

**ANNEX A**  
**STATEMENT OF WORK**

**LAND C4ISR**  
**INTELLIGENCE, SURVEILLANCE, TARGET ACQUISITION,**  
**AND RECONNAISSANCE**  
**SUSTAINMENT SERVICES**

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# 1 INTRODUCTION

## 1.1 Purpose

This Statement of Work (SOW) defines the Intelligence Surveillance Target Acquisition and Reconnaissance (ISTAR) work in support of the Land Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance Capability (Land C4ISR Capability). The ISTAR is one of the four Functional Groupings that were identified at the enterprise level during the definition phase. The purpose was to clearly define the scope of work for each functional grouping. This SOW defines the work that is required for the ISTAR functional grouping specifically. Further details are provided in Figure 3 of this document.

## 1.2 Scope

- 1.2.1 The scope of work will predominately include delivery of the sustainment services, which is based on the items identified in Appendix A2 – DLCSPM standard DLCSPM-SBSRM-2021. The main purpose of this appendix is to identify the responsibilities of Department of National Defence (DND) and the contractor for the ISTAR functional grouping. As the items of Land C4ISR Capability are part of a continuously evolving system, therefore items in DLCSPM-SBSRM-2021 standard may continually evolve throughout the contract period. The changes within DLCSPM-SBSRM-2021 standard will be effected through, but not limited to, Core Work and Additional Work Requirements (AWRs), that will be performed during the contract period.
- 1.2.2 Canada reserves the right to amend the list of supported items from time to time, as determined to be necessary, by the Technical Authority (TA) or Technical Office of Primary Interest (Tech OPI) and approved by the Contracting Authority (CA).
- 1.2.3 The responsibilities of the Land C4ISR ISTAR sustainment Contractor will include but are not limited to the following:
- i. Systems and Sub-system Engineering Management,
  - ii. ISTAR Systems and Sub-System Engineering,
  - iii. ISTAR Systems and Sub-System Integration and Testing,
  - iv. Problem Resolution Support,
  - v. Incident Management Support,
  - vi. Obsolescence Management,
  - vii. Quality Management,
  - viii. ISTAR Domain Architecture Support,
  - ix. Life Cycle Material Management Support,
  - x. Field Support.

### 1.3 Background and Land C4ISR Capability High Level Description

1.3.1 The Government of Canada has given the Canadian Armed Forces (CAF) clear direction concerning its vision for defence, in which Canada is:

- i. Strong at home, its sovereignty well-defended by a Canadian Armed Forces, also ready to assist in times of natural disaster, other emergencies, and search and rescue,
- ii. Secure in North America, active in a renewed defence partnership in NORAD and with the United States,
- iii. Engaged in the world, with the Canadian Armed Forces doing its part in Canada's contributions to a more stable, peaceful world, including through peace support operations and peacekeeping.

1.3.2 In order to meet these objectives, Canada needs an agile, multi-purpose, combat-ready military, operated by highly trained, well-equipped personnel. At any given time, the Government of Canada can call upon the CAF to undertake missions for the protection of Canada and Canadians, and the maintenance of international peace and stability. The CAF must be prepared to:

- i. Detect, deter and defend against threats to, or attacks on Canada,
- ii. Detect, deter and defend against threats to, or attacks on North America in partnership with the United States, including through NORAD,
- iii. Lead and contribute forces to NATO and coalition efforts to deter and defeat adversaries, including terrorists, to support global stability,
- iv. Lead and contribute to international peace operations and stabilization missions with the United Nations, NATO, and other multilateral partners,
- v. Engage in capacity building to support the security of other nations and their ability to contribute to security abroad,
- vi. Provide assistance to civil authorities and law enforcement, including counterterrorism, in support of national security and the security of Canadians abroad,
- vii. Provide assistance to civil authorities and nongovernmental partners in responding to international and domestic disasters, or major emergencies,
- viii. Conduct search and rescue operations.

1.3.3 Further, the CAF will be prepared to simultaneously:

- i. Defend Canada, including responding concurrently to multiple domestic emergencies in support of civilian authorities,
- ii. Meet its NORAD obligations,
- iii. Meet commitments to NATO Allies under Article 5 of the North Atlantic Treaty,
- iv. Contribute to international peace and stability through:

- a. Two sustained deployments of ~500-1500 personnel, including one as a lead nation,
- b. One time-limited deployment of ~500-1500 personnel (6-9 months duration),
- c. Two sustained deployments of ~100-500 personnel,
- d. Two time-limited deployments (6-9 months) of ~100-500 personnel,
- e. One Disaster Assistance Response Team (DART) deployment, with scalable additional support,
- f. One Non-Combatant Evacuation Operation, with scalable additional support.

1.3.4 To carry out these missions, the CAF requires a fully integrated tactical network, capable of providing flexible, multi-role, and combat-capable communications to the military. It also requires connectivity to other federal government departments, governments of other countries, international organizations, non-governmental organizations, private volunteer organizations, and private business ventures.

1.3.5 Land C4ISR Capability primarily supports the Canadian Army in operations by providing commanders with the information and information services required to make effective and timely Command and Control (C2) decisions about their operations and missions. As such, it enables the Canadian Army to:

- i. Plan and direct operations,
- ii. Manage operational information,
- iii. Achieve situational awareness,
- iv. Exchange information.

1.3.6 Land C4ISR Capability is an interconnected network of digital communications and information systems by which the data needed to plan, direct, and control tactical land operations is communicated, stored, processed, and displayed. Figure 1 - Land C4ISR Capability Conceptual Diagram shows a high-level diagram of the Land C4ISR Capability, depicting the systems, the vehicles, the dismounted soldiers, and the sub-networks that interconnect them. The Director Land Command System Program Management (DLCSPM), as the TA for the Land C4ISR Capability, retains Total System Responsibility (TSR), and is responsible for the life cycle management of the Land C4ISR from architectural development through systems engineering and integration, fielding, in-service support, and finally disposal. As such, DLCSPM will manage the sustainment of the Land C4ISR Capability by an Integrated Product Team (IPT).

1.3.7 DLCSPM will be responsible for ensuring that the right system is being built while the Contractor must be responsible for ensuring the system is being sustained and continuously enhanced to meet the Canadian Army's needs.

1.3.8 Doctrinally the Land C4ISR Capability is divided into the following constituent systems:

- i. **Tactical Command and Control Information Systems (TacC2IS):** TacC2IS are the interconnected Information Systems (IS) that provide an integrated network of computers with specific software applications that deliver information processing

support for commanders and staffs at all levels.

- ii. **Tactical Communications (TacComms):** TacComms are the physical Communications Systems (CS) that enable commanders at all levels to have access to a fully integrated, secure communications network that provides the capability to exercise C2 through voice and data communications. TacC2IS is transported over TacComms.
- iii. **Intelligence, Surveillance and Reconnaissance (ISR):** ISR are the sensors and analysis capabilities used to gather and process tactical information into useful intelligence.

The operational concept for CAF land operations is based on *Land Operations 2021* (ISBN: 978-0-662-44742-9) and the evolving *Signals in Land Operations* (B-GL-351-002/FP-001). This concept is sometimes referred to as the Land C4ISR context, which is represented in Figure 1 - Land C4ISR Capability Conceptual Diagram. Whereas Figure 2 depicts Land C4ISR in the battle space.

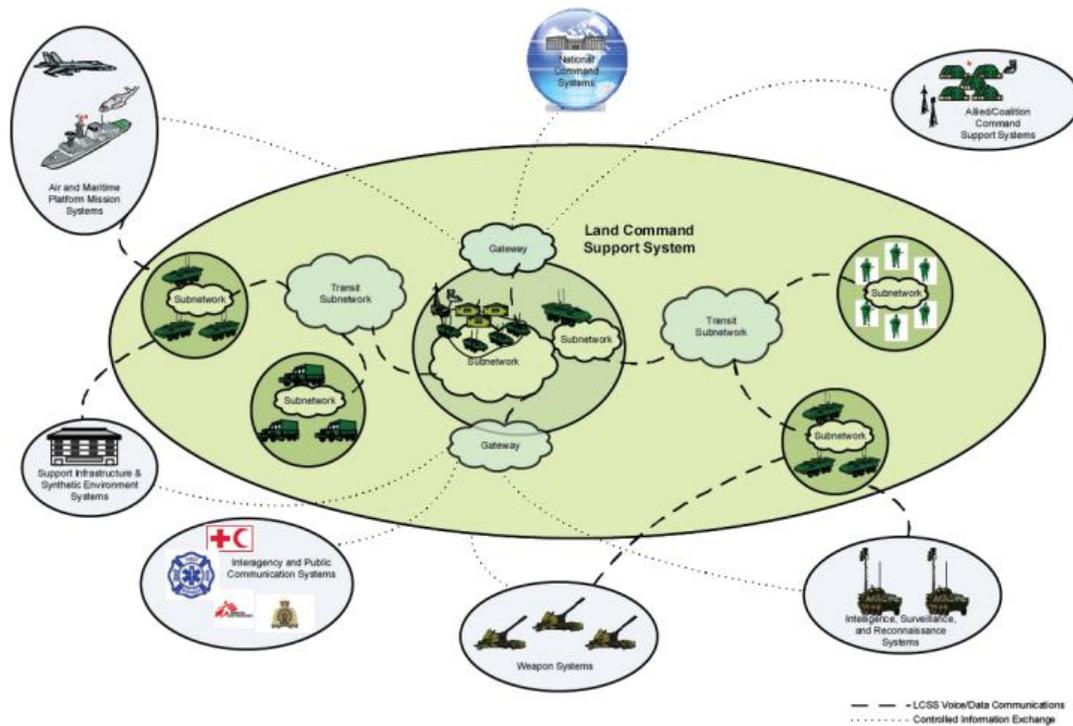


Figure 1 Land C4ISR Capability Conceptual Diagram



requirement operating at the SECRET security classification. The primary means of communication is voice. The supporting data network is highly mobile and is based on the idea of digitizing a soldier's paper map. It is not client-server based and there is no expectation of guaranteed delivery of messages.

- iii. **Headquarters Domain (HQ Domain).** The HQ Domain is normally employed at the BG and higher in the command elements of these units and formations. It is characterized by high and rich data requirements. Fundamentally, it operates like a field deployable enterprise network, running a variety of client-server applications and databases. It also is the domain that links to National or Coalition systems via gateways. It can be described as transportable, but not mobile; meaning network laydown and configuration is relatively stable. It also operates at the SECRET level, with increased security protection due to the volume of data utilized on this network.
- iv. **ISTAR enabler.** ISR contains the sensors and analytical tools enabling the Canadian Army to conduct Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR). It delivers substantial capability to the Canadian Army. Some products and sub-systems leverage or connect to the MD and HQ Domains to transport or store their information, while others operate as stand-alone systems in their own right and provide capability without any of the three domains.
- v. **Simulation enabler.** Simulation contains simulation Systems, Sub-Systems, and Products to enable the Canadian Army to train (tactics and C2 procedures), force generate, and force develop. It delivers an engineered and integrated Synthetic Training Environment (STE) in support of the Future Integrated Training Environment (FITE). These simulation enablers connect to the MD and HQ Domains to support Canadian Army constructive training, and DLCSPM experimentation and systems engineering emulation and network testing.

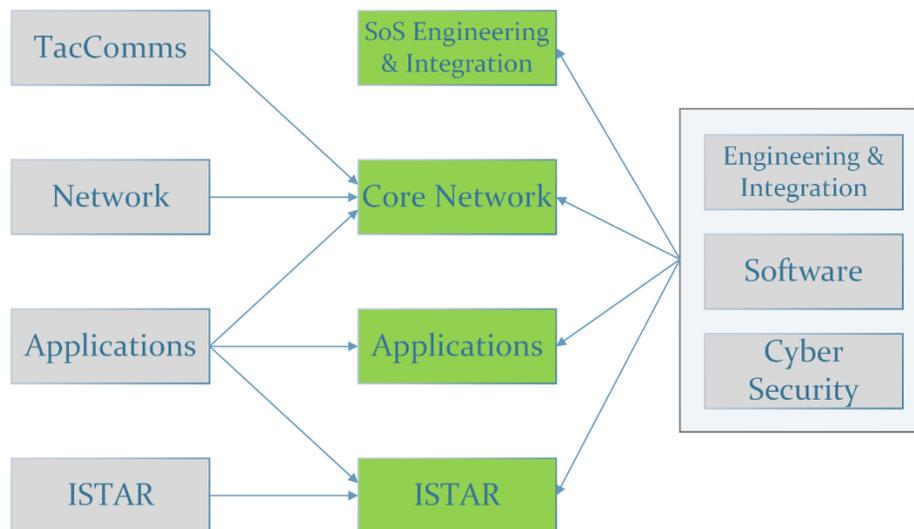
## 1.5 Sustainment Model

1.5.1 The Land C4ISR Capability Sustainment model includes the four Functional Groupings listed below and in Figure 3 - Sustainment Model:

- i. **Land C4ISR SoS E&I.** This functional grouping consists of the overall Land C4ISR Capability architecture and design. This functional grouping defines the user needs and resulting system requirements. To then take those system requirements and further refine and define the Land C4ISR architecture and overall connection and interconnection patterns. System engineering will then refine those requirements to determine what standards are to be employed by all sub-systems to integrate into the domains or overall Land C4ISR Capability. This functional grouping is also responsible for the overall integration of the other three functional groupings and the resulting verification and validation of the MD and HQ Domains and the ISTAR and Simulation enablers to form the Land C4ISR Capability.
- ii. **Land C4ISR Core Network.** This functional grouping is based on all services that are common across all domains and forms the backbone of the overall Land C4ISR Capability. Engineering activities within this functional grouping revolve around utilizing the standards and connecting patterns developed in the Land C4ISR SoS E&I functional grouping and applying them to the sub-system and product design of

the Land C4ISR Core Network. It is comprised of hardware, firmware, software, and databases.

- iii. **Land C4ISR Applications.** This functional grouping is based on all user facing services and software, which leverage the MD and HQ Domains to provide capability to the end user. Information generated by services and software in this functional grouping is then transported by the Land C4ISR Core Network sub-system from its origin to destination. This functional grouping is information based and comprised largely of software and databases, with no involvement in hardware or firmware development.
- iv. **Land C4ISR ISTAR.** This functional grouping is comprised of standalone systems, integrated sub-systems and products for specialized ISR services. When integrated into the MD and HQ Domains, the sub-systems and products pass information over the Land C4ISR Core Network and interact with the Land C4ISR Applications.



*Figure 3 – Sustainment Model*

## **2 GENERAL REQUIREMENTS**

### **2.1 Applicable Documents**

#### 2.1.1 Glossary and Definitions

The glossary and definitions that support this SOW are identified at Appendix A1.

#### 2.1.2 Technical Standards, Specifications and Publications

The standards, specifications, and publications that support this SOW are identified at Appendix A2.

### **2.2 Technical Authority - Roles, Authorities and Responsibilities**

In addition to the Authorities defined in the terms and conditions of the contract, this SOW defines the following roles, authorities, and responsibilities.

#### 2.2.1 Technical Office of Primary Interest

The Technical Office of Primary Interest (Tech OPI) is a DND employee delegated by the TA to exercise certain authorities, on their behalf, in accordance with this SOW and any additional work arising that may be authorized in accordance with the task authorization process.

#### 2.2.2 Integrated Product Team

2.2.2.1 DND oversees the overall the management of the Land C4ISR Capability within an Integrated Product Team (IPT) structure. In order to manage the Land C4ISR Capability while working in a collaborative manner, each IPT member serves as a conduit for information between each individual area of responsibility and associated stakeholders.

2.2.2.2 An IPT will exist at various levels. Each IPT will have specific objectives, but all IPTs must meet the following goals:

- i. Ensure the right system is being built by managing the involvement of all stakeholders, including government, Canadian Army and industry,
- ii. Establish the objectives for each system release cycle,
- iii. Ensure system visibility and transparency amongst all IPT members,
- iv. Provide final approval of the master or sub-schedule, and prioritizes all work items,
- v. Approve changes to the DLCSPM-SBSRM-2021 standard and the appropriate baseline,
- vi. De-conflict competing stakeholder requirements in collaborative environments,
- vii. Escalate issues to a higher IPT if members unable to resolve issues, or issues cross IPT boundaries.

2.2.2.3 The IPTs are defined in Appendix A2 – DLCSPM standard DLCSPM-SEP-2021.

### 2.2.3 Design Authority

- 2.2.3.1 The Design Authority will make design decisions regarding a system element or elements under design, or modifications within the boundaries defined by stated requirements and constraints, including resource limitations placed upon the person or organization exercising this authority.
- 2.2.3.2 DLCSPM retains Total System Responsibility (TSR) as well overall Design Authority over all work done under this Contract for the Land C4ISR Capability. For Additional Work Requirements (AWRs), the TA may delegate design responsibility to an IPT.

### **3 REQUIREMENTS**

#### **3.1 Core Work**

3.1.1 Core Work is comprised of the requirements described in Section 3 and Section 4 of this SOW that must be performed on a regular and ongoing basis over the duration of the contract period.

3.1.2 The Contractor must perform the following core services on an ongoing basis:

- i. Core Management Work,
- ii. Core Engineering Management Work,

#### **3.2 Additional Work Requirements**

3.2.1 The Contractor must provide additional sustainment services beyond Core Work on an “as and when” requested basis.

3.2.2 The Contractor may be asked to perform Additional Work Requirements (AWRs), related to the engineering, integration, sustainment and support services of hardware, firmware, and software system elements within the Land C4ISR Capability as described in Section 5 of this SOW.

3.2.3 Additionally, the Contractor may also be tasked to recommend and perform preventive, corrective, perfective, adaptive and emergency maintenance on the Product.

3.2.4 In the case of software and firmware, the Contractor will be provided with source code and detailed design documentation as appropriate. In the case of hardware, the Contractor will be provided with a technical data package, including design documentation where applicable. In all cases, the TA will provide the appropriate licenses or rights to use technical data or source code.

## **4 Core Management Work**

### **4.1 General**

- 4.1.1 The Contractor must perform Core Management Work on an on-going basis throughout the contract period.
- 4.1.2 The Contractor must plan, organize, and control all work described in this SOW including AWRs.
- 4.1.3 The Contractor must only use the identified Core Work Personnel (CWP) to manage the on-going Core Work. The Contractor must identify, in its PMP, how the Core Work will be managed by the CWP. The Contractor must not utilize the CWP to deliver AWRs. The Contractor must provide a separate team to perform AWRs.

### **4.2 Project Management Plan**

- 4.2.1 The Contractor must prepare, deliver, update, maintain, and implement a Project Management Plan (PMP) in accordance with CDRL 100.001, DID 100.001.
- 4.2.2 The Contractor must implement and maintain the PMP that has been approved by DND.
- 4.2.3 Project Management must encompass management of all contractual activities such as initiate, plan, execute, control, and closeout all the work as defined in the CDRLs and DIDs.
- 4.2.4 The Contractor must adhere to the provisions of the approved PMP.
- 4.2.5 Project Management activities must include, but are not limited to:
  - i. Project monitoring and control,
  - ii. Task estimation,
  - iii. Task and budget management,
  - iv. Progress reporting and billing,
  - v. Performance management and continuous improvement process,
  - vi. Canada furnished resource management,
  - vii. Risk management.

### **4.3 Monitoring and Control**

The Contractor must implement monitoring and control as outlined in the following sub-sections.

#### **4.3.1 Monthly Progress Reports**

The Contractor must prepare and submit Monthly Progress Reports in accordance with CDRL, DID 100.002.

### 4.3.2 Progress Review Meetings

The Contractor must conduct Progress Review Meetings (PRMs) bi-annually at the senior management level, between the Contractor, the Contracting Authority (CA), the Procurement Authority (PA), and the Technical Authority (TA). These PRMs must encompass the total program status as of the review date, and must present, for resolution, all known problems as of that date.

### 4.3.3 Progress Review Agenda and Minutes

4.3.3.1 The Contractor must prepare, submit for approval, and update the agenda for the Progress Review Meeting in accordance with CDRL and DID 100.003.

4.3.3.2 The Contractor must prepare, submit for approval, and update minutes of the Progress Review Meeting in accordance with CDRL and DID 100.004.

### 4.3.4 Ad-hoc Meetings and Reviews

4.3.4.1 Working level meetings will be held to review the status of individual tasks, their progress, and relative priorities. No action affecting task cost, or task duration limits, may be taken as a result of these meetings.

## 4.4 DND 626 Task Management

4.4.1 The TA will establish the priority of DND 626 Task Authorizations for AWRs. Should a change be made to the priority of an existing DND 626 Task Authorization, the Contractor must inform the TA of the impact that this change will have on other on-going tasks. The TA will decide on any necessary adjustment in priority, cost, schedule, and scope of on-going tasks.

4.4.2 The Contractor must manage authorized tasks as outlined in the following subsections.

### 4.4.3 Task Initiation and Planning

4.4.3.1 Upon “as and when requested” basis, the Contractor must submit a proposal that includes:

- i. An implementation plan as applicable,
- ii. A work breakdown structure as applicable,
- iii. A schedule as applicable,
- iv. A breakdown of the required resources and their Level of Effort material, sub-contracted services and travel requirements, as applicable, in accordance with AWRs Pricing Options provided in the contract.

4.4.3.2 If DND requests assistance from the Contractor with Task definition, this must not be

construed as authority to proceed with any work.

#### 4.4.4 Task Execution and Control

4.4.4.1 When a DND 626 Task Authorization is issued, the Contractor must:

- i. Assign a Task Lead responsible to oversee the Task and maintain status,
- ii. Assign resources to complete in accordance with Task requirements and budgetary estimates,
- iii. Identify and implement any special reporting or metric requirements,
- iv. Initiate and implement a risk management plan for any and all risks, and
- v. Commence work on the Task in accordance with the approved schedule.

4.4.4.2 The Contractor must manage all pertinent information related to the task, including the original DND 626 Task Authorization, Task amendments, subsequent revisions, and any relevant data or documents.

4.4.4.3 On an ongoing basis during the execution of tasks, the Contractor must:

- i. Track and report tasks based on the DND 626 Task Authorizations numbers,
- ii. Monitor tasks to ensure that the task progress and financial expenditures are in line with approved tasking and report status to the Contracting Authority, Procurement Authority & TA on a regular basis,
- iii. Maintain task scheduling and tracking,
- iv. Implement a performance monitoring and continuous improvement process to ensure that tasks are completed in accordance with the approved schedule and funding.

#### 4.4.5 Task Closure

4.4.5.1 When the Work identified in the DND 626 Task Authorization and associated SOW is complete the Contractor must for each task:

- i. Prepare a final report in accordance with CDRL 100.006,
- ii. Formally close out the task to ensure that there are no further charges accumulated against the task in accordance with the PMP.

### 4.5 Risk Management

4.5.1 The Contractor must implement a risk management plan to conduct the Work, in accordance with the PMP. Risk Management must include the following, but not limited to:

- i. Risk identification including risk quantification,
- ii. Analysis,

- iii. Planning,
- iv. Tracking and Control.

4.5.2 The Contractor must perform Risk Management in accordance with the PMP.

#### **4.6 Government Furnished Resources**

4.6.1 The Contractor must, as part of Core Management Work, implement a Government Furnished Resource (GFR) Management Plan.

4.6.2 Canada will provide to the Contractor, through a loan agreement, Government Furnished Assets (GFA), including Government Furnished Equipment (GFE), Government Furnished Vehicles (GFV), Government Furnished Information (GFI), and Government Supplied Material (GSM), including Controlled Goods to be used to support the Work.

4.6.3 The GFI may include, but not limited to, Commercial Off-The-Shelf (COTS) software, Military Off-the-shelf (MOTS) software, Government Off-The-Shelf (GOTS) software licenses, media and associated documentation, and other technical documentation.

4.6.4 The GFE may include, but not limited to, MOTS and COTS hardware to enable the Contractor to engineer, integrate and test.

4.6.5 The Contractor must prepare a GFR Report in accordance with CDRL 100.005.

#### **4.7 Travel**

4.7.1 Contractor personnel may be required to travel to TA specified locations in support of the work. The Contractor must manage travel and accommodations for their personnel. The Contractor must obtain written approval from DND for all travel and accommodations, prior to incurring any expense. The Contractor must obtain TA's approval in writing for all travel in advance before travelling.

4.7.2 In the event of deployment to a theatre of operations, DND will assist in arranging travel and accommodations. The Contractor must ensure that its personnel have all documentation required to complete the assigned task.

## **5 Core Engineering Management Work**

### **5.1 General**

5.1.1 This section describes the elements of the work that must be delivered as Core Engineering Management Work. This includes, but is not limited to the following:

- i. System Engineering Management,
- ii. Contractor's Core Key Engineering Personnel,
- iii. Quality Management Plan.

### **5.2 System Engineering Management**

#### **5.2.1 System Engineering Management Plan (SEMP)**

5.2.1.1 The Contractor must implement and manage a SEMP in accordance with the standard DLCSPM-SEP-2021. The purpose of the SEMP is to describe the overall process to be established and implemented to perform the engineering work of this SOW.

5.2.1.2 The Contractor must prepare, submit and maintain the SEMP in accordance with CDRL 200.001.

#### **5.2.2 Configuration Management and Data Management (CM-DM) Services**

5.2.2.1 The Contractor must prepare a Configuration Management and Data Management (CM-DM) Plan in accordance with CDRL and DID 400.001.

#### **5.2.3 Engineering Document Management**

The Contractor must manage the engineering documents that they produce, following DND's directed document management processes as identified in the DLCSPM-SEP-2021 standard.

#### **5.2.4 Change Management**

##### **5.2.4.1 Baseline Configuration Control**

5.2.4.1.1 The Contractor must maintain and deliver baseline configuration control services for the Land C4ISR Capability. Canada may require multiple baselines of the Land C4ISR Capability at any particular time, for example, maintenance of an in-service configuration-controlled baseline simultaneous with maintenance of a development stream and test event configuration-controlled baseline. Definitions of these baselines are found in Appendix A1 – Glossary and Definitions.

5.2.4.1.2 The Contractor must maintain baseline configuration control in a format to be approved by the TA after contract award.

5.2.4.1.3 Canada will own the master copy of approved and delivered configuration baselines

through the designated system of record owned by Canada.

### 5.2.5 Configuration Change Management

5.2.5.1 The Contractor must perform configuration change management in accordance with the DLCSPM-SEP-2021 as Core Engineering Management Work.

## 5.3 Contractor's Core Key Engineering Personnel

In order to ensure continued engineering services, the Contractor's CWP, as a minimum, must include but not limited to, the following key personnel:

### 5.3.1 Contractor's ISTAR Lead Engineer

The Contractor must specific personnel of its choice to advise the TA on ISTAR design and interfaces by acting as the engineering focal point for the IPT. The Lead ISTAR Engineer must have the requisite approval authority within the Contractor's organization for all engineering matters related to the ISTAR engineering work of the SOW.

### 5.3.2 Contractor's ISTAR Engineering Manager

The Contractor must designate an individual as its ISTAR Engineering Manager to advise on Land C4ISR Capability engineering management activities to the TA.

## 5.4 Quality Management Plan

5.4.1 The Contractor must establish and maintain a Quality Management Plan (QMP) in order to perform the QM Process.

5.4.2 The Contractor must prepare and submit a QMP in accordance with CDRL 400.002.

## **6 Additional Work Requirements**

### **6.1 General**

- 6.1.1 This section describes the Sustainment Services that the Contractor must deliver on an “as-and-when” requested basis.
- 6.1.2 In broad terms AWRs will be separated by work elements described in the list below. Detailed scope of each AWR will be developed in concert with the Contractor and provided in the form of a Task SOW. The duration of AWRs may vary in length depending on the scope of the work required.
- 6.1.3 The Contractor must provide the following services on an “as and when” requested basis, but not limited to:
- i. Architecture
  - ii. System and Sub-system Engineering and Integration,
  - iii. Product Development and Testing,
  - iv. Integration and Testing,
  - v. Field Support Services,
  - vi. Integrated Logistics Support,
  - vii. Cyber Security Engineering
  - viii. Specialty Engineering Services,
  - ix. Production Services,
  - x. Technical Investigation and Engineering Support (TIES) support.

### **6.2 Architecture**

- 6.2.1 Upon request, the Contractor must conduct architecture assessments from an ISTAR perspective identifying key findings and provide viable recommendations in the form of a formal report as directed by the TA.
- 6.2.2 Upon request, the Contractor must provide updates to the DLCSPM-SBSRM-2021 standard referenced in Standards and References - Appendix A2.

### **6.3 System and Sub-Systems Engineering and Integration**

- 6.3.1 Upon request, the Contractor must provide systems engineering services for any part or parts of the systems Land C4ISR Engineering Process of this SOW and in DLCSPM-SEP-2021. The full list of services that comprise the ISTAR components can be found in DLCSPM-SBSRM-2021 standard (Appendix A2), with a high level summary in the list below:
- i. ISTAR sensors integration,

- ii. ISR planning and coordination,
- iii. Sensor command and control planning,
- iv. Intelligence information management, collection and collation,
- v. Electronic Warfare (EW) integration,
- vi. Chemical, Biological, Radiological and Nuclear (CBRN) integration,
- vii. Radar integration,
- viii. ISTAR database, exploitation, sharing and distribution,
- ix. Unmanned Aerial Vehicle systems (UAVs) integration.

## **6.4 Product Development & Testing**

### 6.4.1 ISTAR Software & Firmware Engineering and Development

6.4.1.1 Upon request, the Contractor must provide software and firmware engineering support services for the ISTAR Products outlined in the DLCSPM-SBSRM-2021 standard. Activities involving the development of these products may include, but are not limited to:

- i. Recommend and evaluate software engineering changes and perform a system impact analysis thereto,
- ii. Design, develop and integrate software modifications,
- iii. Design, develop and integrate new software system elements,
- iv. Software Qualification Testing,
- v. Support to System & SoS Integration,
- vi. Support to System & SoS Verification and Validation Testing.

6.4.1.2 The activities must be conducted in accordance with the associated process defined in the SEMP.

### 6.4.2 Hardware Engineering

6.4.2.1 Upon request, the Contractor must provide hardware engineering support services for the ISTAR Products outlined in the DLCSPM-SBSRM-2021 standard. Activities involving the development of these products may include, but are not limited to:

- i. Recommend and evaluate hardware engineering changes and perform a system and component impact analysis thereto,
- ii. Design, develop and integrate prototypes,
- iii. Hardware Architecture and hardware Product and system element design,
- iv. Prototyping,
- v. Sub-System Integration,

- vi. Hardware testing and qualification activities,
- vii. Production of pre-production equipment from engineering drawings,
- viii. Production of limited quantities of Land C4ISR System elements from manufacturing drawings to meet Immediate Operational Requirement,
- ix. Technical data package production and delivery sufficient to support third-party manufacturing,
- x. Support to System & SoS Integration,
- xi. Support to System & SoS Verification and Validation Testing.

6.4.2.2 Hardware engineering services consists of electrical, electronic and mechanical engineering activities performed on Land C4ISR products, and on the platforms upon which they are installed. These services also include the necessary manufacturing and pre-production of equipment configurations, modification and installation kits. These are primarily to verify and validate system deployment concepts, and to develop the installation and modification instructions.

## **6.5 Integration and Testing**

6.5.1 Upon request, the Contractor must support ISTAR integration and testing at the SoS level in support of SoS E&I tasks and activities. This includes both product and sub-system testing. It must encompass both continuous integration as well as verification test cycles.

### **6.5.2 Operational Test and Evaluation**

6.5.2.1 Upon request, the Contractor must provide support for Operational Test and Evaluation (OT&E) exercises, including, but not limited to:

- i. Field engineering exercises,
- ii. Field validation exercises.

6.5.2.2 Support for OT&E exercises normally requires engineering and technical support above and beyond that provided by Field Service Representatives (FSR). These OT&E services will include, but not limited to the following:

- i. Planning, definition, scheduling and coordination of tests,
- ii. Providing specific technical expertise,
- iii. Conduct and evaluation of tests,
- iv. Analysis of test results,
- v. Provide test reports.

## **6.6 Field Support Services**

6.6.1 Field Support Services involves a variety of activities, both within and outside of Canada

in support of the ongoing deployment and use of the Land C4ISR Capability in the field.

6.6.2 In addition to support for OT&E activities, the complex technological and functional nature of the Land C4ISR Capability, it is anticipated that mentoring services will be required during specific periods in the life of the System. Accordingly and upon request, the Contractor must provide expert technical assistance at specified locations for particular activities or events of known duration. This may include, but is not limited to:

- i. Reporting, diagnosing and developing workarounds for problems with the software elements of the system, encompassing all aspects of the software's functionality, operating manuals, training and usage,
- ii. Assisting with on-site configuration of the software,
- iii. Assessing the usage of the software and recommending changes to training and standard operating procedures, as warranted,
- iv. Assisting with field upgrades, installation, re-installation and modifications of the Software.

6.6.3 Upon request, the Contractor must provide resources to locations in North America within seven (7) calendar days of receipt of notification and anywhere in the world within 14 calendar days of receipt of request.

6.6.4 The Contractor must carry out work at locations specified by DND. Contractor personnel may be deployed overseas on Named Exercises and Named Operations. When this location is in a theatre of operations, the TA will identify the threat in sufficient detail to allow the Contractor to assess the risk and make the appropriate arrangements.

## **6.7 Integrated Logistics Support**

Upon request, the Contractor must provide a variety of Integrated Logistics Support services to support DND's Life Cycle Material Management (LCMM) function in accordance with Appendix A3 – Logistics SOW. These services may include the following, but are not limited to:

- i. Integrated Logistics Support Plan (ILSP),
- ii. Obsolescence management support services,
- iii. Sparing services including parts provisioning, packaging, handling, storage and transportation,
- iv. Training development and support,
- v. ILS Documentation.

### **6.7.1 Integrated Logistics Support Plan (ILSP)**

6.7.1.1 Upon request the Contractor must prepare, submit and maintain the Land C4ISR ILSP in support of the DLCSPM-SEP-2021 and in accordance with CDRL and DID 300.001. This plan may be generic to the ISTAR Functional Grouping and evolve over time or

might be developed on a baseline-by-baseline cadence.

## 6.7.2 Obsolescence Management

- 6.7.2.1 Upon request, the Contractor must provide obsolescence management engineering services. The intent is to assist the TA with resolving Land C4ISR obsolescence issues in a proactive manner.
- 6.7.2.2 The Contractor must notify the DND when product elements, both hardware and software, are approaching their end of life. In addition, the Contractor must advise the DND of all high-risk components. Components are considered high-risk if the OEM has publicly disclosed that the component in question will be obsolete within the lifetime of the product. For high-risk components, the Contractor must advise the DND within one month and provide recommendations, and feasibility of available alternatives, or should no alternative be available, of developmental approaches to mitigating the obsolescence gap.
- 6.7.2.3 Upon request, the Contractor must prepare and submit an obsolescence report to the TA, which identifies for current and intended Land C4ISR Products and obsolescence related issues. The obsolescence report must be prepared and submitted in accordance with CDRL 200.002. The Contractor may be required to advise the TA of potential, or actual obsolescence with recommended solutions to allow the TA to make an informed decision.
- 6.7.2.4 Upon request, the Contractor must assist the TA with developing obsolescence strategies that maximize operational availability while minimizing life cycle costs.

## 6.7.3 Government-Industry Data Exchange Program (GIDEP) Participation

Upon request, the Contractor must actively participate in the GIDEP in accordance with the GIDEP Operations Manual, SO300-BT-PRO-010.

## 6.7.4 Diminishing Manufacturing Sources and Material Shortages

Upon request, the Contractor must review, through the period of performance of the Contract, the GIDEP Diminishing Manufacturing Source (DMS) notices and other supplier notifications for applicability to system components for all Land C4ISR Products for which DLCSPM-SBSRM-2021 includes. The Contractor must notify the TA within 5 days of any DMS situation that affects equipment maintenance and repair for all Land C4ISR Products.

## 6.7.5 Material Change Notices

Whenever the Contractor makes any engineering changes that affect end items such as part numbers, drawing numbers, manufacturer's code, quantities and applicability changes made to component parts, the Contractor must prepare and deliver Material Change Notices (MCNs) in accordance with D-012-100-215/SF-000.

### 6.7.6 Training Support

Upon request, the Contractor must provide training to personnel designated by DND. These services include, but are not limited to:

- i. Conducting training needs analysis,
- ii. Providing training material including courseware at the product, sub-system or functional grouping level in a manner that can be incorporated into system, SoS or Canadian Army training material,
- iii. Developing training plans and syllabuses at the product, sub-system or functional grouping level in a manner that can be incorporated into system, SoS or Canadian Army training material,
- iv. Deliver initial cadre training.

### 6.7.7 ILS Documentation

6.7.7.1 Upon request, the Contractor must produce and deliver all ILS data and documentation, such as, but not limited to, System element ILS Plans, Logistics Support Analyses, Recommended Spare Parts Lists, Initial Provisioning Conferences, etc.

6.7.7.2 Upon request, the Contractor must provide documentation services including:

- i. Preparing and updating User Manuals,
- ii. Preparing and updating Technical Data Packages.

## 6.8 Cyber Security Engineering

6.8.1 Upon request, the Contractor must provide a variety of Cyber Security Engineering services to support DND. These services include the following:

- i. Cyber security engineering and integration,
- ii. Technical investigations and monitoring,
- iii. Baseline patch management,
- iv. Security vulnerability assessment and authorization,
- v. Engineering network security.

## 6.9 Speciality Engineering Support Services

6.9.1 Speciality Engineering Support Services are those which support the development and deployment of the Land C4ISR Capability, but are not necessarily part of the Capability itself. Upon request, the Contractor must provide Speciality Engineering Support Services required to sustain ISTAR Products, Sub-systems and Systems within the Land

C4ISR capability.

## 6.9.2 Radio Frequency Safety (RFS) Engineering Services

6.9.2.1 The Contractor must support DND's Radio Frequency Safety Program, in accordance with Defence Administrative Orders and Directives (DAOD 3026-1), including the provision of technical assistance to designers and maintainers to ensure that the concepts and design practices of RFS are thoroughly understood.

6.9.2.2 RFS advice, planning and test plan maintenance is Core Engineering work. Conduct of assessments and tests are AWRs.

## 6.10 Production Services

Upon request, the Contractor must develop and/or provide operational and production grade military specification hardware for laboratory and field test environments. This production capability is not intended to be used for large scale fielding, or producing items in large quantities.

## 6.11 Technical Investigation and Engineering Support (TIES)

Upon request, the Contractor must undertake TIES. This activity includes the provision of corrective and perfective maintenance support as well as requirement and problem analysis, design, implementation, integration, verification, validation, cyber mission assurance assessment and delivery of security solutions.