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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

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Title - Sujet Tactical Air Coordination Suite	
Solicitation No. - N° de l'invitation W8476-185751/A	**Amendment No. - N° modif.** 002
Client Reference No. - N° de référence du client 6000412936	**Date** 2019-11-20
GETS Reference No. - N° de référence de SEAG PW-$$QD-036-27508	
File No. - N° de dossier 036qd.W8476-185751	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2020-01-15**	**Time Zone** **Fuseau horaire** Eastern Standard Time EST
F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☑	
Address Enquiries to: - Adresser toutes questions à: Briere-Provost, Mathieu	**Buyer Id - Id de l'acheteur** 036qd
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Canada

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Request For Information

1. Purpose and Objectives

1.1. The purpose of this Request for Information (RFI) is to request Industry feedback regarding an upcoming competitive procurement process for the Department of National Defence's (DND) requirement to procure, integrate and support the Tactical Air Coordination Software suite for the Airspace Coordination Center capability.

1.2. Public Services and Procurement Canada's (PSPC) intent for this Request for Information (RFI) is to engage Industry in a consultative process and to gain a better understanding of current software affordability and availability to support a Commercial off the shelf and/or Military off the shelf (COTS/MOTS) procurement model with limited developmental and task based integration work. The main objectives of this RFI process are:

a) Provide Industry with draft Statement of Work for Acquisition and Sustainment of a software suite;
b) Provide Industry with draft requirement specification for Acquisition of a software suite;
c) Provide Industry with anticipated maximum celling for resulting Acquisition and Sustainment contracts;
d) Request input on technical feasibility based on the SOW and requirement specifications if needed;
e) Request input on affordability based on the SOW and requirement specifications if needed;
f) Obtain industry feedback on any issues that would impact their ability to bid on a resulting solicitation or to deliver on the department's requirements; and
g) Facilitate one on one meeting with Industry if requested.

2. Background Information:

2.1. Airspace Coordination is a critical command activity, the information from which the Land Component Commander can make operational decisions related to knowledge of manned aircraft, unmanned aerial vehicle and fire support activities. Land Force airspace coordination is done through the Airspace Coordination Centre. An ASCC does not normally work in isolation and as such must also be able to link to Air Force, Navy and allied command and control facilities. The ASCCM project will provide modernized hardware, software and communication equipment that will enable effective operations in a joint or multinational environment.

3. Requirement

3.1. The Tactical Airspace Coordination Software (TACS) is a software based solution that is intended to be deployed on ASCC modernized platforms to deliver a set of capabilities that responds to the Army's needs in airspace monitoring and coordination to support national as well as international missions. The main functionalities of TACS include the

following:

a) Local Air Picture (LAP) compilation and dissemination;
b) Recognized Air Picture (RAP) compilation and sharing;
c) Tactical airspace monitoring and coordination.

3.2. See Annex C for the detailed description of this requirement.

4. Affordability

4.1. Subsequent to the initial industry engagement and amendments to the original requirements, Canada's anticipated procurement and sustainment costs will be reflective of the resulting contract ceilings. Following the results of this RFI and upcoming RFP, Canada will accordingly validate and seek final budgetary approval.

4.2. The current estimated ceiling for all resulting contract are set as follows:
a) Contract ceiling for the Acquisition of the TACS - $11.5M
b) Contract ceiling for the In Service Support (15 years) of TACS - $15M

5. Schedule

5.1. The following is the tentative schedule associated with both the RFI and potential competitive procurement process:

a) Release of RFI: 15 November 2019
b) Deadline to request one on one meeting : 25 November 2019
c) RFI Closing date: 15 January 2020
d) Tentative Release of RFP: February 2020
e) Potential Contract Award: July 2020

6. Industry Interaction

6.1. The consultative process associated with this RFI includes release of specific documents aimed to help determine the capability of industry to satisfy the project requirements and may include follow-up questions.

6.2. There are no requirements on format or nature of expected response from the industry. Canada seeks any relevant comment and feedback as requested in Paragraph 1.2 d), e) and f) of this documents.

6.3. One on one meetings between Industry and Government will only be held upon request within the deadline specified. This may include limited product overviews and demonstration.

7. Notes to Interested Parties

7.1. This RFI is neither a call for tender nor an RFP, and no agreement or contract for the procurement of the requirement described herein will be entered into solely as a result of this RFI. The issuance of this RFI is not to be considered in any way as a commitment by Canada nor as authority to potential Respondents to undertake any work that could be charged to Canada.

7.2. This RFI is not to be considered as a commitment to issue a subsequent solicitation or award contract(s) for the work described herein. Canada does not intend to award a contract on the basis of this notice or otherwise pay for the information solicited. Any and all expenses incurred by the Respondent in pursuing this opportunity, including the

provision of information and potential visits, are at the Respondent's sole risk and expense.

7.3. Any discussions on this subject with project staff representing DND, PSPC, any other Government of Canada representative or other personnel involved in project activities, must not be construed as an offer to purchase or as a commitment by Canada.

7.4. Respondents may provide documents / information / data collected as commercial-in-confidence (and if identified as such, will be treated accordingly by Canada). However, Canada reserves the right to use the information to assist them in drafting performance specifications and for budgetary purposes in consultation with both national and international stakeholders. Requirements are subject to change, which may be as a result of information provided in response to this RFI. Participants are advised that any information submitted to Canada in response to this RFI may or may not be used by Canada in the development of the potential subsequent RFP.

7.5. Respondents are encouraged to clearly identify, in writing, in the information they share with Canada, any information they feel is commercial-in-confidence, proprietary, third party, or personal. Please note that Canada may be obligated by law (e.g. in response to a request under the Access to Information and Privacy Act) to disclose proprietary or commercially-sensitive information concerning a Respondent (for more information: http://laws-lois.justice.gc.ca/eng/acts/a-1/).

7.6. Respondents are asked to identify, in writing, if their response, or any part of their response, is subject to the Controlled Goods Regulations.

7.7. Participation in this RFI is encouraged but is not mandatory. There will be no shortlisting of potential suppliers for the purposes of undertaking any future work as a result of this RFI. Similarly, participation in this RFI is not a condition or prerequisite for the participation in any potential subsequent solicitation.

7.8. Respondents will not be reimbursed for any cost incurred by participating in this RFI.

8. Potential Scope and Constraints

8.1. This RFI is not subject to the Controlled Goods Program, however any resulting competitive process may be. For information pertaining to the Controlled Goods Program, please refer to the Public Services and Procurement Canada (http://ssi-iss.tpsgc-pwgsc.gc.ca/dmccgd/ index-eng.html) website.

8.2. There are no security requirements associated with this RFI, however, there may be security requirements associated with any resulting competitive procurement process. Additional information on the security requirements will be communicated on https://buyandsell.gc.ca/ as part of the upcoming competitive procurement process.

8.3. Should Industry require information on personnel and organization security screening or security clauses, please refer to the Canadian Industrial Security Directorate (CISD),

Industrial and Security Program of Public Services and Procurement Canada (http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html) website.

8.4. Any additional information on the potential scope and constraints will be communicated on https://buyandsell.gc.ca/ as part of any competitive process.

8.5. Legislation, Trade Agreements, and Government Policies

The following is a list of some legislation and government policies that may govern the upcoming competitive procurement process:

a) Defence Production Act (DPA)
b) Controlled Goods Program (CGP)
c) Federal Contractors Program for Employment Equity (FCP-EE)
d) Government Contract Regulations (GCR)
e) PSPC Policy on Green Procurement

Any additional information pertaining to Legislation and Government Policies will be communicated on https://buyandsell.gc.ca/ as they become available throughout the period of this RFI or as part of any resulting competitive procurement process.

9. PSPC Contracting Authority

9.1. Any correspondence must be directed, in writing, in either official language of Canada, to the PWGSC Contract Authority identified below, preferably via email:

Mathieu Brière-Provost
Contracting Authority
Public Services and Procurement Canada
E-mail: Mathieu.briere-provost@tpsgc-pwgsc.gc.ca
Phone: 819-420-6029

10. Amendments

10.1. Changes to this RFI may occur and will be advertised on the Government Electronic Tendering System, https://buyandsell.gc.ca/.

10.2. Canada asks interested parties to visit https://buyandsell.gc.ca/ regularly to check for changes, if any.

11. List of Annexes

11.1. Annex A0 – Draft Statement of Work Acquisition
11.2. Annex A1 – Draft System Performance Specifications
11.3. Annex A2 – Draft Priority of Delivery
11.4. Annex B – Draft Statement of Work - In service Support
11.5. Annex C – Draft Acronyms

ANNEX A0

TACTICAL AIR COORDINATION SUITE (TACS) -
AIRSPACE COORDINATION CENTRE MODERNIZATION (ASCCM)

1. Introduction. This Statement of Work (SOW) defines the Work required for the production, delivery, and initial support of the Tactical Air Coordination Suite (TACS) used within the modernized Airspace Coordination Centre (ASCC). The TACS is a software solution that will be implemented and integrated as part of the ASCC Modernization (ASCCM) project to deliver a digitalized, centered, information-based system. This will enable the provision of an integrated and cohesive global situational awareness picture, with enhanced airspace coordination and management capabilities, in support of air missions and joint task force operations.

2. Background. Airspace Coordination is a critical command activity, the information from which the Land Component Commander can make operational decisions related to knowledge of manned aircraft, unmanned aerial vehicle and fire support activities. Land Force airspace coordination is done through the Airspace Coordination Centre. An ASCC does not normally work in isolation and as such must also be able to link to Air Force, Navy and allied command and control facilities.

The ASCCM project will provide modernized hardware, software and communication equipment that will enable effective operations in a joint or multinational environment.

3. Overview. The TACS is a software based solution that is intended to be deployed on ASCC modernized platforms to deliver a set of capabilities that responds to the Army's needs in airspace monitoring and coordination to support national as well as international missions.

3.1. The main functionalities of TACS include the following:

3.1.1. Local Air Picture (LAP) compilation and dissemination;

3.1.2. Recognized Air Picture (RAP) compilation and sharing;

3.1.3. Tactical airspace monitoring and coordination.

3.2. The TACS should also enable the ASCC transformation to support the Tactical Air Control Party (TACP) in monitoring and controlling the tactical air-ground operations by providing an enhanced global situational awareness picture and a set of functionalities to control friendly air assets.

3.3. The TACS must be implemented to support flexible operational / deployment requirements based on the following principles and architectural characteristics:

3.3.1. Modular and Dynamic;

3.3.2. Agility; and

3.3.3. Scalability.

4. Scope. The Contractor is required to deliver the TACS capabilities and functionalities for the ASCCM system as described in Appendix A1 – System Performance Specifications (SPS) under the following terms and conditions:

4.1. Priority. The Contractor must deliver the TACS capabilities and functionalities by following priorities, in accordance with Appendix A2 – Priorities of Delivery:

4.1.1. Priority-One (P1). A requirement that must be fully delivered and operational at the TACS Initial Operational Capability (IOC), which is targeted for no later than three (3) months after the Contract award.

4.1.2. Priority-Two (P2). A requirement that must be fully delivered and operational at the TACS Final Operational Capability (FOC), which is targeted for no later than eighteen (18) months after the Contract award.

4.2. Operational License.

4.2.1. The Contractor must provide a quantity of twelve (12) licenses for operating TACS with full capability[1].

4.2.2. The Contractor must provide an option for up to five (5) additional licenses.

4.3. Training License. The Contractor must provide a training license with full capability to support a minimum of twelve (12) students, within Department of National Defense (DND)'s testing, integration and training environment.

4.4. Restriction. The Contractor must deliver the TACS software with no operating restriction on its use by Canadian Armed Forces (CAF) / DND.

5. Project Management.

5.1. Project Management Plan. The Contractor must establish and maintain a Project Management Plan (PMP) to coordinate all plans and activities, including the implementation roadmap, required to meet the requirements of this SOW.

5.2. Contract Award Meeting. The Contractor must conduct a meeting at the Contractor's facility within 30 days after Contract award to discuss schedule and work, as well as milestones and deliverables.

[1] The term 'full capability' used in this document is referencing the capabilities/functionalities described in the Appendix A1 – SPS.

5.3. Progress Review Meetings. The Contractor must conduct a Progress Review Meeting (PRM) at the Contractor's facility on a schedule agreed to by Canada and the Contractor. Any design and technical review meetings required should be integrated with the progress review meetings.

5.4. Unscheduled Meetings. Other meetings may be requested by the Contractor, Contracting Authority (CA) or the Technical Authority (TA) when issues arise that need to be solved. Upon agreement between all parties that such a meeting is required, the Contractor must participate in the unscheduled meeting.

5.5. Post Delivery and Equipment Support Services Meeting. The Contractor must host a meeting after the last TACS software and/or system delivery is complete at a time mutually agreed to by Canada and the Contractor to discuss outstanding issues.

5.6. Progress Reports. The Contractor must prepare and submit to the TA a monthly Progress Report, in the Contractor's format, for the duration of the Contract.

5.7. Final Report. The Contractor must prepare and submit a Final Report at the end of the Contract.

6. System Engineering.

6.1. General.

6.1.1. The Contractor must maintain the requirements traceability matrix[2] for TACS to ensure that the implementation meets the technical, performance and environmental requirements specified by the SOW.

6.1.2. The Contractor must develop the System/Software Design Specifications (SDS) to respond to the technical, performance, and environmental requirements specified by the SOW and/or DND 626 – Task Authorization Form.

6.2. Product Specifications. The Contractor must prepare and submit a software description in their own format.

6.3. System Requirements Review. A System/Software Requirement Review (SRR) must be conducted prior to the implementation of all P2 requirements in Appendix A1 – SPS for which the Contractor does not already have an existing solution at Contract award, to ensure that the Contractor's SDS are thoroughly understood by all parties and that appropriate verification methods are identified.

6.4. Preliminary Design Review. A Preliminary Design Review (PDR) must be held to review the conceptual design of all P2 requirements in Appendix A1

[2] The requirements traceability matrix in accordance with Appendix A1 - SPS

– SPS for which the Contractor does not already have an existing solution at Contract award, to ensure that the planned technical approach will meet the requirements.

6.5. Critical Design Review. A Critical Design Review (CDR) must be held to review the detailed design of all P2 requirements in Appendix A1 – SPS for which the Contractor does not already have an existing solution at Contract award, to ensure that the design implementation has met the requirements.

6.6. Factory Acceptance Test. The Contractor must perform a Factory Acceptance Test (FAT) through live demonstration of the pre-release TACS software.

6.7. Acceptance Test Procedures. Working first article TACS system software must be tested in lab environment or a live scenario.

7. Integrated Logistics Support (ILS)

7.1. Technical Data and Supporting Documents

7.1.1. Where accountable hardware and software items do not already have Unique Item Identifiers (UII), the Contractor must assign and affix UIIs to these items.

7.2. Operation and Technical Publications. The Contractor must provide technical publications and documentation to enable Canadian Army operators and technicians to effectively operate and maintain the TACS system software. These publications and documents must be, as a minimum, the following:

7.2.1. Detailed TACS Operating Instructions (English only);

7.2.2. Detailed TACS Configuration and troubleshooting Instructions (English only);

7.2.3. Interface Control Documents (ICD) of external hardware and software interfaces with a view to the eventual integration of TACS within the Canadian Army Land Command Support System (LCSS) (English only).

7.3. Technology Adaptation. The Contractor must allow for the adaptation and/or modification of the TACS software through the issuance of a task via a DND 626 – Task Authorization Form.

7.4. Training

7.4.1. Training Package. The Contractor must design a TACS Operator course to teach all TACS operator functions, basic fault finding and corrective maintenance. The Contractor must submit to Technical Authority a training package, inclusive of training presentations and Recommended Training Materials List (RTML),

no later than four (4) weeks before that course. The training packages must be in English. The RTML must include training material, training aids, and any other equipment that would be necessary for the conduct of a TACS Operator course as appropriate.

7.4.2. Conduct Training

7.4.2.1. TACS Operator Training. The Contractor must conduct one serial of TACS Operator training per the TACS Operator training package for up to 12 Canadian Army personnel as an initial "Train the trainer" course. This course must be conducted at a time and location mutually agreeable to Canada and the Contractor, but no later than four (4) weeks after the delivery of the TACS IOC.

7.4.2.2. Technology Update Training. The Contractor must conduct one serial of TACS Operator training per the TACS Operator training package for up to 12 Canadian Army personnel as a "Technology Update Training" course for the trainer. This course must be conducted at a time and location mutually agreeable to Canada and the Contractor, but no later than four (4) weeks after the delivery of the TACS FOC.

7.4.2.3. Training Assistance/Support. The Contractor must provide professional and material support for no more than two serials of Canadian Army-run TACS Operator courses. The courses will be run at Canadian Forces Base Gagetown, New Brunswick. The last serial of training will be completed no later than twelve months after the final delivery of the TACS system software.

7.5. Configuration Management Plan. The Contractor must prepare, submit and adhere to a Configuration Management Plan (CMP) for the TACS system software.

ANNEX A1

TACTICAL AIR COORDINATION SUITE (TACS) -
AIRSPACE COORDINATION CENTRE MODERNIZATION (ASCCM)

1. Introduction. This System Performance Specification describes the key performance requirements for the Tactical Air Coordination Suite (TACS) used within the modernized Airspace Coordination Centre (ASCC). The TACS is a software solution that will be implemented and integrated as part of the ASCC Modernization project (ASCCM) to deliver a digitalized, centered, information-based system. This will enable the provision of an integrated and cohesive global situational awareness picture, with enhanced airspace coordination and management capabilities, in support of air missions and joint task force operations.

2. Background. Airspace Coordination is a critical command activity, the information from which the Land Component Commander can make operational decisions related to knowledge of manned aircraft, unmanned aerial vehicle and fire support activities. Land Force airspace coordination is done through the Airspace Coordination Centre. An ASCC does not normally work in isolation and as such must also be able to link to Air Force, Navy and allied command and control facilities.

The Airspace Coordination Centre Modernization project will provide modernized hardware, software and communication equipment that will enable effective operations in a joint or multinational environment.

3. Overview. The TACS is intended to be deployed within the ASCC modernized platform to provide a set of functionalities that responds to the Army's immediate needs in airspace monitoring and coordination. The TACS solution must enable the ASCC to achieve its missions with a high level of efficiency through:

3.1. Simplicity:

3.1.1. Plug-n-Play communication interfaces; and

3.1.2. Minimum system and software configuration requirements.

3.2. Flexibility:

3.2.1. Support different configurations.

3.3. Dynamicity:

3.3.1. Adaptable to operational context and mission.

3.4. Agility:

3.4.1. Support a wide range of sensor and radar interface protocols.

3.5. Scalability:

3.5.1. Deployable at different level of Command and Control including Battle Group, Brigade and Division.

4. Requirements Structure. The TACS implementation requirements are structured per area of interest and categorized by operational needs. The following areas have been focused on in the present System Performance Specification (SPS):

4.1. **Software Architecture** – This section stipulates the minimum architectural conditions and characteristics on what the deliverable software and its subcomponents or services are built on.

4.2. **Availability** – This section contains the requirements regarding the operational and survival condition requirements the deliverable software must comply.

4.3. **Security** – This section contains the requirements regarding the secured data exchange on tactical interfaces within a domain and across domains that the deliverable software must comply.

4.4. **Operational Environment** – This section stipulates the minimum conditions and characteristics of the operating environment in which the deliverable software and its subcomponents or services are intended to be deployed.

4.5. **Configuration and Monitoring** – This section stipulates the requirements with regards to the flexibility, agility and dynamicity of the deliverable software.

4.6. **Operational Capability** – This section stipulates the desired capabilities and functionality to support immediate needs.

4.7. **Tactical Display Command/Control Interface** – This section stipulates the requirements regarding the Graphical User Interface (GUI) of the TACS.

5. Terms Definition. The terms “must/should allow” and “must/should be able” used in this document must be interpreted as follow:

5.1. **Must/Should allow** – These words are used to indicate the functionality and/or capability described by the current requirement must/should be included in the delivered solution and be available for use as needed.

5.2. **Must/Should be able** – These words are used to indicate the delivered solution must/should execute, at the command and/or automatically, the action or functionality described by the current requirement.

6. Requirement.

6.1. Architecture. The TACS is required to adhere to, as a minimum, the following architectural characteristics:

6.1.1. The TACS must be implemented based on a distributed architecture which allows its main components and services to operate on different machines and/or virtual machines across the Local Area Network (LAN).

6.1.2. The TACS must be scalable, in terms of functionality, to support the following operational capabilities:

6.1.2.1. Local Air Picture[3] (LAP) compiling, monitoring, and airspace coordination only;

6.1.2.2. Recognized Air Picture[4] (RAP) compiling, monitoring, and airspace coordination only;

6.1.2.3. LAP and RAP compiling, monitoring, and airspace coordination.

6.1.3. The TACS must be able to exchange information with external[5] and peer[6] systems through an Ethernet interface using the following Internet Protocol (IP) based data communication methods:

6.1.3.1. Connection Oriented (TCP/IP);

6.1.3.2. Connectionless (UDP/IP);

6.1.3.3. IP Multicast;

6.1.3.4. IP Broadcast; and

6.1.3.5. IP encapsulated serial communication protocols.

6.1.4. The TACS must be able to exchange information with external and peer systems through the serial interface using the following communication protocols:

6.1.4.1. RS-232; and

6.1.4.2. RS-422.

6.1.5. The TACS should be able to exchange information with external and peer systems through a serial interface using RS-485 communication protocols.

[3] The terms “Local Air Picture” (LAP) used in this document is referencing the result of the local radars air track combining and de-conflicting process.

[4] The terms “Recognized Air Picture” (RAP) used in this documents is defined as the result of the combining and de-conflicting process which involves LAP tracks and tracks received from TDL network.

[5] The term “External systems” used in this documents is defined as the platform’s systems which are not delivered with the TACS solution

[6] The term “Peer systems” used in this documents is defined as the third party TDL processor such as CSI, JRE and BOSS.

6.1.6. The TACS must allow for time synchronization with the Network Time Protocol (version 3 and later) server.

6.1.7. The TACS must allow for time synchronization with the external Global Positioning System (GPS) that is capable of sending, as a minimum, the National Marine Electronics Association (NMEA) 0183 RMC[7] and GGA[8] and sentences through its serial RS-232 interface.

6.1.8. The TACS must allow for entering time and location data manually by the operator.

6.1.9. The TACS must allow for receiving location data from a navigation system that is capable of sending the NMEA 0183 RMC and GGA sentences through its Serial RS-232 and Ethernet IP interface.

6.1.10. The TACS must allow for the exchange of information[9] simultaneously on the following data link and networks:

6.1.10.1. Sensor network; and

6.1.10.2. Tactical Data Link (TDL) network.

6.1.11. The TACS should allow for the exchange of information within the Integrated Broadcast Service (IBS) community.

6.1.12. The TACS must allow for the exchange of information[10] on a Variable Message Format (VMF) interface.

6.2. Security. The TACS must implement, as a minimum, the following security requirements to operate in a single level security domain:

6.2.1. The TACS must enforce system access protection by implementing a user authentication mechanism for its core services and subcomponents.

6.2.2. The TACS must allow for controlling access to system functionalities based on the user role.

6.2.3. The TACS must allow for the update required to operate with the latest security patches applied on the Operating System on which it's running.

[7] Recommended minimum data which provide position, velocity and time data

[8] Essential fix data which provide 3D location and accuracy data

[9] Based on the ASTERIX and Link-16 messages specified in the sections 6.7.1 and 6.7.2 of this document.

[10] Based on the VMF messages specified in the section 6.7.2 of this document.

6.2.4. The TACS must pass the vulnerability check on the system which is performed by the NESSUS Vulnerability Scanner[11].

6.2.5. The TACS must allow for the filtering out of incoming tactical information based on, as a minimum, the following security parameters:

6.2.5.1. Originator's Identification;

6.2.5.2. Originator's IP address; and

6.2.5.3. Data format.

6.3. Availability / Reliability

6.3.1. The TACS must allow for operating at full capability, and continuously for 24/7 operation with a permissible down-time of one (1) hour per month for maintenance.

6.3.2. The TACS must be able to continue functioning with the remaining capability on the failure of subcomponents and services.

6.3.3. The TACS should allow for the management of processing resources (CPU and Memory) by implementing a load control and balancing mechanism with, as a minimum, the following characteristics:

6.3.3.1. The TACS should allow for configuring the priority and processing resource threshold for the main services and processors;

6.3.3.2. The TACS should allow for monitoring the load and performance of the system and high priority services; and

6.3.3.3. The TACS should raise an alarm and automatically shut down the low priority services when the processing resources reach the threshold.

6.4. Operational Environment. In order to meet the Army's operational and training requirements, the TACS needs to respond, as a minimum, to the following operational environment requirements:

6.4.1. The TACS must be operable at full capability in the following operational configuration:

6.4.1.1. On a single workstation; and

6.4.1.2. In a distributed environment, on up to three dedicated workstations simultaneously:

[11] A third party software tool that allows for the detection and reporting of the potential network security flaws.

6.4.1.2.1. LAP compiling and monitoring workstation;

6.4.1.2.2. RAP compiling and monitoring workstation; and

6.4.1.2.3. Airspace coordination and management workstation.

6.4.2. The TACS must be operable at full capability on a workstation[12] or portable computer with a minimum system requirements as follow:

- Intel® Quad-core 2.7 GHz CPU or an equivalent;
- 32 GB Random-Access Memory (RAM);
- 500 GB NVMe SSD;
- 1 TB (SATA) 7200 RPM HDD;
- NVidia GeForce GTX 1070 8GB GDDR5 or an equivalent;
- Maximum Digital Resolution 4096x2160;
- Maximum VGA Resolution 2048x1536;
- 100/1000 Base-T Ethernet Network Interface Card (NIC);
- Universal Serial Bus (USB) 2.0/3.0 Interface;
- High-Definition Multimedia Interface (HDMI);
- 17 inch Display monitor.

6.4.3. The TACS must be operable, as a minimum, on one of the following Operating Systems environment[13]:

- Microsoft Windows 10 Enterprise;
- Microsoft Windows Server® 2008 R2;
- Microsoft Windows Server® 2012 R2;
- Red Hat® Enterprise Linux 6 or later.

6.4.4. The TACS must allow for operating concurrently with third party software and applications on the dedicated host computer, without requiring configuration change, except for the adjustments related to the firewall policies or/and local port conflict resolution.

6.4.5. The TACS must be able to communicate simultaneously with the following systems through the Ethernet IP interface:

6.4.5.1. The platform J capable Link-16 terminal, including but not limited to the KOR-24A – Small Tactical Terminal (STT);

6.4.5.2. Army Navy/Portable Radio Communications (AN/PRC)-117G;

6.4.5.3. An IP mobile ad-hoc network radio such as GEN-5 WaveRelay® Radio.

[12] Using multiple Virtual Machines (VM) on the same workstation is an acceptable solution.

[13] Using the Virtual Machine (VM) on these Operating Systems is acceptable.

6.4.6. The TACS should be able to communicate simultaneously with the following systems through an Ethernet IP and/or Serial RS-232/422 interface:

6.4.6.1. KOR-24A's Second Channel Ultra High Frequency/Very High Frequency (UHF/VHF);

6.4.6.2. Enhanced Position Location Report System (EPLRS) / Situation Awareness Data Link (SADL);

6.4.6.3. Automatic Dependent Surveillance – Broadcast (ADS-B) Receiver[14].

6.4.7. The TACS must be able to communicate with the Defense Advanced GPS Receiver (DAGR) through the following communication interfaces:

6.4.7.1. RS-232; and

6.4.7.2. RS-422.

6.4.8. The TACS must be able to interface with remote serial equipment and devices by using IP encapsulated serial communication through an external Serial Devices Server (SDS).

6.5. Network and Communication Interfaces. The TACS is mandated to provide data and voice communication on supported networks and data link interfaces with, as a minimum, the following specifications:

6.5.1. The TACS must be able to join and exchange information on the TDL network by using the KOR-24A (STT) radio.

6.5.2. The TACS must be able to exchange tactical information on the sensor network by using an IP MANET radio such as WaveRelay® MPU-5.

6.5.3. The TACS should be able to exchange information on the SADL by using the EPLRS with appropriate firmware and configuration.

6.5.4. The TACS must be able to exchange the LAP and RAP over the satellite by using the AN/PRC 117-G.

6.5.5. The TACS should be able to exchange strategic information and commands on the participant network by using the following data communication devices:

6.5.5.1. Combat Net Radio Enhancement (CNR-E); and

6.5.5.2. EPLRS.

[14] The Sunhillo's Margate II ADS-B Receiver or equivalent could be used as the reference. The further information on this product can be found at the company's website.

6.5.6. The TACS should allow for voice communication by using the AN/PRC-117G and second channel of the KOR-24A radio.

6.5.7. The TACS should allow for the selection of the following communication devices for the satellite and voice communication:

6.5.7.1. AN/PRC-117G; and

6.5.7.2. KOR-24A's Second Channel. .

6.5.8. The TACS must be able to exchange information, as specified in sections 6.7.1 and 6.7.2, simultaneously and independently on the following interfaces:

6.5.8.1. Link-16;

6.5.8.2. Air Surveillance Radar; and

6.5.8.3. Joint Range Extension Application Protocol (JREAP).

6.5.9. The TACS must allow for the support, as a minimum, of ten (10) communication channels[15] or links on the Air Surveillance Radar network interface.

6.5.10. The TACS must allow for the support, as a minimum, of sixteen (16) communication channels or links on the JREAP network interface.

6.5.11. The TACS should be able to exchange information, as specified in the section 6.7.2, simultaneously and independently on the following interfaces:

6.5.11.1. SADL; and

6.5.11.2. VMF.

6.5.12. The TACS must be able to handle, as a minimum, ten (10) multiple communication channels simultaneously on the Air Surveillance Radar interface, using following protocols:

6.5.12.1. UDP/IP;

6.5.12.2. TCP/IP; and

6.5.12.3. IP Multicast.

[15] The "communication channel" is defined in the TACS SPS context as the connection or the data input/output point on a specific network interface.

6.5.13. The TACS must be able to handle, as a minimum, sixteen (16) communication channels simultaneously on a JREAP interface, using the following protocols:

6.5.13.1. UDP/IP;

6.5.13.2. TCP/IP; and

6.5.13.3. IP Multicast.

6.5.14. The TACS must be able to handle a minimum of eight (8) IP encapsulated serial communication channels through an external SDS.

6.5.15. The TACS should support the following Communication Link Layers for its VMF data exchange:

6.5.15.1. MIL-STD-188-220D w/Change 1; and

6.5.15.2. Ethernet (default).

6.6. Configuration and Monitoring Requirements.

6.6.1. The TACS must provide the operator a GUI for the configuration and monitoring of system's operational parameters as described in this document.

6.6.2. The TACS should provide the operator a central access point or service with a GUI for the configuration, monitoring and diagnostic of its software subcomponents and services.

6.6.3. The TACS should provide the operator a WEB based configuration and monitoring service for its software subcomponents and/or services.

6.6.4. The TACS must provide the operator a configuration and monitoring element as described by, but is not limited to, the following characteristics for the overall software:

6.6.4.1. The TACS must allow for loading of the software configuration parameters from an initialization file;

6.6.4.2. The TACS must persist the configuration change and customization for a cold restart;

6.6.4.3. The TACS must allow the operator to configure the network IP addresses and ports for software subcomponents, services, and connected systems;

6.6.4.4. The TACS must allow the operator to select and configure the system time synchronization using the following time sources:

6.6.4.4.1. NTP Server;

6.6.4.4.2. NMEA 0183 compliant GPS.

6.6.4.5. The TACS must allow the operator to configure and monitor network connections between all software subcomponents, services and external systems;

6.6.4.6. The TACS must allow the operator to monitor the status of all software subcomponents and services;

6.6.4.7. The TACS should allow the operator to conduct performance diagnostics on the system.

6.6.5. The TACS must provide the operator a configuration and monitoring element as described by, but is not limited to, the following characteristics for the network interfaces:

6.6.5.1. The TACS should allow for the configuration of a network interface[16] without interruption of the communications on other network interfaces.

6.6.5.2. The TACS must allow for enabling or disabling a communication channel, and data link without interrupting the operation of other channels and data links on the same network interface.

6.6.5.3. The TACS should allow for adding a new communication channel or data link on a network interface without interruption of the communications of other channels or links on the same network interface.

6.6.5.4. The TACS must allow for monitoring of the communications status on supported network interfaces by implementing, as a minimum, the following functionalities:

6.6.5.4.1. Displaying the communication channels and links status of a network interface; and

6.6.5.4.2. Recording the data traffic on each enabled communication channel or data link of a network interface.

6.6.5.5. The TACS should allow for the control of data transmissions on the medium, low bandwidth communication channel and link by implementing, as a minimum, the following functionalities:

6.6.5.5.1. Monitoring the data traffic and usage bandwidth in real time manner;

[16] The “network interface” is defined in the TACS SPS context as the communication gateway to a specific network. A network interface might compound one or multiple communication channels or links.

6.6.5.5.2. Performing dynamic segmentation and reassembly accordingly to optimize the data transmission performance.

6.6.5.5.3. Enabling the operator to manually adjust the control parameters of data transmission on each communication channel and link.

6.6.5.6. The TACS must establish and update the communication matrix for supporting network interfaces at a configurable interval with, as a minimum, the following information:

6.6.5.6.1. Network connectivity diagram; and

6.6.5.6.2. Active units on each network interface.

6.6.5.7. The TACS must continuously manage and maintain communication with peers on each active network interface.

6.6.5.8. The TACS must allow the operator to configure own site/unit data, including, as a minimum, the following parameters:

6.6.5.8.1. Unit Call Sign;

6.6.5.8.2. Unit Position;

6.6.5.8.3. Unit Identification Number on each network interface whereas it's applicable; and

6.6.5.8.4. Reporting Track Number Block on each network interface whereas it's applicable.

6.6.5.9. The TACS must allow the operator to configure and monitor the communication channels on the following network interfaces:

6.6.5.9.1. Air surveillance radar;

6.6.5.9.2. Link 16; and

6.6.5.9.3. Joint Range Extension TDL (JREAP).

6.6.5.10. The TACS should allow the operator to set the operational priority for each communication channel on a network interface.

6.6.5.11. The TACS must allow the operator to configure the connectivity parameters for each communication channel on a network interface.

6.6.5.12. The TACS must allow the operator to monitor the status and data traffic on each communication channel of a network interface.

6.6.5.13. The TACS must allow for saving the configuration changes on data links, communication channels and network interfaces for a cold restart.

6.6.5.14. The TACS must apply the latest saved configuration parameters on data links, communication channels and network interfaces at start-up.

6.6.5.15. The TACS must allow for the display and recording of incoming and outgoing messages on each network interface.

6.6.5.16. The TACS must allow for the activation and de-activation of the data display and recording for each data link on a network interface.

6.6.6. The TACS must provide a configuration and monitoring element as described by, but is not limited to, the following characteristics for its subcomponents and services:

6.6.6.1. The TACS must allow for adding and removing the data communication interface between subcomponents and services.

6.6.6.2. The TACS should provide a centralized communication manager for information exchange between its subcomponents and services.

6.6.6.3. The TACS should allow for applying the change on the communication interface between subcomponents and services without restarting the whole process or service.

6.6.6.4. The TACS must allow for the enabling and disabling of each communication interface between subcomponents and services dynamically and independently.

6.6.6.5. The TACS should allow for monitoring of the status of, and data traffic on, each communication interface between subcomponents and services.

6.6.6.6. The TACS must allow for saving the configuration changes on its data communication interfaces between subcomponents and services.

6.6.6.7. The TACS should allow for the display and recording of incoming and outgoing messages on each data communication interface between subcomponents and services for diagnostic purposes.

6.6.6.8. The TACS should allow for the activation and de-activation of the data display and recording on each data communication interface between subcomponents and services dynamically.

6.6.6.9. The TACS must allow for stopping and starting processes, subcomponents and services independently.

6.6.6.10. The TACS must allow for the configuration of logging and diagnostic parameters for each subcomponent and service.

6.6.6.11. The TACS must allow for the generation of configuration files for each subcomponent and service.

6.6.6.12. The TACS must apply the latest saved configuration parameters of subcomponents and services at start-up.

6.6.6.13. The TACS should allow for the configuration of system admissibility for the following types of user role:

6.6.6.13.1. Airspace Monitoring and Coordination; and

6.6.6.13.2. Airspace Command and Control.

6.6.6.14. The TACS should allow for the configuration of user profiles based on the functionalities and capabilities associated to each role.

6.6.6.15. The TACS must allow for configuring and enabling the following operational capabilities:

6.6.6.15.1. LAP monitoring and coordination only;

6.6.6.15.2. RAP monitoring and coordination only; and

6.6.6.15.3. LAP and RAP monitoring and coordination.

6.6.6.16. The TACS should allow for configuring and enabling/disabling the Tactical Airspace Control capability.

6.6.6.17. The TACS should record, in a log file, information related to the originator of configuration changes. The record must include, as a minimum, the user and operational profile, date and time.

6.7. Operational Capabilities. The TACS is intended to provide, as a minimum, the following capabilities in order to meet the Army's operational requirements and to support capability growth:

6.7.1. Local Air Picture Management (LAPM). The implemented LAPM capability must enable the ASCC to receive; process and combine data tracks from local air surveillance sensors, in order to compile and distribute the local air picture within the air surveillance and defense community. The TACS is expected to respond, as a minimum, to the following requirements under this capability:

6.7.1.1. The LAPM[17] must allow for supporting, as a minimum, ten (10) sensor interfaces simultaneously.

6.7.1.2. The LAPM should allow for supporting up to sixteen (16) sensor interfaces simultaneously.

6.7.1.3. The LAPM must allow for exchanging data with each individual sensor using the following data communication protocols on each sensor interface:

6.7.1.3.1. UDP/IP;

6.7.1.3.2. TCP/IP; and

6.7.1.3.3. IP Multicast.

6.7.1.4. The LAPM should allow for exchanging data with sensors using IP encapsulated serial data communication protocol.

6.7.1.5. The LAPM must allow for processing only the data from a specific sensor based on the Unique Identification Number (UIN) assigned to each sensor.

6.7.1.6. The LAPM must allow for specifying the measurement data format to be received on each sensor interface, including as a minimum:

6.7.1.6.1. Range/Bearing (RB);

6.7.1.6.2. Range/Bearing/Altitude (RBA);

6.7.1.6.3. Range/Bearing/Elevation (RBE); and

6.7.1.6.4. Latitude/Longitude/Altitude (LLA).

6.7.1.7. The LAPM must allow for manually configuring the sensor location (latitude, longitude and altitude) on each sensor interface.

6.7.1.8. The LAPM must update the sensor location information in the sensor configuration panel and file automatically at the reception of the sensor location report and sensor status messages.

6.7.1.9. The LAPM must use the most recent sensor location information in the track calculation and processing.

[17] The term LAPM used in this document is referencing the LAPM capability of the TACS. The LAPM capability could be an integrated service/module or an embedded process within the TACS.

6.7.1.10. The LAPM must take into account the covariance reported in the track message from the sensor to perform track processing and management (correlation, fusion…).

6.7.1.11. The LAPM must allow for the manual configuration of the default tracking error parameters (range, azimuth, elevation, horizontal and vertical position error) provided by the sensor, which are used for the track/target correlation on each sensor interface.

6.7.1.12. The LAPM must allow for manually overriding the covariance reported from the sensor with the configured default tracking error parameters, to perform track processing and management.

6.7.1.13. The LAPM must allow for manually specifying and enabling sensor data input filters, as a minimum the following for each sensor interface:

6.7.1.13.1. Duplicated data;

6.7.1.13.2. Coverage zone (limits); and

6.7.1.13.3. Geographical region / area[18].

6.7.1.14. The LAPM should allow for controlling and monitoring of the tracks being processed based on, as a minimum, the following characteristics:

6.7.1.14.1. The LAPM should allow for the configuration of the track processing threshold, which is more than one thousand (1000) tracks per second.

6.7.1.14.2. The LAPM should allow for the prioritization of track Input filters;

6.7.1.14.3. The LAPM should automatically reduce the number of tracks input to the system when the threshold has been reached, by applying the following elimination methods:

6.7.1.14.3.1. Track input filters in priority order; and

6.7.1.14.3.2. Exceeded tracks if the input filter is not configured.

6.7.1.15. The LAPM should allow for superseding the sensor's track data timestamp with the reception timestamp at each sensor interface.

6.7.1.16. The LAPM must allow for specifying the track reporting period on each sensor interface.

[18] The supported Geographical region / area shapes are specified in the Tactical Display Service (TDS) requirements section.

6.7.1.17. The LAPM must allow for the selection of the following data frame delimiters for each sensor interface:

6.7.1.17.1. North Marker / Pulse; and

6.7.1.17.2. Scan period.

6.7.1.18. The LAPM should allow for specifying one of the following reporting data types for each sensor interface:

6.7.1.18.1. Plot (Primary and Secondary) and Track;

6.7.1.18.2. Plot (Primary and Secondary);

6.7.1.18.3. Primary Plot;

6.7.1.18.4. Secondary Plot; and

6.7.1.18.5. Track.

6.7.1.19. The LAPM must allow for the configuration of the sensor's reported operational limits, including range, azimuth and elevation for the calculation of track/target positional error.

6.7.1.20. The LAPM must allow for the monitoring of system status and alerts at the following logging levels:

6.7.1.20.1. Critical;

6.7.1.20.2. Error;

6.7.1.20.3. Warning;

6.7.1.20.4. Info; and

6.7.1.20.5. Debug.

6.7.1.21. The LAPM must allow the operator to enable and disable the auto-generation of the system alarm and warning.

6.7.1.22. The LAPM must be able to receive and process, as a minimum, the following ASTERIX messages:

6.7.1.22.1. CAT 007 – Directed Interrogation Messages (Ed. 1.5 and earlier) with Appendix A – Coding rules for "Reserved Expansion Field" (Ed. 1.3);

6.7.1.22.2. CAT 021 – ADS-B Report (Ed. 2.4);

6.7.1.22.3. CAT 34 – Monoradar Service Messages as the North Marker and as Jamming Strobe (Ed. 1.27 and earlier);

6.7.1.22.4. CAT 048 – Monoradar Target Reports (Ed. 1.21 and earlier) with Appendix A – Reserved Expansion Field (Ed. 1.7);

6.7.1.22.5. CAT 062 – System Track Messages (Ed. 1.17 and earlier); and

6.7.1.22.6. CAT 063 – Sensor Status Messages (Ed. 1.3 and earlier).

6.7.1.23. The LAPM must be upgradable to support the 14-bit (instead of 12) Track Number data field within the CAT 048 – Monoradar Target Reports (Ed. 1.21).

6.7.1.24. The LAPM must be upgradable to support the 14-bit (instead of 12) Track Number data field within the CAT 021 – ADS-B (Ed. 2.4).

6.7.1.25. The LAPM must be upgradable to extract and process the primary track classification from the Second Extent[19] of the Track Status data field within the CAT 048 – Monoradar Target Reports (Ed. 1.21).

6.7.1.26. The LAPM should be upgradable to receive and process the latest version of supported ASTERIX messages and new ASTERIX messages.

6.7.1.27. The LAPM should be able to receive and process surveillance track data in ECGP/CD-2, ASR-9 and MAR message formats.

6.7.1.28. The LAPM should be upgradable to receive and transmit the latest Canadian VMF Strike/Threat Warning[20] message.

6.7.1.29. The LAPM should be upgradable to forward the Canadian VMF Strike/Threat Warning to a third party's Alarm/Warning dispatching process or service.

6.7.1.30. The LAPM must allow for interaction with the dedicated GUI to display track data and execute command and control features.

6.7.1.31. The LAPM must be able to receive, process and support Interrogation Friend or Foe (IFF) Mode 5 information.

6.7.1.32. The LAPM must be upgradable to allow the operator to initiate an IFF Mode 5 interrogation request on selected tracks and forward to the corresponding sensor.

[19] The details with regards to the bits encoding will be provided at the kick-off meeting.

[20] Canadian VMF Strike/Thread Warning message is an adapted version of the MIL-STD 6017C's K05.13.

6.7.1.33. The LAPM should allow for the adjustment of control parameters for track correlation[21] test including, as a minimum, the following:

6.7.1.33.1. Positional error associated with Track Quality;

6.7.1.33.2. Minimum window size;

6.7.1.33.3. Window size multiplier;

6.7.1.33.4. Speed threshold (lower); and

6.7.1.33.5. Alternate speed test factor.

6.7.1.34. The LAPM must process and manage all plots received on each sensor interface.

6.7.1.35. The LAPM must implement a tracking engine that allows for the initiation of a track from the Primary plots on each sensor data interface.

6.7.1.36. The LAPM must be able to perform “Plot Association” which is the procedure of assignment of a new sensor measurement to a track.

6.7.1.37. The LAPM must allow for the configuration and application of auto-identification[22] rules on received tracks from each sensor interface based on the IFF response (code) information.

6.7.1.38. The LAPM must allow for the activation and de-activation of auto-identification for received tracks/targets from each sensor interface.

6.7.1.39. The LAPM must be able to process and support, as a minimum, tracks of the following environments/categories:

6.7.1.39.1. Air; and

6.7.1.39.2. Space.

6.7.1.40. The LAPM must be able to process and support tracks of the following environments/categories:

6.7.1.40.1. Land;

6.7.1.40.2. Surface; and

[21] The terms “track correlation” reference, in this document, to the correlation of any pair tracks of same environment/category, unless otherwise specified.

[22] The auto-identification is referencing, in this document, to the automatic assignation of the identification attributes including but not limited to identity, environment, platform and nationality to a target or a track.

6.7.1.40.3. Subsurface.

6.7.1.41. The LAPM must be able to process and display received jamming strobes with, as a minimum, the following information:

6.7.1.41.1. Identification (Source ID and track number);

6.7.1.41.2. Timestamp; and

6.7.1.41.3. Start and End azimuth.

6.7.1.42. The LAPM must be able to display ADS-B information received, including as a minimum, the location, identification, platform and specific type.

6.7.1.43. The LAPM must be able to correlate ADS-B data with the Primary Surveillance Radar (PSR) track data to the correlation and air picture compilation process.

6.7.1.44. The LAPM must be able to perform data correlation and fusion between the following track data reports:

6.7.1.44.1. Primary Surveillance Radar (PSR) and Secondary Surveillance Radar (SSR);

6.7.1.44.2. PSR and ADS-B; and

6.7.1.44.3. Combined Surveillance Radar (CSR)[23] and ADS-B.

6.7.1.45. The LAPM must be able to perform track data correlation and fusion on CSR tracks received from different sensors.

6.7.1.46. The LAPM must be able to deliver a successful correlation / fusion rate with a minimum of 95% for all tracks / targets within the following differential values:

6.7.1.46.1. A horizontal separation of less than 250 m within a range of 30 km;

6.7.1.46.2. A vertical separation of less than 400 m within a range of 30 km; and

6.7.1.46.3. A velocity differential of less than 25 m/s.

6.7.1.47. The LAPM must be able to deliver a successful rate of 90%, as a minimum, for not correlating tracks and targets separated by:

[23] Combined Surveillance Radar (CSR) track is defined in this document as the track resulting of the PSR and SSR tracks combining.

6.7.1.47.1. A horizontal separation of more than 250 m within a range of 30 km;

6.7.1.47.2. A vertical separation of more than 400 m within a range of 30 km; and

6.7.1.47.3. A velocity differential of more than 25 m/s.

6.7.1.48. The LAPM must be able to correlate the CSR track with a PSR or SSR track.

6.7.1.49. The LAPM must allow for the automatic track fusion process in which the correlated tracks are automatically merged and represented by a single track as a result.

6.7.1.50. The LAPM should allow for the semi-automatic track fusion process in which the correlated candidates are presented and the operator's intervention is required to execute the track fusion process.

6.7.1.51. The LAPM must allow for the manual track fusion process in which the operator is enabled to manually select tracks for fusion.

6.7.1.52. The LAPM should allow the operator to revert the fusion created by the semi-automatic and manual track fusion process.

6.7.1.53. The LAPM should allow the operator to manually create and delete the association between two tracks of the same environment/category.

6.7.1.54. The LAPM should be able to assess the identity of all tracks based on the evaluation of the track behavior and IFF response against predefined IFF Switch ON/OFF lines and the following Airspace Control (ASC) area / zone:

6.7.1.54.1. Restricted Operations Zone (ROZ);

6.7.1.54.2. Air Corridor / Route;

6.7.1.54.3. Air Traffic Control (ATC) Airspace;

6.7.1.54.4. Special Use Airspace;

6.7.1.54.5. Base Defence Zone (BDZ); and

6.7.1.54.6. High Density Airspace Control Zone (HIDACZ).

6.7.1.55. The LAPM must allow for the IFF/SIF management with the following functions:

6.7.1.55.1. Selectively clear or update Mode;

6.7.1.55.2. Update IFF/SIF; and

6.7.1.55.3. Update Special Code.

6.7.1.56. The LAPM must assign and manage a unique track number for each and every LAP's track and jamming strobe.

6.7.1.57. The LAPM must allow for defining the track number range that is used for system tracks[24] and jamming strobes.

6.7.1.58. The LAPM should allow for displaying the original track number which is assigned by the reporting sensor.

6.7.1.59. The LAPM should allow for manually changing the track's attributes, as a minimum identity, environment, identification and platform. The changes must be persistent through track updates.

6.7.1.60. The LAPM should allow for manually reverting the track's attributes that was manually changed.

6.7.1.61. The LAPM should allow for manually creating a simulation track and an observed track based on the intelligence information received.

6.7.1.62. The LAPM must allow for the dissemination of system tracks and jamming strobes on the network.

6.7.1.63. The LAPM must allow for controlling the dissemination of system tracks based on the following types of filter:

6.7.1.63.1. Identity; and

6.7.1.63.2. Geographical area / region.

6.7.1.64. The LAPM must allow for controlling the dissemination of system tracks based on the following types of filter:

6.7.1.64.1. Source; and

6.7.1.64.2. Threatening Activity.

6.7.1.65. The LAPM must support the following track classifications:

[24] The term "system track" used in this document references the processed and de-conflicted track that are originated from local sensors.

6.7.1.65.1. Fixed Wing A/C;

6.7.1.65.2. Rotary Wing A/C;

6.7.1.65.3. Cruise Missile;

6.7.1.65.4. Jammer;

6.7.1.65.5. UAS; and

6.7.1.65.6. Rocket, Artillery and Mortar (RAM).

6.7.1.66. The LAPM should support the Ballistic Missile classification.

6.7.1.67. The LAPM should allow for controlling the dissemination of the jamming strobe based on the following parameters:

6.7.1.67.1. Source Type;

6.7.1.67.2. Operational mode; and

6.7.1.67.3. Geographical area / region.

6.7.1.68. The LAPM must maintain and manage track data based on the configurable track persistence period[25].

6.7.1.69. The LAPM must allow for maintaining and managing jamming strobe data based on the configurable jam/strobe persistence period.

6.7.1.70. The LAPM must be able to automatically correlate and fuse twenty (20) dual-track pairs in less than one (1) second.

6.7.1.71. The LAPM must be able to process thirty (30) single-track entities from two (2) different sensors in less than one (1) second.

6.7.1.72. The LAPM must be able to process fifty (50) tracks from a single sensor in less than one (1) second.

6.7.1.73. The LAPM must be able to maintain and display a minimum of one thousand (1000) tracks for each interval of sixty (60) seconds.

6.7.1.74. The LAPM must allow for sharing system tracks in ASTERIX format (Cat 062 – System Track Messages (Ed. 1.17 and earlier)) with other

[25] The persistent period of a track is the time to live of a track when there's no update of the specific track received.

applications and/or external systems, through configurable and real-time[26] data exchange interfaces.

6.7.1.75. The LAPM should allow for the dissemination of system jamming strobes, in ASTERIX format (Cat 034 – Monoradar service messages (Ed. 1.27 and earlier)), with other applications and/or external systems, through configurable and real-time data exchange interfaces.

6.7.1.76. The LAPM should allow for sharing received ADS-B, in ASTERIX format (Cat 021 – ADS-B Report (Ed. 2.4)), with other applications and/or external systems, through configurable and real-time data exchange interfaces.

6.7.1.77. The LAPM should be able to notify the operator of the time desynchronization between the system local time and interfaced radars based on the timestamp within the received Sensor Status Messages (Cat 063).

6.7.1.78. The LAPM should allow for the exchange of management and control messages through an Ethernet IP based interface.

6.7.1.78.1. The LAPM should implement customized protocol and message formats to support the exchange of Change Data Order (CDO) messages with RAPM.

6.7.1.78.2. The LAPM should apply the CDO on the corresponding sensor track and persist the changes over the updates.

6.7.1.78.3. The LAPM should allow for the reception and processing of IFF Mode 5 interrogation requests from the RAPM.

6.7.1.79. The LAPM should allow for the application of Airspace Coordination and Management (ASCM) functionality as described in the section 6.7.3 of this document, on the LAP.

6.7.1.80. The LAPM must allow for recording a minimum of one (1) gigabyte of data packets received from all active sensor interfaces in a rollover file.

6.7.1.81. The LAPM must record the received data packets in a format that can be displayed and replayed by an embedded tools or by an included COTS tool.

6.7.1.82. The LAPM must store the system status and alerts in a log file.

[26] The term ‘real-time’ in the context of this document is referencing the live communication mode in which the exchange information/data can be done instantly or with negligible latency.

6.7.2. Recognized Air Picture Management (RAPM). The implemented RAPM capability must allow the ASCC to process and combine the system tracks with tracks received from the TDL network, in order to de-conflict the Recognized Air Picture (RAP) before sharing among TDL participants and the community of interest. The TACS is expected to respond, as a minimum, to the following requirements under this functionality:

6.7.2.1. The RAPM[27] must implement the processing mechanism that supports the configuration options and parameters related to the RAPM capability directly and/or indirectly.

6.7.2.2. The RAPM must be able to validate and process system air tracks in the CAT 062 – System Track (Ed. 1.17 and earlier) message format in accordance with the Euro Control Standard Document for Surveillance Data Exchange (ASTERIX).

6.7.2.3. The RAPM must be able to validate and process system jamming strobes in the CAT 034 – Monoradar Service Message (Ed. 1.27 and earlier) format in accordance with the Euro Control Standard Document for Surveillance Data Exchange (ASTERIX).

6.7.2.4. The RAPM should allow for the exchange of management and control messages with other applications and/or external systems through an Ethernet IP based interface.

6.7.2.4.1. The RAPM should implement customized protocol and message formats to support the exchange of CDO messages with LAPM.

6.7.2.4.2. The RAPM should allow the operator to select a track and initiate the IFF Mode 5 interrogation request to the LAPM.

6.7.2.5. The RAPM must be able to exchange VMF data using the MIL-STD-2045-47001D w/Change 1 message header format.

6.7.2.6. The RAPM must implement VMF messages specified within this document, in accordance with MIL-STD-6017 C.

6.7.2.7. The RAPM should implement VMF messages specified within this document, in accordance with the latest edition of STANAG 5519.

6.7.2.8. The RAPM should allow for the exchange of VMF messages specified within this document that are compliant to the following standards:

6.7.2.8.1. MIL-STD-2045-47001 C; and

[27] The term RAPM used in this document is referencing the RAPM capability of the TACS. The RAPM capability could be an integrated service/module or an embedded process within the TACS.

6.7.2.8.2. MIL-STD-6017 A and B.

6.7.2.9. The RAPM must allow for the processing and exchange of friendly positions and coordination messages on a VMF/SADL interface by implementing the following VMF messages:

6.7.2.9.1. K01.1 – Free Text; (T/R)[28]

6.7.2.9.2. K05.1 – Position Report; (T/R)

6.7.2.10. The RAPM should allow for the processing and exchange of global situational awareness and tactical operational data on a VMF/SADL interface by implementing the following VMF messages:

6.7.2.10.1. K01.2 – Unit Reference Query/Response; (T/R)

6.7.2.10.2. K03.7 – Airspace Control Means Request/Reply; (T/R)

6.7.2.10.3. K04.1 – Observation Report; (T/R)

6.7.2.10.4. K04.17 – Tactical Image Transfer; (T/R)

6.7.2.10.5. K04.36 – Aircraft Landing Zone Report (ALZREP); (T/R)

6.7.2.10.6. K04.37 – Drop Zone Report (DZREP); (T/R)

6.7.2.10.7. K05.19 – Entity Message; (T/R) and

6.7.2.10.8. K07.1 – Medical Evacuation Request. (T/R)

6.7.2.11. The RAPM must implement the following Host Basic Function messages for Command and Control (C2) JTIDS/MIDS Unit (JU)[29] in accordance with MIL-STD 6016 (revision D and earlier) and STANAG 5516 (Ed.6 and earlier):

6.7.2.11.1. J0.7 – Time Slot Reallocation (T);

6.7.2.11.2. J2.0 – Indirect Interface Unit PPLI[30] (T/R);

6.7.2.11.3. J2.2 – Air PPLI (R);

6.7.2.11.4. J2.3 – Surface (Maritime) PPLI (R);

[28] The abbreviation used to indicate the implementation scope for the current message: T – Transmission Only, R – Reception Only; and T/R – Transmission and Reception

[29] J-Unit (JU) is a Link-16 capable unit which is participating directly on Link-16 interface.

[30] Precise Participant Location and Identification (PPLI) message is used by Link-16 capable unit to report its location and identification.

6.7.2.11.5. J2.4 – Subsurface (Maritime) PPLI (R);

6.7.2.11.6. J2.5 – Land (Ground) Point PPLI (T/R);

6.7.2.11.7. J2.6 – Land (Ground) Track PPLI (T/R);

6.7.2.11.8. J7.0 – Track Management (T/R);

6.7.2.11.9. J7.1 – Data Update Request (R);

6.7.2.11.10. J13.5 – Land Platform and System Status (T); and

6.7.2.11.11. J28.2(0) – Text (T/R).

6.7.2.12. The RAPM should implement the following Host Basic Function messages for C2 JU in accordance with MIL-STD 6016 (revision D and earlier) and STANAG 5516 (Ed.6 and earlier):

6.7.2.12.1. J2.2 – Air PPLI (T);

6.7.2.12.2. J2.3 – Surface (Maritime) PPLI (T);

6.7.2.12.3. J2.4 – Subsurface (Maritime) PPLI (T);

6.7.2.12.4. J7.3 – Pointer (T/R);

6.7.2.12.5. J13.0 – Airfield Status (T/R);

6.7.2.12.6. J15.0 – Threat Warning (T/R);

6.7.2.12.7. J16.0 – Image Transfer (T/R);

6.7.2.12.8. J16.1 – Route Change (T/R); and

6.7.2.12.9. J17.0 – Weather Over Target (T/R).

6.7.2.13. The RAPM must implement the following Surveillance, Platform Situational Awareness, and Command messages for C2 JU in accordance with MIL-STD 6016 (revision D and earlier) and STANAG 5516 (Ed.6 and earlier):

6.7.2.13.1. J3.0 – Reference Point (T/R);

6.7.2.13.2. J3.1 – Emergency Point (T/R);

6.7.2.13.3. J3.2 – Air Track (T/R);

6.7.2.13.4. J3.3 – Surface Track (T/R);

6.7.2.13.5. J3.4 – Subsurface Track (T/R);

6.7.2.13.6. J3.5 – Land Point/Track (T/R);

6.7.2.13.7. J3.6 – Space Track (T/R);

6.7.2.13.8. J5.4 – Acoustic Bearing/Range (T/R);

6.7.2.13.9. J6.0 – Amplification Information (T/R);

6.7.2.13.10. J7.2 – Correlation (T/R);

6.7.2.13.11. J7.4 – Track Identifier (T/R);

6.7.2.13.12. J7.5 – IFF/SIF Management (T/R);

6.7.2.13.13. J9.0 – Command (T/R);

6.7.2.13.14. J10.2 – Engagement Status (R);

6.7.2.13.15. J10.5 – Controlling Unit Report (R);

6.7.2.13.16. J10.6 – Pairing (R);

6.7.2.13.17. J13.2 – Air Platform and System Status (R);

6.7.2.13.18. J13.3 – Surface Platform and System Status (R);

6.7.2.13.19. J13.4 – Subsurface Platform and System Status (R); and

6.7.2.13.20. J13.5 – Land Platform and System Status (R).

6.7.2.14. The RAPM should implement the following Surveillance, Platform Situational Awareness and Command messages for C2 JU in accordance with MIL-STD 6016 (revision D and earlier) and STANAG 5516 (Ed.6 and earlier):

6.7.2.14.1. J3.7 – Electronic Warfare Product Information (T/R);

6.7.2.14.2. J7.7 – Association (T/R);

6.7.2.14.3. J10.6 – Pairing (T).

6.7.2.15. The RAPM should allow for the forwarding of Link-16 Command messages (J9.0) to remote systems with the following options:

6.7.2.15.1. Forward to all interfaces – This is only applicable for the J9.0 when the Command field is set to the value in the range of [0-8]; and

6.7.2.15.2. Forward only to the interface on which the addressee is active.

6.7.2.16. The RAPM must implement the following JREAP Application Layer Protocols in accordance with MIL-STD 3011 (Ed. 2002) and STANAG 5518 (Ed. 2014):

6.7.2.16.1. Half-Duplex Announced Token Passing (JREAP-A);

6.7.2.16.2. Full-Duplex Synchronous or Asynchronous Point-to-Point Connection (JREAP-B); and

6.7.2.16.3. Encapsulation over Internet Protocol (JREAP-C).

6.7.2.17. The RAPM must allow for the exchange of J-Series messages specified by the requirements at 6.7.2.11 and 6.7.2.13 through the JREAP interface.

6.7.2.18. The RAPM should allow for the exchange of J-Series messages specified in the requirements at 6.7.2.12 and 6.7.2.14 through the JREAP interface.

6.7.2.19. The RAPM should allow for the forwarding of the J15.0 – Threat Warning Message received on Link-16 and JREAP J-Series interface to a third party application through an IP based communication channel (TCP/UDP or Multicast).

6.7.2.20. The RAPM should allow for receiving the J15.0 – Threat Warning Message from a third party application through an IP based communication channel (TCP/UDP or Multicast), and forward it to the Link-16 and JREAP J-Series interface.

6.7.2.21. The RAPM should allow for the exchange of tactical information, including tracks and position reports, using Link-16 messages over the Standard Interface for Multiple Links Evaluation (SIMPLE) link in accordance with STANAG 5602.

6.7.2.22. The RAPM must allow for manually entering the unit location in the following coordinate systems:

6.7.2.22.1. Military Grid Reference System (MGRS); and

6.7.2.22.2. World Geodetic System 1984 (WGS-84).

6.7.2.23. The RAPM must allow for configuring up to sixteen (16) JREAP-C J-Series links using the following communication schemes:

6.7.2.23.1. TCP/IP Server;

6.7.2.23.2. TCP/IP Client;

6.7.2.23.3. UDP/IP Unicast; and

6.7.2.23.4. UDP/IP Multicast.

6.7.2.24. The RAPM must allow for configuring up to eight (8) JREAP-B J-Series links.

6.7.2.25. The RAPM must allow for configuring up to two (2)[31] JREAP-A J-Series links.

6.7.2.26. The RAPM must allow for configuring the following types of Common Time Reference on the JREAP-B and JREAP-C J-Series links:

6.7.2.26.1. Round Trip;

6.7.2.26.2. Fixed Delay; and

6.7.2.26.3. Coordinated Universal Time (UTC).

6.7.2.27. The RAPM should allow for the setting of concurrent operational priorities on active data links and interfaces.

6.7.2.28. The RAPM must allow for monitoring, as a minimum, the following communication activities on a Link-16 and JREAP J-Series interface:

6.7.2.28.1. Active Participant Units; and

6.7.2.28.2. Link Status.

6.7.2.29. The RAPM should allow for setting the following PPLI forwarding options on a JREAP J-Series interface:

6.7.2.29.1. As a J2.0 message (default); and

6.7.2.29.2. As Received (J2.x).

6.7.2.30. The RAPM must allow for processing the PPLI message received from a C2 JU that is having the Track Number in or out of the C2 JU Track Number's range, based on the TDL Track Number rules.

[31] One operational and one backup link.

6.7.2.31. The RAPM must allow for enabling and disabling the J-series message extrapolation when forwarding over a JREAP J-Series link.

6.7.2.32. The RAPM must allow for configuring a communication interface with a supported Link-16 terminal over an Ethernet connection.

6.7.2.33. The RAPM must allow for controlling the connected Link-16 terminal with, as a minimum, the following functions:

6.7.2.33.1. Sending the Initialization file to the terminal;

6.7.2.33.2. Retrieving the current Initialization file from the terminal;

6.7.2.33.3. Setting the date and time on the terminal;

6.7.2.33.4. Changing current initialization parameters on the terminal;

6.7.2.33.5. Monitoring the connection, system and communication status, including the Time Slot Duty Factor (TSDF) of the terminal; and

6.7.2.33.6. Editing an Initialization file.

6.7.2.34. The RAPM should allow for the extraction of network parameters from the Operational Tasking Data Links (OPTASK LINK) and update the corresponding network interface configuration.

6.7.2.35. The RAPM should allow for establishing the Link-16 SIMPLE Ethernet link with a third party application and/or remote system, using the following communication scheme:

6.7.2.35.1. TCP/IP Server; and

6.7.2.35.2. TCP/IP Client.

6.7.2.36. The RAPM must allow for establishing a VMF data exchange interface with a third party application and/or remote system, using the following communication scheme:

6.7.2.36.1. UDP/IP Unicast; and

6.7.2.36.2. UDP/IP Multicast.

6.7.2.37. The RAPM should allow for establishing a VMF data exchange interface with a VHF/UHF communication device, using the following communication standards:

6.7.2.37.1. MIL-STD-188-220C; and

6.7.2.37.2. MIL-STD-188-220D w/Change 1.

6.7.2.38. The RAPM should allow for establishing the Intel links, using an Ethernet TCP/IP and UDP/IP communication scheme, with remote systems to exchange the information in, as a minimum, the following formats:

6.7.2.38.1. OTH-G; and

6.7.2.38.2. USMTF.

6.7.2.39. The RAPM must allow for controlling the data forwarding between configured tactical data links including, as a minimum, JREAP J-Series links, a Link-16 terminal interface and SIMPLES links.

6.7.2.40. The RAPM must allow for enabling and disabling forwarding on individual tactical data links including, as a minimum, JREAP J-Series links, a Link-16 terminal interface and SIMPLES links.

6.7.2.41. The RAPM must allow for controlling the data forwarding between tactical data links and other links and interfaces including, as a minimum, VMF, Intel links, and links with other subcomponents and applications.

6.7.2.42. The RAPM must allow for the monitoring of data forwarding on all active tactical data links, Intel links and other links or interfaces.

6.7.2.43. The RAPM must allow for the forwarding of tracks and own position reports between the following tactical data links and interfaces in accordance with MIL-STD 6020 (Ed. 2004):

6.7.2.43.1. Link-16;

6.7.2.43.2. VMF/SADL; and

6.7.2.43.3. JREAP.

6.7.2.44. The RAPM must be able to process and forward tracks and PPLI of the following environments/categories:

6.7.2.44.1. Air;

6.7.2.44.2. Land;

6.7.2.44.3. Surface; and

6.7.2.44.4. Subsurface.

6.7.2.45. The RAPM should be able to process and forward tracks and PPLI of the space environment/category.

6.7.2.46. The RAPM must allow for Auto Identity, which is a process that automatically assigns the identity, platform and activity of an air track received from the LAPM interface, based on the IFF Mode 1, 2, 3, S and 5 response (codes).

6.7.2.47. The RAPM must allow for the specification of Auto Identity parameters including the identity, platform and activity for each IFF Mode 1, 2, 3, S and 5 response.

6.7.2.48. The RAPM must allow for controlling the reception of TDL tracks[32] from TDL interfaces and links based on, as a minimum, the following filtering parameters:

6.7.2.48.1. Track Environment/Category;

6.7.2.48.2. Track Identity;

6.7.2.48.3. Geographic Area; and

6.7.2.48.4. Track Source/Originator.

6.7.2.49. The RAPM must allow for controlling the reception of system tracks from the LAPM interface based on, as a minimum, the following filtering parameters:

6.7.2.49.1. Track Environment/Category;

6.7.2.49.2. Track Identity;

6.7.2.49.3. Geographic Area;

6.7.2.50. The RAPM must allow for the monitoring and management of Tactical tracks[33] and Intel tracks[34] based on the configurable data persistency period (track ageing/timeout).

6.7.2.51. The RAPM must allow for controlling the transmission/forwarding of Tactical and Intel tracks based on, as a minimum, the following filtering parameters:

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[32] TDL tracks are tracks received from TDL network, including Link-16 interface and JREAP links.

[33] The terms “Tactical track” used in this document reference to system tracks and TDL tracks (tracks received from TDL network).

[34] The terms “Intel track” reference to the tracks received from the Intel links.

6.7.2.51.1. Track Environment/Category;

6.7.2.51.2. Track Identity;

6.7.2.51.3. Track Source/Originator; and

6.7.2.51.4. Geographic Area.

6.7.2.52. The RAPM must allow for controlling the reception of TDL tracks, based on configured filtering parameters, on each individual TDL interface/link.

6.7.2.53. The RAPM must allow for controlling the reception of system tracks, based on configured filtering parameters, on each individual LAPM interface.

6.7.2.54. The RAPM must allow for controlling the transmission/forwarding of Tactical and Intel tracks, based on configured filtering parameters, on each individual TDL interface/link.

6.7.2.55. The RAPM must allow for saving/loading the configured parameters and application context settings of all filters in/from a persistent file.

6.7.2.56. The RAPM must be able to perform track de-confliction[35] on air tracks received from different tactical data links and interfaces, in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.57. The RAPM should be able to perform track de-confliction on tracks of the following environments/categories received from different tactical data links and interfaces, in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6):

6.7.2.57.1. Land (Ground);

6.7.2.57.2. Surface (Maritime);

6.7.2.57.3. Subsurface (Maritime); and

6.7.2.57.4. Space.

6.7.2.58. The RAPM must perform correlation between PPLI and Tactical and Intel tracks in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

[35] The terms “track de-confliction” mentioned in this document reference to the process of track data correlation/decorrelation and fusion.

6.7.2.59. The RAPM must allow for performing track de-confliction between Intel tracks and Tactical tracks, based on the following correlation approaches:

6.7.2.59.1. Correlate by Position, including velocity;

6.7.2.59.2. Correlate by Parametric;

6.7.2.59.3. Correlate by Track Number;

6.7.2.59.4. Correlate by Ellipse; and

6.7.2.59.5. Correlate by Command.

6.7.2.60. The RAPM must be able to perform track de-confliction between system tracks and TDL tracks in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.61. The RAPM must allow for performing track de-confliction process automatically and manually in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.62. The RAPM should allow for the following exclusion on the correlation of TDL tracks with Intel and system tracks:

6.7.2.62.1. Excluding the Common Local Tracks[36];

6.7.2.62.2. Excluding the Air Strength Tracks; and

6.7.2.62.3. Excluding tracks with identity differences.

6.7.2.62.4. Excluding tracks with different Mode II IFF Codes.

6.7.2.63. The RAPM must allow for adjusting the correlation and decorrelation performance for Air and Surface tracks based on the following information:

6.7.2.63.1. Number of successful correlation tests required;

6.7.2.63.2. Number of successful decorrelation tests required; and

6.7.2.63.3. Decorrelation windows size multiplier.

6.7.2.64. The RAPM must allow for adjusting the following correlation control parameters, as a minimum, for the Air and Surface tracks:

[36] The term “common local track” used in this document references the system tracks which are already correlated and fused with TDL tracks.

6.7.2.64.1. Track Quality (Min, Max);

6.7.2.64.2. Minimum window size;

6.7.2.64.3. Window size multiplier;

6.7.2.64.4. Speed and Course differential allowance (Max); and

6.7.2.64.5. Altitude differential allowance (Max).

6.7.2.65. The RAPM should allow for adjusting, as a minimum, the following correlation control parameters for an Air Strength track:

6.7.2.65.1. Horizontal distance allowance (Max);

6.7.2.65.2. Kinetic testing duration (Min);

6.7.2.65.3. Lateral separation allowance (Max); and

6.7.2.65.4. Course and Speed differential allowance (Max).

6.7.2.66. The RAPM must allow for enabling and disabling the automatic transmission of correlation messages on a Link-16 network.

6.7.2.67. The RAPM must implement track reporting and management rules in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6), for system and Intel tracks that are candidates for dissemination on TDL network.

6.7.2.68. The RAPM must implement and apply the Reporting Responsibility (R2) rules on system and Intel tracks in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.69. The RAPM must allow for the forwarding of de-conflicted Intel and system tracks on the following tactical data links and interfaces:

6.7.2.69.1. Link-16 Interface;

6.7.2.69.2. JREAP Links.

6.7.2.70. The RAPM should allow for the forwarding of de-conflicted Intel and system tracks on the VMF/SADL interfaces.

6.7.2.71. The RAPM must allow for the control of the transmission of a de-conflicted Intel and system track on the Link-16 interface and JREAP J-Series links.

6.7.2.72. The RAPM should allow for manually creating and deleting the association between two tracks of the same environment/category.

6.7.2.73. The RAPM should allow for manually generating and deleting the pairings between tracks of the same environment/category.

6.7.2.74. The RAPM should be able to assess the identity of an air track based on the IFF response against predefined IFF Switch ON/OFF lines and/or track trajectory against the following types of Airspace Control (ASC) zone / area:

6.7.2.74.1. Restricted Operations Zone (ROZ);

6.7.2.74.2. Air Corridor/Route;

6.7.2.74.3. Air Traffic Control (ATC) Airspace;

6.7.2.74.4. Special Use Airspace;

6.7.2.74.5. Base Defence Zone (BDZ); and

6.7.2.74.6. High Density Airspace Control Zone (HIDACZ).

6.7.2.75. The RAPM must implement required functions that allow for the report and resolution of duplicated track numbers and entity conflicts in accordance with the Data Difference Resolution principles described by MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.76. The RAPM must implement required functions that allow for the report and resolution of the following differences in accordance with the Data Difference Resolution principles described by MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6):

6.7.2.76.1. Environment;

6.7.2.76.2. Identity

6.7.2.76.3. Exercise Indicator;

6.7.2.76.4. Platform;

6.7.2.76.5. Activity;

6.7.2.76.6. Specific Type; and

6.7.2.76.7. Special Interest Indicator.

6.7.2.77. The RAPM must implement the required functions that allow for the report and resolution of dual designations in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.78. The RAPM must implement the procedures for the Change Data Order (CDO) of a track on a TDL network in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.79. The RAPM must allow for manually creating an observed and Non Real-Time track of all supported environments/categories based on the intelligent information received.

6.7.2.80. The RAPM must allow for manually editing and deleting (dropping) a Tactical and Intel track.

6.7.2.81. The RAPM should allow for enabling and disabling the transmission of a single track onto the network.

6.7.2.82. The RAPM must be able to maintain and display a minimum of one thousand and five hundred (1500) tracks for each interval of ninety (90) seconds.

6.7.2.83. The RAPM must locally maintain and manage a track database for Tactical and Intel tracks.

6.7.2.84. The RAPM should allow for manually initiating and reporting the system track target on the Link-16 network as a J12.6 – Target Sorting message.

6.7.2.85. The RAPM must allow for manually creating and reporting a condition at a specific location without a track number through the means of a J7.3 – Pointer message in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.86. The RAPM must allow for manually requesting a track data update on a specific track through the means of a J7.1 – Data Update Request message in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6).

6.7.2.87. The RAPM must allow for manually generating and transmitting the following information through the means of a J-Series messages in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6):

6.7.2.87.1. J3.0 – Reference Point;

6.7.2.87.2. J3.1 – Emergency Point;

6.7.2.87.3. J3.7 – Electronic Warfare (EW) Product Information;

6.7.2.87.4. J6.0 – Track Point Amplification; and

6.7.2.87.5. J14.0 – Parametric Information.

6.7.2.88. The RAPM should allow for manually generating and transmitting the following information through the means of J-Series message in accordance with MIL-STD 6016 (Rev. D) and STANAG 5516 (Ed. 6):

6.7.2.88.1. J3.7 – Electronic Warfare (EW) Product Information; and

6.7.2.88.2. J14.0 – Parametric Information.

6.7.2.89. The RAPM must allow for an audible and visual alert on the arrival of a Force Tell and Emergency track.

6.7.2.90. The RAPM must allow for enabling or disabling the Force Tell and Emergency attribute on a track.

6.7.2.91. The RAPM must allow for an audible and visual notification upon the receipt of a CDO message.

6.7.2.92. The RAPM must allow for the notification of a threat received on a local interface and the TDL network.

6.7.2.93. The RAPM should implement the required messages to support the Air Controlling Unit function for C2 JU in accordance with MIL-STD 6016 (revision D) and the STANAG 5516 (Ed.6).

6.7.2.94. The RAPM should allow for automatically enabling and disabling the air control mode based on the configuration selected.

6.7.2.95. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6) to allow the Authority to assume control of a friendly, non-Link-16 capable air unit that is not under active control by another controlling unit.

6.7.2.96. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to assume control of a friendly, Link-16 capable air unit (Non-C2 JU) that is not under active control by another controlling unit.

6.7.2.97. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to terminate control (without handover) of a friendly, non-Link-16 capable friendly air unit.

6.7.2.98. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the

Authority to terminate control (without handover) of a friendly, Link-16 capable air unit.

6.7.2.99. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to perform a handover of a friendly, non-Link-16 capable friendly air unit to a non-Link-16 controlling unit.

6.7.2.100. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to perform a handover of a friendly, Link-16 capable air unit to a non-Link-16 capable controlling unit.

6.7.2.101. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to request a handover of a friendly, non-Link-16 capable air entity to a Link-16 capable controlling unit.

6.7.2.102. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to request a handover of a friendly, Link-16 capable air unit to a Link-16 capable controlling unit.

6.7.2.103. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to request to transfer control of a friendly, non-Link-16 capable friendly air unit from a current Link-16 capable controlling unit.

6.7.2.104. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to request to transfer control of a friendly, Link-16 capable friendly air unit from a current Link-16 capable controlling unit.

6.7.2.105. The RAPM should implement the required functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to receive and process the control (check-in) request from a friendly, Link-16 capable air unit.

6.7.2.106. The RAPM should allow for the periodic transmission of a J10.5 – Controlling Unit Report message for each flight of friendly air units which is currently controlled by the own unit.

6.7.2.107. The RAPM should implement the requirements and functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to perform the following operation on a flight of a friendly, Link-16 capable air unit, which is currently controlled by the own unit:

6.7.2.107.1. Mission Assignment including Special Considerations;

6.7.2.107.2. Mission Assignment Cancellation;

6.7.2.107.3. Vector Application;

6.7.2.107.4. Vector Termination;

6.7.2.107.5. Vector Guidance Record Deletion;

6.7.2.107.6. Flight Path (waypoints) Application;

6.7.2.107.7. Flight Path Record Deletion;

6.7.2.107.8. Go To Voice Order Application;

6.7.2.107.9. Salvo/Clear Aircraft Order Application;

6.7.2.107.10. High Interest Track Designation;

6.7.2.107.11. High Interest Track Designation Record Deletion;

6.7.2.107.12. Issuing a Pointer;

6.7.2.107.13. Pointer Record Deletion;

6.7.2.107.14. Issuing a BackLink Sensor Target Reporting Directive;

6.7.2.107.15. BackLink on Record Deletion;

6.7.2.107.16. Issuing a Route Change Directive;

6.7.2.107.17. Route Change Record Deletion.

6.7.2.108. The RAPM should implement the requirements and functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to perform the following operation for an air asset under own unit control:

6.7.2.108.1. Issuing a Mark Point / Point Of Interest;

6.7.2.108.2. Mark Point / Point Of Interest Record Deletion;

6.7.2.108.3. Issuing a Heads Up Situation;

6.7.2.108.4. Issuing a Target Report including Special Considerations;

6.7.2.108.5. Target Record Deletion;

6.7.2.108.6. Issuing a Target or Mark Point Cancellation;

6.7.2.108.7. Issuing a Target Status;

6.7.2.108.8. Target Status Deletion;

6.7.2.108.9. Issuing an Engagement Status;

6.7.2.108.10. Engagement Status Deletion;

6.7.2.108.11. Issuing a Battle Damage Assessment;

6.7.2.108.12. Issuing a Target Bearing Report;

6.7.2.108.13. Target Bearing Record Deletion;

6.7.2.109. The RAPM should implement the requirements and functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow for the processing of the following information received from a flight of a friendly, Link-16 capable air unit, which is currently controlled by the own unit:

6.7.2.109.1. Mark Point / Point Of Interest;

6.7.2.109.2. Mark Point / Point Of Interest Deletion;

6.7.2.109.3. Engagement Heads Up;

6.7.2.109.4. Target Report;

6.7.2.109.5. Target / Mark Point Cancellation;

6.7.2.109.6. Target Status;

6.7.2.109.7. Target Status Deletion;

6.7.2.109.8. Engagement Status;

6.7.2.109.9. Engagement Status Deletion;

6.7.2.109.10. Battle Damage Assessment;

6.7.2.109.11. Target Bearing Report;

6.7.2.109.12. Target Bearing Record Deletion.

6.7.2.110. The RAPM should implement the requirements and functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow for the Authority to direct an friendly, Link-16 capable air unit (C2 JU):

6.7.2.110.1. To conduct missions to destroy an objective;

6.7.2.110.2. To stop the destruction of an objective;

6.7.2.110.3. To conduct a mission to intercept an objective; and

6.7.2.110.4. To conduct procedures other than intercept or destroy.

6.7.2.111. The RAPM should allow for Unmanned Aerial Vehicle (UAV) payload control (level 1 through 5) in accordance with STANAG 4586 – Standard Interface of the Unmanned Control System (UCS) for NATO UAV Interoperability.

6.7.2.112. The RAPM must allow for the application of Airspace Coordination and Management (ASCM) functions as described in the section 6.7.3 of this document, on the RAP.

6.7.2.113. The RAPM must allow for display and recording of alert messages coming from internal processors, interfaces and links.

6.7.2.114. The RAPM must allow for clearing a single, or all, alert messages coming from internal processor, interfaces and links.

6.7.2.115. The RAPM must allow for recording a minimum of one (1) gigabyte of data packets received from the LAPM interface in a rollover file.

6.7.2.116. The RAPM must allow for recording a minimum of one (1) gigabyte of data packets received from a TDL network in a rollover file.

6.7.2.117. The RAPM must record the received data packets in a format that can be displayed and replayed by an embedded tool or by a COTS tool.

6.7.2.118. The RAPM must allow for the repetition of recorded data in real-time or at a higher rate.

6.7.2.119. The RAPM should allow for the incorporation of recorded data in a simulation scenario that is built and used for training or mission rehearsal.

6.7.2.120. The RAPM must allow for viewing and recording, in real time, the incoming and outgoing messages on a single and on multiple TDL interfaces and links.

6.7.2.121. The RAPM must allow for displaying the content of incoming and outgoing messages on a single and on multiple TDL interfaces and links in hexadecimal and human-readable formats.

6.7.2.122. The RAPM should allow for selectively viewing and recording incoming and outgoing messages on a single and on multiple TDL interfaces and links based on the following selection criteria:

6.7.2.122.1. Source;

6.7.2.122.2. Link Number;

6.7.2.122.3. Track Number;

6.7.2.122.4. Direction (incoming / outgoing); and

6.7.2.122.5. Message types per data link types.

6.7.2.123. The RAPM should allow for auto scrolling and pausing the display of incoming and outgoing messages on a single and on multiple TDL interfaces and links.

6.7.3. Airspace Coordination and Management (ASCM). The implemented ASCM capability must allow the operator to monitor airspace and coordinate and resolve conflicts based on the Air Tasking Order (ATO), Airspace Coordination Measure (ACM) or Airspace Control Order (ACO) information received from the local or joint airspace control authority. The ASCM is expected to respond, as a minimum, to the following requirements:

6.7.3.1. The ASCM[37] must allow for the importation/loading and processing of the ATO and ACO/ACM files in United States Message Text Format (USMTF) format.

6.7.3.2. The ASCM must allow for the importation/loading and processing of the ATO and ACO/ACM in Allied Data Publication 3 (ADatP-3)[38] format.

6.7.3.3. The ASCM should implement an adaptability or message conversion functionality for an ATO and ACO/ACM which allows for the translation between USMTF and ADatP-3 format.

6.7.3.4. The ASCM should allow for the exchange of an ATO and ACO/ACM through a secured IP communication interface using the following connectivity schemes:

[37] The term ASCM used in this document is referencing the ASCM capability of the TACS. The ASCM capability could be an integrated service/module or an embedded process within the TACS.

[38] The ADatP-3 standard and related documents will be released only with restriction to the Implementer at the project kick-off meeting. The ATO messages are defined in the APP-11 (revision C or later) catalogue.

6.7.3.4.1. UDP/IP;

6.7.3.4.2. TCP/IP; and

6.7.3.4.3. IP Multicast.

6.7.3.5. The ASCM must allow for downloading an ATO and ACO/ACM from a dedicated server through a secured WEB interface.

6.7.3.6. The ASCM must allow for uploading an ACO/ACM to a dedicated server through a secured WEB interface.

6.7.3.7. The ASCM must allow for the creation and configuration of an ACM with, as a minimum, the following operational parameters:

6.7.3.7.1. ACM Type;

6.7.3.7.2. ACM Name;

6.7.3.7.3. Lower altitude;

6.7.3.7.4. Upper altitude;

6.7.3.7.5. Start and End times;

6.7.3.7.6. Status; and

6.7.3.7.7. Visibility.

6.7.3.8. The ASCM must allow for configuring and showing, as a minimum, the following information related to an ACO of each ACM:

6.7.3.8.1. File name;

6.7.3.8.2. ACO ID;

6.7.3.8.3. Operation Codeword;

6.7.3.8.4. Plan Originator; and

6.7.3.8.5. ACO Start and End times.

6.7.3.9. The ASCM must allow for the creation and processing of, as a minimum, the following ACM shapes with specified characteristics:

6.7.3.9.1. Ellipse;

6.7.3.9.2. Polygon;

6.7.3.9.3. Arc – Defined by a center point, radius, and left, right bearings;

6.7.3.9.4. Fan – Defined by a center point, inner, outer radius and left, right bearings; and

6.7.3.9.5. Orbit.

6.7.3.10. The ASCM must support, as a minimum, the following ACM types:

6.7.3.10.1. Air Defense Area;

6.7.3.10.2. Air Defense Operation Area;

6.7.3.10.3. Air Traffic Control (ATC) Airspace;

6.7.3.10.4. Air Corridor/Route;

6.7.3.10.5. Procedural;

6.7.3.10.6. Restricted Operations Zone (ROZ);

6.7.3.10.7. High Density Airspace Control Zone (HIDACZ); and

6.7.3.10.8. Special Use Airspace.

6.7.3.11. The ASCM must allow for the creation and configuration of one, or multiple, warning / alert filters for each ACM based on track properties, including, as a minimum, the following:

6.7.3.11.1. Identity;

6.7.3.11.2. Environment/Category;

6.7.3.11.3. State (Original, Correlated);

6.7.3.11.4. Type (Exercise, Simulated, Live);

6.7.3.11.5. Role (C2 JU, NonC2 JU, Remotely / Locally Controlled);

6.7.3.12. The ASCM must allow for configuring the following triggering conditions for each warning / alert filter of an ACM:

6.7.3.12.1. Entry Alert;

6.7.3.12.2. Exit Alert;

6.7.3.12.3. Impending Entry Alert; and

6.7.3.12.4. Impending Exit Alert.

6.7.3.13. The ASCM must generate a visual and audible alert when a track is meeting the warning / alert filter criteria and triggering conditions.

6.7.3.14. The ASCM must allow for saving the created and configured ACMs to a file for reuse and sharing purpose.

6.7.3.15. The ASCM must allow for editing and deleting an existing ACM.

6.7.3.16. The ASCM should allow for the creation and configuration of an ACO.

6.7.3.17. The ASCM should allow for adding and removing one, or multiple, ACMs to/from an ACO.

6.7.3.18. The ASCM should allow for the creation and export of an ACO to a file for the reuse and sharing purpose.

6.7.3.19. The ASCM must allow the operator to retrieve and display ATO records based on, as a minimum, the following parameters:

6.7.3.19.1. Call Sign;

6.7.3.19.2. Mission Number;

6.7.3.19.3. Mode 2 Codes;

6.7.3.19.4. Mode 3 Codes; and

6.7.3.19.5. Type of aircraft.

6.7.3.20. The ASCM must allow the operator to visualize the data within each ATO record.

6.7.3.21. The ASCM must allow for the monitoring of an ATO and its missions based on the Start and End times.

6.7.3.22. The ASCM must allow for the performance of the automatic correlation of an imported/loaded ATO with the Tactical and Intel tracks automatically.

6.7.3.23. The ASCM must allow for the automatic correlation of an imported/loaded ATO with Tactical and Intel tracks based on, as a minimum, the following information:

6.7.3.23.1. IFF Mode 2 Code;

6.7.3.23.2. IFF Mode 3 Code; and

6.7.3.23.3. JU Address.

6.7.3.24. The ASCM must allow for the manual correlation of an imported/loaded ATO with the Tactical and Intel track based on the JU address.

6.7.3.25. The ASCM must automatically update a track's properties with the information extracted from the corresponding item within an ATO when the correlation of the ATO with the subject track is positive.

6.7.3.26. The ASCM should enable the selection of a communication device and establish voice communication with the aircraft and Air Control Center through a dedicated voice radio channel.

6.7.3.27. The ASCM should allow for the activation and de-activation of airspace collision monitoring which is an implemented function to calculate and predict any potential airspace collisions and generate a visual and audible alert.

6.7.3.28. The ASCM should implement the requirements and functions as specified by MIL-STD 6016 (revision D) and STANAG 5516 (Ed.6), to allow the Authority to report the weather condition over a target area.

6.7.3.29. The ASCM should allow for the generation of recommended routes for ingress and egress using the following input parameters:

6.7.3.29.1. Terrain elevation of area of operation;

6.7.3.29.2. Aircraft starting location;

6.7.3.29.3. Aircraft type;

6.7.3.29.4. Fuel remaining;

6.7.3.29.5. Known threats;

6.7.3.29.6. Current ACMs; and

6.7.3.29.7. Current ACOs.

6.7.3.30. The ASCM should enable the operator to amend the generated route.

6.7.3.31. The ASCM should provide a visual indication when the generated route includes excessive climb profiles.

6.7.3.32. The ASCM should provide a visual indication when the generated route includes excessive dive/descent profiles.

6.7.3.33. The ASCM should provide a visual indication when the generated route includes interference with restricted airspace.

6.7.3.34. The ASCM must allow for the configuration of visual and audible alerts.

6.7.3.35. The ASCM must allow for enabling and disabling audible alerts.

6.7.3.36. The ASCM must allow for recording airspace monitoring alerts generated by the system.

6.7.3.37. The ASCM must allow for the visualization of recorded alerts.

6.8. Tactical Display, Command/Control Interface (TDC2I). The implemented TDC2I must allow the Operator to graphically monitor the air pictures (LAP/RAP) and to execute commands performing airspace coordination and management. The TDC2I is expected to respond, as a minimum, to the following requirements:

6.8.1. The TDC2I[39] must provide a multi-role display interface which is able to show dedicated information based on the configuration.

6.8.2. The TDC2I must support the following operational configuration with dedicated functionalities:

6.8.2.1. Situational Awareness (SA); and

6.8.2.2. Command and Control (C2).

6.8.3. The TDC2I must allow the operator to configure connections and interface with related components and services, such as LAPM and RAPM.

6.8.4. The TDC2I must allow the operator to import, as a minimum, the following data files:

6.8.4.1. Map;

6.8.4.2. Terrain database;

6.8.4.3. Recorded mission file; and

[39] The term TDC2I used in this document is referencing the Graphical User Interfaces (GUI) of the TACS. The TDC2I could be an integrated service/module or an embedded process within the TACS.

6.8.4.4. Simulated Scenarios file.

6.8.5. The TDC2I must support, as a minimum, the following map formats:

6.8.5.1. CADRG; and

6.8.5.2. Raster;

6.8.6. The TDC2I should support the following map formats:

6.8.6.1. Vector; and

6.8.6.2. MB Tiles.

6.8.7. The TDC2I must allow the operator to import and display the following map data formats:

6.8.7.1. CADRG;

6.8.7.2. DTED; and

6.8.7.3. Geo Images (NITF).

6.8.8. The TDC2I must allow the operator to configure the following coordinate systems which is used for the display of the entities on the map:

6.8.8.1. Military Grid Reference System (MGRS); and

6.8.8.2. World Geodetic System 1984 (WGS-84).

6.8.9. The TDC2I must allow the operator to enable and disable a grid on the displayed map.

6.8.10. The TDC2I must allow the operator to import and display, as a minimum, the following configuration and control means:

6.8.10.1. ATO and ACO / ACM;

6.8.10.2. Filters (including GeoFilter);

6.8.10.3. Operator’s Settings and Preferences; and

6.8.10.4. Overlays.

6.8.11. The TDC2I must allow the operator to export, as a minimum, the following configuration and control means:

6.8.11.1.1. Filters (including GeoFilter);

6.8.11.1.2. Operator Settings and Preferences; and

6.8.11.1.3. Overlays.

6.8.12. The TDC2I must allow the operator to configure, as a minimum, the following display preferences:

6.8.12.1. Coordinate System;

6.8.12.2. Unit of Measure;

6.8.12.3. Terrain Display Characteristics;

6.8.12.4. Operational Configuration;

6.8.12.5. Remote Connection and Interface;

6.8.12.6. Track Search Parameters;

6.8.12.7. Alert Configuration;

6.8.12.8. Display Symbology;

6.8.12.9. Track Display Preferences; and

6.8.12.10. Track Information.

6.8.13. The TDC2I must allow the operator to draw, as a minimum, the following geometric shapes for GeoFilter:

6.8.13.1. Ellipse;

6.8.13.2. Rectangle;

6.8.13.3. Polygon;

6.8.13.4. Arc; and

6.8.13.5. Radarc.

6.8.14. The TDC2I must allow for the monitoring of, as a minimum, the following information:

6.8.14.1. Map Overview;

6.8.14.2. Information Alert List;

6.8.14.3. Decision Alert List;

6.8.14.4. Geo Image List; and

6.8.14.5. Filters.

6.8.15. The TDC2I must allow the operator to create and configure track display and alert filters based on, as a minimum, the following information:

6.8.15.1. Source;

6.8.15.2. Platform Type;

6.8.15.3. Identity;

6.8.15.4. Classification;

6.8.15.5. Activity;

6.8.15.6. Environment/Category; and

6.8.15.7. Geographical Area.

6.8.16. The TDC2I should allow the operator to configure the number of track history trails to be displayed.

6.8.17. The TDC2I should allow the operator to manually create the association between selected tracks.

6.8.18. The TDC2I must allow the operator to enable and disable the display of a track's history trails.

6.8.19. The TDC2I must allow the operator to visualize the detailed information of a selected track.

6.8.20. The TDC2I must allow the operator to focus on a specific track by manually selecting a track and hooking it. The information of the selected track must be displayed in an appropriate window and refreshed in accordance with the track update.

6.8.21. When operating in C2 mode, the TDC2I must allow the operator to create, modify and delete tracks of the following environment/category:

6.8.21.1. Air;

6.8.21.2. Surface (Maritime);

6.8.21.3. Subsurface (Maritime);

6.8.21.4. Space;

6.8.21.5. Land Point/Track;

6.8.21.6. Reference Point; and

6.8.21.7. EW.

6.8.22. When operating in C2 mode, the TDC2I must allow the operator to create, modify and delete the following Points Of Interest:

6.8.22.1. Pointer (J7.3);

6.8.22.2. Pointer (J12.6); and

6.8.22.3. Threat Warning (J15.0).

6.8.23. When operating in C2 mode, the TDC2I should allow the operator to manually select a track and perform the following track management functions:

6.8.23.1. Change Data Order (J7.0);

6.8.23.2. Data Update Request (J7.1);

6.8.23.3. Track Alerts (J7.0);

6.8.23.4. Correlation / Decorrelation (J7.2);

6.8.23.5. Track Number Request (J7.4);

6.8.23.6. Target Correlation (J12.5);

6.8.23.7. IFF/SIF Management (J7.5);

6.8.23.8. Inhibit / Allow Transmission.

6.8.24. When operating in C2 mode, the TDC2I should allow the operator to manually select a track and assume control (J10.5).

6.8.25. When operating in C2 mode, the TDC2I should allow the operator to manually select tracks and perform manual association (J7.7).

6.8.26. When operating in C2 mode, the TDC2I must allow the operator to manually select a track and change it to a threat (J15.0).

6.8.27. The TDC2I must provide all functionalities required to allow the operator to perform the operations related to the LAPM capability including, as a minimum, the following:

6.8.27.1. LAPM interface configuration and monitoring;

6.8.27.2. Sensor interface configuration and monitoring;

6.8.27.3. LAP display and manipulation;

6.8.27.4. Alert / Warning display and monitoring.

6.8.28. The TDC2I must provide all functionalities required to allow the operator to perform the operations related to the RAPM capability including, as a minimum, the following:

6.8.28.1. RAPM communication interface configuration and monitoring;

6.8.28.2. TDL interface configuration and monitoring;

6.8.28.3. RAP display and manipulation;

6.8.28.4. ACO/ACM and filters display and management; and

6.8.28.5. Alert / Warning display and monitoring.

6.8.29. The TDC2I must provide the required functionalities to allow the operator to perform the resolution of the following types of conflict:

6.8.29.1. Track Number;

6.8.29.2. Identity;

6.8.29.3. ACO/ACM; and

6.8.29.4. Air traffic.

6.8.30. The TDC2I must allow the operator to activate the track watch lists for the following track categories:

6.8.30.1. Local Report Responsibility (R2) track;

6.8.30.2. Non-C2 track;

6.8.30.3. C2 JUs;

6.8.30.4. High Interest Track Designations;

6.8.30.5. All tracks.

6.8.31. The TDC2I must allow the operator to activate the watch lists for, as a minimum, the following records:

6.8.31.1. Vector Guidance;

6.8.31.2. Mission Assignment;

6.8.31.3. Controlling Unit; and

6.8.31.4. Handover.

6.8.32. The TDC2I must allow the operator to create, modify, delete and copy the following control and operational features :

6.8.32.1. Filters;

6.8.32.2. ACO/ACM; and

6.8.32.3. Overlays.

6.8.33. The TDC2I must allow the operator to create, as a minimum, the following geometric shapes for Overlay and ACM:

6.8.33.1. Point;

6.8.33.2. Ellipse;

6.8.33.3. Polygon;

6.8.33.4. Polyline;

6.8.33.5. Polyarc;

6.8.33.6. Radarc;

6.8.33.7. Orbit;

6.8.33.8. Route;

6.8.33.9. Corridor; and

6.8.33.10. Text.

6.8.34. The TDC2I must allow the operator to activate the watch lists for Overlays based on, as a minimum, the following information:

6.8.34.1. Current Overlays;

6.8.34.2. Expired Overlays;

6.8.34.3. Future Overlays;

6.8.34.4. No Fly Areas;

6.8.34.5. Critical Areas;

6.8.34.6. Kill Boxes;

6.8.34.7. GeoFilters; and

6.8.34.8. All Overlays.

6.8.35. The TDC2I must allow the operator to control the display of ATO, ACO/ACM information based on the following properties:

6.8.35.1. Status;

6.8.35.2. Elevation;

6.8.35.3. Location;

6.8.35.4. Validity period; and

6.8.35.5. Type.

6.8.36. The TDC2I must allow the operator to configure and manage alerts based on the configured filters and on ACMs.

6.8.37. The TDC2I must allow for the notification of systematic and operational alerts and warnings.

6.8.38. The TDC2I must support, as a minimum, the following tactical symbol standards for display:

6.8.38.1. MIL-STD 2525 C; and

6.8.38.2. APP-6C

6.8.39. The TDC2I should allow the operator to generate a simulation scenario which is sequences of actions to be scripted and executed over a period of time.

6.8.40. The TDC2I should allow the operator to record and replay live operations.

6.8.41. The TDC2I should allow for monitoring and recording of operational data, actions and keystrokes in order to be replayed for debrief or training.

6.8.42. The TDC2I should allow for the replaying of recorded operations (data, actions and keystrokes) at a recording rate and at an accelerated rate which is, as a minimum, three times faster than the recording rate.

6.8.43. The TDC2I should allow the operator to select and forward tracks, geographic areas and overlays to a Web map based viewer, in KML format.

6.8.44. The TDC2I must allow the operator to persist/save the configuration change.

6.8.45. The TDC2I must provide the operator an interactive 3D mode of tracks, ACM, geographic area/zone, mission data and DTED Level 2 in real-time and near real-time (information refresh rate is less than 2 seconds).

6.8.46. The TDC2I should allow the operator to define the shortcut keys for display features and functionalities.

6.8.47. The TDC2I must allow the operator to adjust the visualization scale (zoom in/out) and to pan in an area of interest using a mouse or keyboard.

6.8.48. The TDC2I must allow the operator to activate and de-activate the display of amplified information on a selected entity, in a pop-up window, beside the entity.

6.8.49. The TDC2I must allow for the operator to visualize the bearing (in degrees and mils) and range (in kilometers and nautical miles) of a dynamic line drawn on the map that links between two selected points, between selected point and track/plot, between two selected tracks or between two selected plots.

6.8.50. The TDC2I should allow for the calculation and display of the radio communication Line Of Sight (LOS) area / region around a selected track and point on the map, based on the current terrain topology and antenna height / altitude information.

6.8.51. The TDC2I must provide the operator an embedded “Help” functionality and operational user manual for all supported features and functionalities.

6.8.52. The TDC2I must incorporate an editor for message and data files in the following formats:

6.8.52.1. USMTF; and

6.8.52.2. ADatP-3.

6.8.53. The TDC2I should be highly usable in order to enable the operator to perform tasks correctly, accurately and quickly with minimal training. The

system usability evaluation will be based on the System Usability Scale (SUS) defined by John Brooke, and on Measuring Usability with the SUS proposed by Jeff Sauro.

ANNEX A2

TACTICAL AIR COORDINATION SUITE (TACS) –
AIRSPACE COORDINATION CENTRE MODERNIZATION (ASCCM)

1. Prioritization of TACS Requirements Implementation

The implementation of the requirements described in the Appendix A1 – System Performance Specification for the TACS must be based on the assigned priority as presented in the table 1.

1.1. Priority-One (P1). A requirement that must be fully delivered and operational at the TACS Initial Operational Capability (IOC), which is targeted for no later than three (3) months after the Contract award.

1.2. Priority-Two (P2). A requirement that must be fully delivered and operational at the TACS Final Operational Capability (FOC), which is targeted for no later than eighteen (18) months after the Contract award.

Table 1 – TACS Requirements Implementation Priorities

SPS Req. #	Cat.	P1	P2	Specification
6.	I[40]			Requirement
6.1.	I			Software Architecture
6.1.1.	M[41]	*		
6.1.2.	M	*		
6.1.2.1.	M	*		
6.1.2.2.	M	*		
6.1.2.3.	M	*		
6.1.3.	M	*		
6.1.3.1.	M	*		
6.1.3.2.	M	*		
6.1.3.3.	M	*		
6.1.3.4.	M	*		
6.1.3.5.	M		*	
6.1.4.	M	*		
6.1.4.1.	M	*		
6.1.4.2.	M		*	

[40] I is employed in this document to indicate that current statement is for the information.

[41] M is used in this document to indicate that current statement is a mandatory requirement.

6.1.5.	R[42]		*	
6.1.6.	M	*		
6.1.7.	M		*	
6.1.8.	M	*		
6.1.9.	M		*	
6.1.10.	M	*		
6.1.10.1.	M	*		
6.1.10.2.	M	*		
6.1.11.	R		*	
6.1.12.	M	*		
6.2.	I			Security
6.2.1.	M	*		
6.2.2.	M	*		
6.2.3.	M		*	
6.2.4.	M	*		
6.2.5.	M	*		
6.2.5.1.	M	*		
6.2.5.2.	M	*		
6.2.5.3.	M	*		
6.3.	I			Availability / Reliability
6.3.1.	M	*		
6.3.2.	M	*		
6.3.3.	R		*	
6.3.3.1.	R		*	
6.3.3.2.	R		*	
6.3.3.3.	R		*	
6.4.	I			Operational Environment

[42] R is used in this document to indicate that current statement is a desirable and rated requirement.

6.4.1.	M	*		
6.4.1.1.	M	*		
6.4.1.2.	M	*		
6.4.1.2.1.	M	*		
6.4.1.2.2.	M	*		
6.4.1.2.3.	M	*		
6.4.2.	M	*		
6.4.3.	M	*		
6.4.4.	M	*		
6.4.5.	M	*		
6.4.5.1.	M	*		
6.4.5.2.	M		*	
6.4.5.3.	M	*		
6.4.6.	R	*		
6.4.6.1.	R	*		
6.4.6.2.	R	*		
6.4.6.3.	R		*	
6.4.7.	M		*	
6.4.7.1.	M		*	
6.4.7.2.	M		*	
6.4.8.	M	*		
6.5.	I			Network and Communication Interface
6.5.1.	M	*		
6.5.2.	M	*		
6.5.3.	R		*	
6.5.4.	M		*	
6.5.5.	R		*	
6.5.5.1.	R		*	

6.5.5.2.	R		*	
6.5.6.	R		*	
6.5.7.	R		*	
6.5.7.1.	R		*	
6.5.7.2.	R		*	
6.5.8.	M	*		
6.5.8.1.	M	*		
6.5.8.2.	M	*		
6.5.8.3.	M	*		
6.5.9.	M	*		
6.5.10.	M		*	
6.5.11.	R	*		
6.5.11.1.	R		*	
6.5.11.2.	R	*		
6.5.12.	M	*		
6.5.12.1.	M	*		
6.5.12.2.	M	*		
6.5.12.3.	M	*		
6.5.13.	M	*		
6.5.13.1.	M	*		
6.5.13.2.	M	*		
6.5.13.3.	M	*		
6.5.13.4.	M	*		
6.5.14.	R		*	
6.5.15.	R	*		
6.5.15.1.	R		*	
6.5.15.2.	R	*		
6.6.	I			Configuration and Monitoring

6.6.1.	M	*		
6.6.2.	R	*		
6.6.3.	R	*		
6.6.4.	M	*		
6.6.4.1.	M	*		
6.6.4.2.	M	*		
6.6.4.3.	M	*		
6.6.4.4.	M	*		
6.6.4.4.1.	M	*		
6.6.4.4.2.	M		*	
6.6.4.5.	M	*		
6.6.4.6.	M	*		
6.6.4.7.	R		*	
6.6.5.	M	*		
6.6.5.1.	R	*		
6.6.5.2.	M	*		
6.6.5.3.	R	*		
6.6.5.4.	M	*		
6.6.5.4.1.	M	*		
6.6.5.4.2.	M	*		
6.6.5.5.	R		*	
6.6.5.5.1.	R		*	
6.6.5.5.2.	R		*	
6.6.5.5.3.	R		*	
6.6.5.6.	M		*	
6.6.5.6.1.	M		*	
6.6.5.6.2.	M		*	
6.6.5.7.	M	*		

6.6.5.8.	M	*		
6.6.5.8.1.	M	*		
6.6.5.8.2.	M	*		
6.6.5.8.3.	M	*		
6.6.5.8.4.	M	*		
6.6.5.9.	M	*		
6.6.5.9.1.	M	*		
6.6.5.9.2.	M	*		
6.6.5.9.3.	M	*		
6.6.5.10.	R	*		
6.6.5.11.	M	*		
6.6.5.12.	M	*		
6.6.5.13.	M	*		
6.6.5.14.	M	*		
6.6.5.15.	M		*	
6.6.5.16.	M		*	
6.6.6.	M	*		
6.6.6.1.	M	*		
6.6.6.2.	R	*		
6.6.6.3.	R	*		
6.6.6.4.	M	*		
6.6.6.5.	R	*		
6.6.6.6.	M	*		
6.6.6.7.	R		*	
6.6.6.8.	R		*	
6.6.6.9.	M	*		
6.6.6.10.	M	*		
6.6.6.11.	M	*		

6.6.6.12.	M	*		
6.6.6.13.	R	*		
6.6.6.13.1.	R	*		
6.6.6.13.2.	R	*		
6.6.6.14.	R	*		
6.6.6.15.	M	*		
6.6.6.15.1.	M	*		
6.6.6.15.2.	M	*		
6.6.6.15.3.	M	*		
6.6.6.16.	R		*	
6.6.6.17.	R	*		
6.7.	I			Operational Capabilities
6.7.1.	M	*		LAPM
6.7.1.1.	M	*		
6.7.1.2.	R	*		
6.7.1.3.	M	*		
6.7.1.3.1.	M	*		
6.7.1.3.2.	M	*		
6.7.1.3.3.	M	*		
6.7.1.4.	R	*		
6.7.1.5.	M	*		
6.7.1.6.	M		*	
6.7.1.6.1.	M		*	
6.7.1.6.2.	M		*	
6.7.1.6.3.	M		*	
6.7.1.6.4.	M		*	
6.7.1.7.	M	*		
6.7.1.8.	M	*		

6.7.1.9.	M	*		
6.7.1.10.	M	*		
6.7.1.11.	M		*	
6.7.1.12.	M		*	
6.7.1.13.	M	*		
6.7.1.13.1.	M	*		
6.7.1.13.2.	M	*		
6.7.1.13.3.	M	*		
6.7.1.14.	R		*	
6.7.1.14.1.	R		*	
6.7.1.14.2.	R		*	
6.7.1.14.3.	R		*	
6.7.1.14.3.1.	R		*	
6.7.1.14.3.2.	R		*	
6.7.1.15.	R	*		
6.7.1.16.	M	*		
6.7.1.17.	M	*		
6.7.1.17.1.	M	*		
6.7.1.17.2.	M	*		
6.7.1.18.	R	*		
6.7.1.18.1.	R	*		
6.7.1.18.2.	R	*		
6.7.1.18.3.	R	*		
6.7.1.18.4.	R	*		
6.7.1.18.5.	R	*		
6.7.1.19.	M	*		
6.7.1.20.	M	*		
6.7.1.20.1.	M	*		

6.7.1.20.2.	M	*		
6.7.1.20.3.	M	*		
6.7.1.20.4.	M	*		
6.7.1.20.5.	M	*		
6.7.1.21.	M	*		
6.7.1.22.	M	*		
6.7.1.22.1.	M	*		
6.7.1.22.2.	M	*		
6.7.1.22.3.	M	*		
6.7.1.22.4.	M	*		
6.7.1.22.5.	M		*	
6.7.1.22.6.	M	*		
6.7.1.23.	M		*	
6.7.1.24.	M		*	
6.7.1.25.	M		*	
6.7.1.26.	R		*	
6.7.1.27.	R		*	
6.7.1.28.	R		*	
6.7.1.29.	R		*	
6.7.1.30.	M	*		
6.7.1.31.	M		*	
6.7.1.32.	M		*	
6.7.1.33.	R	*		
6.7.1.33.1.	R	*		
6.7.1.33.2.	R	*		
6.7.1.33.3.	R	*		
6.7.1.33.4.	R	*		
6.7.1.33.5.	R	*		

6.7.1.34.	M	*		
6.7.1.35.	M	*		
6.7.1.36.	M	*		
6.7.1.37.	M	*		
6.7.1.38.	M	*		
6.7.1.39.	M	*		
6.7.1.39.1.	M	*		
6.7.1.39.2.	M	*		
6.7.1.40.	M		*	
6.7.1.40.1.	M		*	
6.7.1.40.2.	M		*	
6.7.1.40.3.	M		*	
6.7.1.41.	M		*	
6.7.1.41.1.	M		*	
6.7.1.41.2.	M		*	
6.7.1.41.3.	M		*	
6.7.1.42.	M	*		
6.7.1.43.	M	*		
6.7.1.44.	M	*		
6.7.1.44.1.	M	*		
6.7.1.44.2.	M	*		
6.7.1.44.3.	M	*		
6.7.1.45.	M	*		
6.7.1.46.	M	*		
6.7.1.46.1.	M	*		
6.7.1.46.2.	M	*		
6.7.1.46.3.	M	*		
6.7.1.47.	M	*		

6.7.1.47.1.	M	*		
6.7.1.47.2.	M	*		
6.7.1.47.3.	M	*		
6.7.1.48.	M	*		
6.7.1.49.	M	*		
6.7.1.50.	R	*		
6.7.1.51.	M	*		
6.7.1.52.	R	*		
6.7.1.53.	R	*		
6.7.1.54.	R		*	
6.7.1.54.1.	R		*	
6.7.1.54.2.	R		*	
6.7.1.54.3.	R		*	
6.7.1.54.4.	R		*	
6.7.1.54.5.	R		*	
6.7.1.54.6.	R		*	
6.7.1.55.	M	*		
6.7.1.55.1.	M	*		
6.7.1.55.2.	M	*		
6.7.1.55.3.	M	*		
6.7.1.56.	M	*		
6.7.1.57.	M		*	
6.7.1.58.	R		*	
6.7.1.59.	R	*		
6.7.1.60.	R	*		
6.7.1.61.	R	*		
6.7.1.62.	M	*		
6.7.1.63.	M	*		

6.7.1.63.1.	M	*		
6.7.1.63.2.	M	*		
6.7.1.64.	M		*	
6.7.1.64.1.	M		*	
6.7.1.64.2.	M		*	
6.7.1.65.	M	*		
6.7.1.65.1.	M	*		
6.7.1.65.2.	M	*		
6.7.1.65.3.	M	*		
6.7.1.65.4.	M		*	
6.7.1.65.5.	M		*	
6.7.1.65.6.	M		*	
6.7.1.66.	R		*	
6.7.1.67.	R		*	
6.7.1.67.1.	R		*	
6.7.1.67.2.	R		*	
6.7.1.67.3.	R		*	
6.7.1.68.	M	*		
6.7.1.69.	M		*	
6.7.1.70.	M	*		
6.7.1.71.	M	*		
6.7.1.72.	M	*		
6.7.1.73.	M	*		
6.7.1.74.	M	*		
6.7.1.75.	R		*	
6.7.1.76.	R		*	
6.7.1.77.	R		*	
6.7.1.78.	R		*	

6.7.1.78.1.	R		*	
6.7.1.78.2.	R		*	
6.7.1.78.3.	R		*	
6.7.1.79.	R		*	
6.7.1.80.	M	*		
6.7.1.81.	M	*		
6.7.1.82.	M	*		
6.7.2.	I			RAPM
6.7.2.1.	M	*		
6.7.2.2.	M	*		
6.7.2.3.	M		*	
6.7.2.4.	R		*	
6.7.2.4.1.	R		*	
6.7.2.4.2.	R		*	
6.7.2.5.	M	*		
6.7.2.6.	M	*		
6.7.2.7.	R	*		
6.7.2.8.	R		*	
6.7.2.8.1.	R		*	
6.7.2.8.2.	R		*	
6.7.2.9.	M	*		
6.7.2.9.1.	M	*		
6.7.2.9.2.	M	*		
6.7.2.10.	R	*		
6.7.2.10.1.	R	*		
6.7.2.10.2.	R		*	
6.7.2.10.3.	R	*		
6.7.2.10.4.	R		*	

6.7.2.10.5.	R		*	
6.7.2.10.6.	R		*	
6.7.2.10.7.	R	*		
6.7.2.10.8.	R	*		
6.7.2.11.	M	*		
6.7.2.11.1.	M	*		
6.7.2.11.2.	M	*		
6.7.2.11.3.	M	*		
6.7.2.11.4.	M	*		
6.7.2.11.5.	M		*	
6.7.2.11.6.	M	*		
6.7.2.11.7.	M	*		
6.7.2.11.8.	M	*		
6.7.2.11.9.	M		*	
6.7.2.11.10.	M			
6.7.2.11.11.	M			
6.7.2.12.	R	*		
6.7.2.12.1.	R	*		
6.7.2.12.2.	R	*		
6.7.2.12.3.	R		*	
6.7.2.12.4.	R		*	
6.7.2.12.5.	R		*	
6.7.2.12.6.	R	*		
6.7.2.12.7.	R		*	
6.7.2.12.8.	R		*	
6.7.2.12.9.	R		*	
6.7.2.13.	M	*		
6.7.2.13.1.	M	*		

6.7.2.13.2.	M	*		
6.7.2.13.3.	M	*		
6.7.2.13.4.	M	*		
6.7.2.13.5.	M		*	
6.7.2.13.6.	M	*		
6.7.2.13.7.	M		*	
6.7.2.13.8.	M		*	
6.7.2.13.9.	M		*	
6.7.2.13.10.	M	*		
6.7.2.13.11.	M	*		
6.7.2.13.12.	M		*	
6.7.2.13.13.	M		*	
6.7.2.13.14.	M		*	
6.7.2.13.15.	M		*	
6.7.2.13.16.	M		*	
6.7.2.13.17.	M	*		
6.7.2.13.18.	M	*		
6.7.2.13.19.	M		*	
6.7.2.13.20.	M	*		
6.7.2.14.	R	*		
6.7.2.14.1.	R		*	
6.7.2.14.2.	R	*		
6.7.2.14.3.	R	*		
6.7.2.15.	R		*	
6.7.2.15.1.	R		*	
6.7.2.15.2.	R		*	
6.7.2.16.	M	*		
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6.7.2.20.	R		*	
6.7.2.21.	R	*		
6.7.2.22.	M	*		
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6.7.2.107.11.	R		*	

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6.7.3.35.	M	*		
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6.8.50.	R	*		
6.8.51.	M	*		
6.8.52.	M	*		
6.8.52.1.	M	*		
6.8.52.2.	M		*	
6.8.53.	R	*		

ANNEX B

TACTICAL AIR COORDINATION SUITE (TACS) -
AIRSPACE COORDINATION CENTRE MODERNIZATION (ASCCM)

8. Introduction. This Statement of Work (SOW) for In-Service Support (ISS) defines the Work required for the on-going support of the Tactical Air Coordination Suite (TACS) used within the modernized Airspace Coordination Centre (ASCC). The TACS is a software solution that will be implemented and integrated as part of the ASCC Modernization (ASCCM) project to deliver a digitalized, centered, information-based system. This will enable the provision of an integrated and cohesive global situational awareness picture, with enhanced airspace coordination and management capabilities, in support of air missions and joint task force operations.

9. Background. Airspace Coordination is a critical command activity, the information from which the Land Component Commander can make operational decisions related to knowledge of manned aircraft, unmanned aerial vehicle and fire support activities. Land Force airspace coordination is done through the Airspace Coordination Centre. An ASCC does not normally work in isolation and as such must also be able to link to Air Force, Navy and allied command and control facilities.

The ASCCM project will provide modernized hardware, software and communication equipment that will enable effective operations in a joint or multinational environment.

10. Overview. The TACS is a software based solution that is intended to be deployed on ASCC modernized platforms to deliver a set of capabilities that responds to the Army's needs in airspace monitoring and coordination to support national as well as international missions.

10.1. The main functionalities of TACS include the following:

10.1.1. Local Air Picture (LAP) compilation and dissemination;

10.1.2. Recognized Air Picture (RAP) compilation and sharing;

10.1.3. Tactical airspace monitoring and coordination.

10.2. The TACS should also enable the ASCC transformation to support the Tactical Air Control Party (TACP) in monitoring and controlling the tactical air-ground operations by providing an enhanced global situational awareness picture and a set of functionalities to control friendly air assets.

10.3. The TACS must be implemented to support flexible operational / deployment requirements based on the following principles and architectural characteristics:

10.3.1. Modular and Dynamic;

10.3.2. Agility; and

10.3.3. Scalability.

11. Scope. The work to be performed by the Contractor to provide the assistance and maintenance for the TACS software as well as supporting systems is as follows:

11.1. Software Maintenance. When tasked, via a DND 626 Task Authorization Form, the Contractor must provide correction and fixes to any failures prioritizing by severity of the fault.

11.2. Software Upgrades. When tasked, via a DND 626 Task Authorization Form, the Contractor must :

11.2.1. Perform major software upgrades when requested.

11.2.2. Provide the Technical Authority with minor software updates.

11.2.3. Provide documentation and expert support to Canada for Information Assurance and software certification purposes.

11.3. General Engineering and Maintenance Services (GEMS). When tasked, via a DND 626 Task Authorization Form, the Contractor must provide support to Canada to facilitate the effective evaluation, troubleshooting, design, development, prototyping, qualification, modifications and upgrades to the TACS.

11.4. Technical Support. When tasked, via a DND 626 Task Authorization Form the contractor shall provide consultancy support for the Technical Authority during the contractor's normal business hours, where initial contact will normally be made by email to initiate the consultancy support. Consultancy support by phone can be made as arranged by email.

11.5. Software Options. The Contractor must provide Optional licenses for the TACS. The Option pricing must be updated on an annual basis, and must be valid for the duration of that year. The Contractor must allow Canada to purchase Optional licenses through use of a DND 626 Task Authorization Form.

12. System Engineering.

12.1. General.

12.1.1. The Contractor must develop a System/Software Design Specifications (SDS) to respond to the technical, performance, functional and environmental requirements detailed in the DND 626 Task Authorization Form.

12.2. Reporting. The Contractor must prepare and submit annual Progress Reports to the Technical Authority (TA), in the Contractor's format, for the duration of the Contract. The Progress Report must include information on the state of the Contractor's software with respect to obsolescence, when software upgrades are available and when bug fixes are available.

12.3. System Requirements Review. A System/Software Requirement Review (SRR) must be conducted prior to the implementation of any changes to the TACS, to ensure that the Contractor's SDS are thoroughly understood by all parties.

12.4. Preliminary Design Review. A Preliminary Design Review (PDR) must be held to review the conceptual design of any modifications, changes and enhancements to the specifications to ensure that the planned technical approach will meet the requirements.

12.5. Critical Design Review. A critical Design Review (CDR) must be held to review the detailed design of any modifications, changes and enhancements to the specifications to ensure that the design implementation has met the requirements.

12.6. Factory Acceptance Test. The Contractor will perform a Factory Acceptance Test through live demonstration of TACS software updates/upgrade.

12.7. Acceptance Test Procedures. Working first article TACS system software reflecting any updates/upgrade, must be tested in a lab environment or live scenario.

13. Integrated Logistics Support.

13.1. Configuration Management. The Contractor must prepare, submit and adhere to a Configuration Management Plan (CMP) for the TACS system software.

13.2. Training and Training Support. When tasked, via a DND 626 Task Authorization Form, the Contractor must develop, update and conduct Operator and Maintenance training. The Contractor must also update the Operator and Maintenance training packages in order to maintain currency throughout the life cycle of the TACS.

ANNEX C

TACTICAL AIR COORDINATION SUITE (TACS) -
AIRSPACE COORDINATION CENTRE MODERNIZATION (ASCCM)

TABLE OF ACRONYMS

ACM – Airspace Coordination Measure
ACO – Airspace Control Order
ADatP-3 – Allied Data Publication 3
ADS-B – Automatic Dependent Surveillance – Broadcast
ALZREP – Aircraft Landing Zone Report
AN/PRC – Army Navy/Portable Radio Communications
ASC – Airspace Control
ASCC – Airspace Coordination Centre
ASCCM – ASCC Modernization
ASCM – Airspace Coordination and Management
ATC – Air Traffic Control
ATO – Air Tasking Order
BDZ – Base Defence Zone
C2 – Command and Control
CA – Contracting Authority
CAF – Canadian Armed Forces
CDO – Change Data Order
CDR – Critical Design Review
CMP – Configuration Management Plan
CNR-E – Combat Net Radio Enhancement
CSR – Combined Surveillance Radar
DAGR – Defense Advanced GPS Receiver
DND – Department of National Defense
DZREP – Drop Zone Report
EPLRS – Enhanced Position Location Report System
EW – Electronic Warfare
FAT – Factory Acceptance Test
FOC – Final Operational Capability
GPS – Global Positioning System
GUI – Graphical User Interface
HDMI – High-Definition Multimedia Interface
HIDACZ – High Density Airspace Control Zone
IBS – Integrated Broadcast Service
ICD – Interface Control Documents
IOC – Initial Operational Capability
IFF – Interrogation Friend or Foe
JREAP – Joint Range Extension Application Protocol
JU – JTIDS/MIDS Unit
LAN – Local Area Network
LAP – Local Air Picture
LAPM – Local Air Picture Management
LCSS – Land Command Support System
LLA – Latitude/Longitude/Altitude
MGRS – Military Grid Reference System
NMEA – National Marine Electronics Association
NIC – Network Interface Card
OPTASK LINK – Operational Tasking Data Links
P1 – Priority-One
P2 – Priority-Two
PDR – Preliminary Design Review
PMP – Project Management Plan
PRM – Progress Review Meeting
PSR – Primary Surveillance Radar
R2 – Report Responsibility
RAM – Random-Access Memory
RAM – Rocket, Artillery and Mortar
RAP – Recognized Air Picture
RAPM – Recognized Air Picture Management
RB – Range/Bearing
RBA – Range/Bearing/Altitude
RBE – Range/Bearing/Elevation
ROZ – Restricted Operations Zone
RTML – Recommended Training Materials List
SADL – Situation Awareness Data Link
SDS – Serial Device Server
SDS – Software Design Specifications
SOW – Statement of Work
SPS – System Performance Specification
SRR – Software Requirement Review
SSR – Secondary Surveillance Radar
STT – Small Tactical Terminal
TA – Technical Authority
TACP – Tactical Air Control Party
TACS – Tactical Air Coordination Suite

TDC2I – Tactical Display, Command/Control Interface
TDL – Tactical Data Link
TSDF – Time Slot Duty Factor
UAV – Unmanned Aerial Vehicle
UHF/VHF – Ultra High Frequency/Very High Frequency
UII – Unique Item Identifier
UIN – Unique Identification Number
USMTF – United States Message Text Format
UTC – Coordinated Universal Time
VMF – Variable Message Format
WGS-84 – World Geodetic System 1984