware and shareware, and stand-alone executables and callable libraries. Also includes any item that requires only minor modification or modifications of a type customarily available in the commercial marketplace in order to meet the requirements of the procuring department or agency.
Non-Functional Requirement (NFR)	Requirements that define system attributes such as security, reliability, performance, maintainability, scalability, and usability. They serve as constraints or restrictions on the design of the system across the different backlogs.
Open Source Software (OSS)	Computer software along with its source code is made available with a license in which the copyright holder provides the rights to study, change and distribute the software to anyone and for any purpose. It is now part of the broader term Free and Open Source Software (FOSS).
Process Description	<ul style="list-style-type: none"> - Includes readiness (entrance) criteria, standards, procedures for performing the work, verification methods to ensure product quality, outputs, process and product measures, and completion (exit) criteria. - Identifies the roles and responsibilities of participants and stakeholders. - Is planned, employs skilled people having adequate resources, involves relevant stakeholders, is monitored and controlled, and is evaluated to ensure consistent implementation

Product Backlog	A collection of Capabilities, Features, Non-functional requirements, User Stories, defects, and enhancements.
Product Backlog Grooming	Product Owner and team members review and update Product Backlog items to ensure that the Product Backlog items are prioritized, and the top Product Backlog items meet the Definition of Ready in order to be selected for the next Sprint. During the Product Backlog Grooming sessions, the team removes Product Backlog items that are no longer relevant, adds new Product Backlog items in response to newly discovered needs, re-assesses the relative priority of Product Backlog items, estimates the effort for new Product Backlog items in Story Points, corrects the effort estimates of existing Product Backlog items in light of newly discovered information, and splits coarse grained Product Backlog items into (finer and accurate) Product Backlog items that fit into a Sprint.
Product Manager	A person who owns the product vision and road map, has a high-level view of where the complete product will be over the next few years, works with product owners and advocates for the product internally, represents the customer in meetings with development, and helps the customer or stakeholders understand the evolution of the product.
Product Owner	Person responsible for managing Product Backlog (define, prioritize, make visible the Product Backlog items that reflect Product Roadmap) and creates User Stories.
Product Roadmap	Describes a set of planned releases, along with the high-level information about the associated scope, goals, schedules, etc., of the releases. The Roadmap is intended to be revised iteratively as the project plan evolves.
Release	A distinct, tested, deployable software element of a militarily useful capability to the Government. – AFI 99-103 (6 Apr 2017)
Release Burnup	The cumulative amount of work completed in Story Points with Sprints in a release.
Release Burnup Chart	A chart showing number of Story Points or Product Backlog Items delivered on the vertical axis, accumulated over time in terms of Sprints on the horizontal axis.
Reuse Code	Reuse code is defined as the total lines of application code in SI (compilable units) that have been taken in their entirety from a previously completed system or application library. Commercial off-the shelf products and multiple use of a module within the same system are not included in the reuse measurements.
Risk Reduction Demonstration (RRD)	A Risk Reduction Demonstration is a contractor-led system-level test event held at the completion of a Build on an integrated PTES system (including all segments) to demonstrate features and verify

	requirements selected to be implemented in that Build; regression testing of the requirements and features of prior Builds is included.
Risk Reduction Test (RRT)	A Risk Reduction Testing is an LDTO-led test held after an RRD to validate the integrated PTES system meets PTES TRD requirements and features completed up to and including the RRD in an operationally realistic environment using operationally relevant procedures.
Software Build	A testable, integrated subset of the overall capability – which together with clearly defined decision criteria, ensure adequate progress is being made before fully committing to subsequent Builds. Several software builds are typically necessary to achieve a deployable capability. Each Build has allocated requirements, resources, and scheduled testing to align dependencies with subsequent Builds and to produce testable functionality to ensure that progress is being achieved. (DoDI 5000.02 (Information Assurance Implementation))
Software Item (SI)	An aggregation of software, such as a computer program or database, that satisfies an end-use function and is designated for purposes of specification, qualification, testing, interfacing, configuration management, or other purposes. [DAU].
Source Lines of Code (SLOC)	SLOC is a software metric used to measure the size of a computer program by counting the number of lines in the text of the program's source code.
Sprint	Short time frame, in which a set of software features is developed, leading to a working product that can be demonstrated to stakeholders.
Sprint Burn down Chart	A chart showing remaining work in terms of number of Story Points or Product Backlog Items on the vertical axis versus time in terms of days during a given Sprint on the horizontal axis.
Sprint Demonstration	An activity of a Sprint Review where the completed (per "Definition of Done") Sprint Backlog items are demonstrated.
Sprint Planning Session	Held at the beginning of each Sprint, where Sprint Backlog Items are selected from the Product Backlog.
Sprint Retrospective	Held after the Sprint Review, the team reflects on the completed Sprint; identifies and agrees on continuous process improvement actions
Sprint Review	A review meeting to present User Stories that have met the Definition of Done. Following a Sprint Demonstration, a discussion of opportunities, constraints and findings, and a discussion of Product Backlog changes.

Sprint Velocity	Rate at which work is completed. Measured in number of Story Points completed within a Sprint; predictive metric for planning and execution.
Story Points	Relative unit of measure for estimating the effort to implement a Product Backlog item.
Subsystem	An entity with discrete structure, such as an assembly or software module, within a system considered at a particular level of analysis.
System Demonstration	A demonstration of integrated working software and hardware across multiple teams of full and partial capabilities by the Contractor on DISA CDC Integration, Demonstration & Test, and Training environment to the Government Program Office.
Team Lead	Identifies and removes impediments that could prevent the team from completing the deliverables, obtain resources, and keeps the team focused on the task at hand.
Team Member	A developer, programmer, tester or engineer responsible for the creation and delivery of a system.
User Story	Simple narrative illustrating the user goals that one (1) or more software functions will satisfy.

Appendix B – Key Personnel Substitution

- a. A requirement of the Protected Tactical Enterprise Service (PTES) contract is to maintain stability of personnel proposed in order to complete all activities required to design and develop PTES from Effective Contract Date (ECD) through completion of Critical Design Review (CDR) and CDR closeout actions. The Contractor agrees to assign to this contract only those key personnel listed in paragraph (e) below whose resumes were submitted and approved and who are necessary to fulfill the requirements of the contract. No changes in key personnel, including but not limited to the substitution or addition of key personnel, shall be made except in accordance with this appendix.
- b. If key personnel become unavailable for work under the contract for whatever reason for a continuous period exceeding thirty (30) working days, or are expected to devote substantially less effort to the work than required in the SOW, the Contractor shall propose a substitution for such personnel in accordance with this appendix.
- c. The PTES Contractor agrees that changes in key personnel will not be made unless necessitated by compelling reasons. Compelling reasons include, but are not limited to, serious illness, death, termination of employment, declination of an offer or employment (for those individuals proposed as contingent hires), and paternity / maternity leave. When the Contractor determines that compelling reason to change key personnel exists, the Contractor shall submit a request in accordance with subparagraph (d) below to the Procuring Contracting Officer (PCO) and obtain PCO approval prior to changing key personnel.
- d. All requests to change or add key personnel shall be submitted in writing to the PCO not less than thirty (30) days prior to the date of the proposed substitution/addition. The request shall provide a detailed explanation of the circumstances necessitating the proposed change, the resume of the individual proposed for substitution/addition, information regarding financial impact of the change, and any other relevant information. All proposed substitutes (no matter when they are proposed during the performance period) shall have qualifications that are equal to or higher than the qualifications of the person being replaced. The PTES PCO shall evaluate such requests to change or add key personnel and will notify the Contractor of the approval or disapproval in writing.
- e. List of key personnel:
 - Program Manager
 - Product Manager
 - Product Owner (s)
 - System Architect/Engineer
 - System Integration Lead
- f. If the PCO determines the replacement of key personnel to be unsuitable, untimely, not reasonably forthcoming, or that the resultant substitution impair or critically endanger the successful performance of the contract, the contract may be terminated for default or for the convenience of the Government, as appropriate. Alternatively, at the PCO's discretion, if the PCO finds the PTES Contractor is at fault for the condition, the PCO may adjust the contract price or fee to compensate the Government for delay, loss, or damage as a result of the

Contractor's action. Non-compliance with the provisions of this attachment will be considered a material breach of the terms and conditions of this contract for which the Government may seek any and all appropriate remedies.

Appendix C – SMC--Enabling Clause For Government Program Contracts Requiring Interface With Aerospace Federally Funded Research and Development Center (FFRDC) Contract Support (NOV 2017)

(a) This contract covers the Protected Tactical Enterprise Service (PTES) which is under the general program management of the Air Force Space and Missile Systems Center (SMC). The Air Force has entered into a contract with the Aerospace Corporation, a California nonprofit corporation operating a Federally Funded Research and Development Center (FFRDC), for the services of a technical group that will support DoD/U.S. Government program office by performing General Systems Engineering and Integration, Technical Review, and/or Technical Support including informing the commander or director of the various Department of Defense ("DoD") organizations it supports and any U.S. Government program office of product or process defects and other relevant information, which, if not disclosed to the U.S. Government, could have adverse effects on the reliability and mission success of a U.S. Government program.

(1) General Systems Engineering and Integration (GSE&I) deals with overall system definition; integration both within the system and with associated systems; analysis of system segment and subsystem design; design compromises and tradeoffs; definition of interfaces; review of hardware and software including manufacturing and quality control; observation, review and evaluation of tests and test data; support of launch, flight test, and orbital operations; appraisal of the contractors' technical performance, through meeting with contractors and subcontractors, exchange and analysis of information on progress and problems, review of plans for future work; developing of solutions to problems, technical alternatives for reduced program risk, providing comments and recommendations in writing to the DoD System Program Manager and/or Project Officer as an independent technical assessment for consideration for modifying the program or redirecting the contractors' efforts; all to the extent necessary to assure timely and economical accomplishment of program objectives consistent with mission requirements.

(2) Technical Review (TR) includes the process of appraising the technical performance of the contractor through meeting, exchanging information on progress and problems, reviewing reports, evaluating presentations, reviewing hardware and software, witnessing and evaluating tests, analyzing plans for future work, evaluating efforts relative to contract technical objectives, and providing comments and recommendation in writing to the applicable Air Force Program Manager as in independent technical assessment for consideration for modifying the program or redirecting the contractor's efforts to assure timely and economical accomplishment of program objectives.

(3) Technical Support (TS) deals with broad areas of specialized needs to customers for planning, system architecting, research and development, horizontal engineering, or analytical activities for which The Aerospace Corporation is uniquely qualified by virtue of its specially qualified personnel, facilities, or corporate memory. The categories of TS tasks are: Selected Research, Development, Test and Evaluation; Plans and System Architecture; Multi-Program Systems Enhancement; International Technology Assessment; and Acquisition Support.

(b) In the performance of this contract, the contractor agrees to cooperate with The Aerospace Corporation by 1) responding to invitations from authorized U.S. Government personnel to attend meetings; 2) by providing access to technical information and research, development planning data such as, but not limited to, design and development analyses, test data and results, equipment and process specifications, test and test equipment specifications and procedures, parts and quality control procedures, records and data, manufacturing and assembly procedures, and schedule and milestone data,

where available; 3) by delivering data as specified in the Contract Data Requirements List; 4) by discussing technical matters relating to this program; 5) by providing access to contractor facilities utilized in the performance of this contract; 6) and by allowing observation of technical activities by appropriate technical personnel of The Aerospace Corporation. The Aerospace Corporation personnel engaged in GSE&I, TR, and/or TS efforts: (i) are authorized access to all such technical information (including proprietary information) pertaining to this contract and may discuss and disclose such technical information (including proprietary information) to the commander or director of the various DoD organizations it supports and any U.S. Government personnel in a program office which, if not disclosed to the U.S. Government could have adverse effects on the reliability and mission success of a U.S. Government program; and (iii) Aerospace shall make the technical information (including proprietary information) available only to its Trustees, officers, employees, contract labor, consultants, and attorneys who have a need to know.

(c) The contractor further agrees to include in all subcontracts a clause requiring compliance by subcontractor and supplier and succeeding levels of subcontractors and suppliers with the response and access and disclosure provisions of this Enabling Clause, subject to coordination with the contractor, except for subcontractors for commercial items or commercial services. This agreement does not relieve the contractor of its responsibility to manage the subcontracts effectively and efficiently nor is it intended to establish privity of contract between the Government or The Aerospace Corporation and such subcontractors or suppliers, except as indicated in paragraph (d) below.

(d) The Aerospace Corporation shall protect the proprietary information of contractors, subcontractors, and suppliers in accordance with the Nondisclosure Agreement, The Aerospace Corporation entered into with The Air Force, a copy of which is available upon request. This Nondisclosure Agreement satisfies the Nondisclosure Agreement requirements set forth in 10 U.S.C. § (f) (2) (B), and provides that such contractors, subcontractors, and suppliers are intended third-party beneficiaries under the Nondisclosure Agreement and shall have the full rights to enforce the terms and conditions of the Nondisclosure Agreement directly against The Aerospace Corporation, as if they had been signatory party hereto. Each such contractor, subcontractor, or supplier hereby waives any requirement for The Aerospace Corporation to enter into any separate company-to-company confidentially or other nondisclosure agreements.

(e) The Aerospace Corporation personnel are not authorized to direct the contractor in any manner. The contractor agrees to accept technical direction as follows:

(1) Technical direction under this contract will be given to the contractor solely by PCO.

(2) Whenever it becomes necessary to modify the Agreement and redirect the effort, a Change Order signed by the Contracting Officer, or a Supplemental Agreement signed by both the Contracting Officer and the Contractor will be issued.

*Cost data is defined as information associated with the programmatic elements of life cycle (concept, development, production, operations, and retirement) of the system/program. As defined, cost data defers from "financial" data, which is defined as information associated with the internal workings of a company or contractor that is not specific to a project or program.

Appendix D – Rework, Replacement, or Correction Due to CAT I Emergency and CAT I Urgent Defects (Applicable To CLINS 0002, 0003, 0004, and 0005) (May 2018)

(a) The cost of rework, replacement, or correction associated with CAT I Emergency and CAT I Urgent Defects under CLINs 0002, 0003, 0004, and 0005 shall be considered Unallowable Costs. CAT I Emergency and CAT I Urgent Defects are defined as any condition or characteristic in any supply that:

(1) If uncorrected, may cause death, severe injury, or severe occupational illness and no workaround is known; or, if uncorrected, may cause major loss or damage to equipment or a system and no workaround is known; or, prevents the accomplishment of an essential capability or critically restricts operational safety, suitability and effectiveness (OSS&E), to include required interaction with other mission critical platforms or systems; and no acceptable workaround is known (reference CAT I Emergency, as defined in T.O. 00-35D-54 "USAF Deficiency Reporting, Investigation and Resolution" dated 1 September 2015); or

(2) Adversely affects an essential capability or negatively impacts operational safety, suitability, or effectiveness and no acceptable workaround are known or adversely affects technical, cost, or schedule risks to the project or to life cycle support of the system, or results in a production line stoppage and no acceptable workaround is known (reference CAT I Urgent, as defined in T.O. 00-35D-54 dated 1 September 2015).

Appendix E – Acronym List

ACA	Associate Contractor Agreements
AF	Air Force
AFB	Air Force Base
AFSPC	Air Force Space Command
APA	Additional Performance Attributes
ARSTRAT	Army Forces Strategic Command
ASME	American Society of Mechanical Engineers
ATO	Authority to Operate
BDR	Build Decision Reviews
BOM	Build of Materials
CAIV	Cost as an Independent Variable
CC	Critical Components
CCB	Configuration Control Board
CCP	Contract Change Proposal
CD	Calendar Days
CDC	Core Data Center
CDD	Capabilities Development Document
CDR	Critical Design Review
CDRL	Contract Data Requirement List
CDS	Cross Domain Solution
CDSE	Cross Domain Solution Element
CFSR	Contracts Funds Status Report
CIP	Critical Intelligence Parameter
CLIN	Contract Line Item Numbers
CM/DM	Configuration/Data Management
CMMI-DEV	Capability Maturity Model-Integrated for Development (CMMI-DEV)
CNSSP	Committee on National Security Systems Policy
COCOM	Combatant Commanders
COI	Critical Operational Issue
CONOPs	Concept of Operations

COTS	Commercial-Off-The-Shelf
CPA	Critical Path Analysis
CPI	Critical Program Information
CRB	Cybersecurity Review Board
CSDR	Cost and Software Data Reporting
CSIP	Cybersecurity Implementation Plan
CSOW	Contractor Statement of Work
CSSP	Cybersecurity Service Provider
CTP	Critical Technical Parameter
CTVP	Cybersecurity Test & Verification Plan
CVE	Common Vulnerability Enumerations
CVI	Cooperative Vulnerability Identification
CVPA	Cooperative Vulnerability Penetration Assessment
CWBS	Contractor Work Breakdown Structure
DAL	Data Accession List
DBDD	Database Design Description
DFARS	Defense Acquisition Regulations System
DISA	Defense Information Systems Agency
DISR	Defense Information Technology Standards Registry
DM	Data Management
DMAWG	Depot Maintenance Analysis Working Group
DoD	Department of Defense
DoDI	DoD Instruction
DoDIN	Department of Defense Information Networks
DOORS	Dynamic Object Orientation Requirements System
DR	Deficiency Report
DRIP	Design Review Information Package
DSOR	Depot Source of Repair
DT	Developmental Test
DT&E	Developmental Test and Evaluation
ECD	Effective Contract Date

ECP	Engineering Change Proposal
ECU	End Cryptographic Unit
EDFP	Engineering Data for Provisioning
EIA	Electronic Industries Alliance
EOA	Early Operational Assessment
ERB	Engineering Review Board
ESOH	Environmental, Safety & Occupational Health
EVMS	Earned Value Management
FACAR	Failure Analysis and Corrective Action Report
FCA	Functional Configuration Audit
FCHR	Functional Cost-Hour Report
FFRDC	Federally Funded Research and Development Center
FIPS	Federal Information Processing Standards
FLIS	Federal Logistics Information System
FMECA	Failure Modes, Effects and Criticality Analysis
FOC	Full Operational Capability
FRB	Failure Review Board
FSM	Firmware Support Manual
GFP	Government Furnished Property
GOPC	Ground Operations and Processing Center
GOTS	Government-off-the-Shelf
GRA	Government Reference Architecture
GSOW	Government Statement of Work
GT	Ground Terminal
GWBS	Government Work Breakdown Structure
HAEDDESR	High Assurance Encryption Device Development Environment Security Requirements
HAZMAT	Hazardous Material
HEPP	Human Engineering Program Plan
HQ	Headquarters
HSI	Human-system integration
HTS	Hazard Tracking System

HW/SW	Hardware/Software
IA	Information Assurance
IASRD	Information Assurance System Requirements Document
IAT	Information Assurance Technical
IAVA	Information Assurance Vulnerability Alert
IAW	In Accordance With
IBR	Integrated Baseline Reviews
ICD	Interface Control Document
ICS	Interim Contractor Support
IDE	Integrated Digital Environment
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
INFOSEC	Information Security
IOC	Initial Operational Capability
IOT&E	Initial Operational Test & Evaluation
IPMR	Integrated Program Management Report
IPT	Integrated Product Teams
IRN	Interface Revision Notice
ISO	International Organization for Standardization
ISR	Individual Subcontract Report
ISSM	Information System Security Manager
IT	Information Technology
IT	Integrated Test
IT&E	Integrated Test and Evaluation
ITT	Integrated Test Team
IUID	Item Unique Identification
JDRS	Joint Deficiency Reporting System
JIE	Joint Integration Environment
JIST	Joint Integrated SATCOM Tool
KCMP	Key and Certificate Management Plan
KCS	Key and Certificate Specification

KHOST	KLIF Host
KLIF	Key Loading and Initialization Facility
KMS	Key Management System
KPP	Key Performance Parameters
KSA	Key System Attributes
LCC	Life Cycle Cost
LDTO	Lead Developmental Test Organization
LORA	Level of Repair Analysis
M&S	modeling and simulation
MBSE	Model Based Systems Engineering
MCB	MILSATCOM Control Board
MCFA	Mission Critical Fault Analysis
MMS	Mission Management System
MOA	Memorandum of Agreement
MOSA	Modular Open System Approach
MOT&E	Multi-service Operational Test and Evaluations
NDA	Non-Disclosure Agreement
NDI	Non-Developmental Item
NDIA	National Defense Industrial Association
NIPRNet	Non-Classified Internet Protocol (IP) Router Network
NIST	National Institute of Standards and Technology
NOSC	Network Operations Security Center
NSA	National Security Agency
NSTISSP	National Security Telecommunications Information System Security Policy
O&M	Operations and Maintenance
OA	Operational Assessment
OCD	Operational Concept Description
OEM	Original Equipment Manufacturer
OSD	Office of the Secretary of Defense
OSS	Open Source Software
OSSPP	Operating System and Software Patching Plan

OT	Operational Test
OT&E	Operational Test and Evaluation
OTA	Operational Test Agency
OTB	Over-Target-Baseline
OTS	Over-Target-Schedule
PATS	Protected Anti-Jam Tactical Satellite Communications (SATCOM)
PATSOC	PATS Satellite Operations Center
PBL	Performance Based Logistics
PCA	Physical Configuration Audit
PCAP	Physical Configuration Audit Plan
PCAR	Physical Configuration Audit Report
PCO	Procurement Contracting Officer
PDR	Preliminary Design Review
PEO	Program Executive Officer
PM	Program Management
PMB	Performance Measurement Baseline
PMR	Program Management Review
PPE	Personal Protective Equipment
PPIP	Program Protection Implementation Plan
PPP	Program Protection Plan
PPS	Ports, Protocols and Services
PRR	Production Readiness Review
PSA	Product Support Analysis
PSP	Product Support Plan
PTES	Protected Tactical Enterprise Service
PTS	Protected Tactical SATCOM
PTW	Protected Tactical Waveform
QA	Quality Assurance
R&M	Reliability and Maintainability
RAP	Risk Assessment Panel
RFP	Request for Proposal

RFV	Request for Variance
RM&T	Reliability, Maintainability and Testability
RMB	Risk Management Board
RMF	Risk Management Framework
RMP	Risk Management Plan
RRD	Risk Reduction Demonstration
RRT	Risk Reduction Testing
RTM	Requirements Traceability Matrix
RVP	Requirement Verification Plan
SAD	Software Architecture Description
SAM	Software Assurance Matrix
SAR	Safety Assessment Report
SAR	Software Architecture Review
SATCOM	Satellite Communications
SBIR	Small Business Innovative Research
SCN	Specification Change Notice
SDD	EVM System Design Document
SDP	Software Development Plan
SDPDD	Software Development Process Description Document
SDS	Safety Data Sheets
SED	Security Evaluation Document
SEI	Software Engineering Institute
SEIT	System Engineering, Integration and Test
SEMP	Systems Engineering Management Plan
SEP	Systems Engineering Plan
SFR	System Functional Review
SHDD	Software/Hardware Design Description
SHRS	Software/Hardware Requirements Specification
SIPRNet	Secret Internet Protocol (IP) Router Network
SITP	System Integration and Test Plan
SLA	Service Level Agreement

SLOC	Source Lines of Code
SMCC	Special Material Content Code
SMR	Schedule Management Review
SP	Special Publication
SPA	Security Production Assurance
SPLER	Software and Programmable Logic Evaluation Report
SPO	System Program Office
SPS	Software Product Specification
SRDR	Software Resources Data Reporting
SRF	Service Request Form
SRR	System Requirements Review
SRS	Software Requirements Specification
SSDD	System/Subsystem Design Description
SSHAR	System Safety Hazard Analysis Report
SSMP	System Safety Management Plan
SSMR	Software and System Measurement Report
SSPP	System Safety Program Plan
SSR	Summary Contract Report
SSWG	System Security Working Groups
STD	Software Test Description
STE	Secure Telephone
STIG	Security Technical Implementation Guide
STP	Software Test Plan
STR	Software Test Reports
STrP	Software Transition Plan
SUM	Software User Manual
SVD	Software Version Description
SVP	System Verification Plan
SVPP	Security Verification Plan and Procedures
SVR	Security Verification Report
SVR	System Verification Review

SVT	Security Verification Test
SysML	Systems Modeling Language
T&E	Test and Evaluation
TBD	To Be Determined
TBP	To Be Provided
TBR	To Be Revised
TBS	To Be Supplied
TEMP	Test and Evaluation Master Plan
TIM	Technical Interchange Meetings
TIR	Test Incident Report
TO	Technical Order
TPM	Technical Performance Measures
TRD	Technical Requirements Document
TRR	Test Readiness Review
TS/SCI	Top Secret/Sensitive Compartmented Information
TSRD	Telecommunications Security Requirements Document
USASMDC/ARSTAT	U.S. Army Space and Missile Defense Command/Army Forces Strategic Command
USSTRATCOM	United States Strategic Command
VCRM	Verification Cross Reference Matrix
VOLT	Validated Online Lifecycle Threat
VV&A	Verification, Validation & Accreditation
WGS	Wideband Global SATCOM
WSTARS	Wideband SATCOM Trending and Anomaly Resolution System