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Title - Sujet WESM - RFI/LOI Weapons Effect System Modernization	
Solicitation No. - N° de l'invitation W8476-216429/B	**Date** 2022-01-18
Client Reference No. - N° de référence du client W8476-216429	**GETS Ref. No. - N° de réf. de SEAG** PW-$$QT-011-28477
File No. - N° de dossier 011qt.W8476-216429	**CCC No./N° CCC - FMS No./N° VME**

Solicitation Closes - L'invitation prend fin
at - à **02:00 PM** Eastern Standard Time EST
on - le **2022-04-29** Heure Normale du l'Est HNE

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Weapon Effects Simulation Modernization
Request for Information

1. Purpose and Nature of the Request for Information (RFI) Process

1.1 Public Services and Procurement Canada (PSPC) is requesting industry feedback regarding the Weapon Effects Simulation Modernization (WESM) procurement on behalf of the Department of National Defence.

Annex A “Questions to Industry” is attached to this RFI. Industry is requested to review these questions and provide answers to the PSPC Contracting Authority identified under Article 5 “Contracting Authority” on or before February 18, 2022, followed by Industry day.

In light of the current COVID-19 pandemic, and its impact on government operations and those of industry, please inform the Contracting Authority if you intend to submit your responses to the Annex A questions after Canada’s requested response date.

THIS IS THE SECOND OF MULTIPLE POTENTIAL ENGAGEMENT ACTIVITIES PLANNED UNDER THIS PROCESS.

1.2 The intent of this RFI is to keep the lines of communication open between GoC and industry throughout the various stages of the engagement process, PSPC intends to release future engagement activities which will clearly identify the information Canada is requesting and the requested industry response date. The purpose of this RFI is to:

a. provide a single point of official program communication with industry;
b. collaborate with industry on elements of the requirements as live simulation and training technology evolves along with how the sustainment and business enterprises are developed through the resulting contract terms and conditions;
c. answer questions from industry to ensure all interested participants receive the same information;
d. provide schedule updates; and
e. hold industry meetings and engagement activities as necessary.

1.3 The objective of this RFI process is to:

a. ensure Canada’s expectations for engagement are clear and easy for industry to understand;
b. foster innovation and deliver the best solution possible for Canada;
c. fully understand potential WESM solutions the market has to offer and leverage industry expertise to develop an efficient and effective sustainement and procurement strategies that achieves the procurement’s objectives and best value to Canada;

d. proactively communicate the Government's commitment to support live simulation in both static locations (rural and urban) and deployed training environments through a fair, open, transparent, and competitive procurement process;
e. communicate timely, relevant, and easy-to-understand information to ensure suppliers understand what the procurement process aims to achieve and how they can participate;
f. foster productive and positive working relationships with the potential WESM supplier community to ensure the procurement's objectives are achieved;
g. seek feedback and validation from industry on various critical aspects to enable the development of the future WES capability; specifically, the two preliminary sets of major operational requirements, one per project option: decentralized (focus on various locations throughout Canada) and centralized (focus on Canadian Forces Base Wainwright, Alberta); and
h. advise industry of potential engagement activities such as Industry Day events, site visits, one-on-one meetings, Price and Availability (P&A) and other potential engagement activities.

1.4 This RFI is neither a call for tender nor an RFP. No agreement or contract will be entered into based on this RFI process. The issuance of this RFI is not to be considered in any way a commitment by the Government of Canada, nor as authority to potential respondents to undertake any work that could be charged to Canada. This RFI process is not to be considered as a commitment to issue a subsequent solicitation or award contract(s) for the work described herein.

Although the information collected may be provided as commercial-in-confidence (and, if identified as such, will be treated accordingly by Canada), Canada may use the information to assist in drafting the technical document (which are subject to change).

Respondents are encouraged to identify, in the information they share with Canada, any information that they feel is proprietary, third party or personal information. Please note that Canada may be obligated by law (e.g. in response to a request under the Access of 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/).

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

Although participation in this RFI process is not mandatory, industry is strongly encouraged to engage early in the process to avoid being at a disadvantage. There will be no short-listing 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.

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

2. Background Information:

The WESM project will modernize the Canadian Army (CA) WES training system to enable individual and collective training in order to deliver combat effective CA units and formations.

The WES capability was acquired by the CA to address the deficiency in simulating realistic weapon effects during force-on-force field training exercises. The WES system provides soldiers the opportunity to train in the way that they would fight, utilizing actual weapons and vehicle platforms as they would be used in theatre and on deployments. This capability provides data and products for effective after-action reviews to enhance the commanders' ability to train and evaluate the readiness of their troops in both an urban and rural training environment. There are four (4) instrumented static sites (with fixed exercise control center) located in Wainwright, Alberta, Gagetown, New Brunswick, Petawawa, Ontario and Valcartier, Quebec in addition to a mobile capability which can be used anywhere within Canada, including thetwo (2) non-instrumented sites, one located in Edmonton, Alberta and the other in Shilo, Manitoba. The intent of this project is to modernize the existing WES capability potentially addressing: equipment obsolescence; updated operational requirements; and advancements in technology and international standards (such as those being developed under UCATT). The intent of this RFI is to seek information from industry; thereby allowing the Government of Canada to better define the options for the modernization of the Canadian WES System.

3. Potential Work Scope and Constraints:

3.1 Potential Scope of Work

This RFI is to understand both the acquisition and in-service support requirements to perform the activities necessary to effectively deliver, operate, maintain, and support exercises and logistical activities for Canada's live simulation equipment after WES enterprise and capability modernization. See Annex A for a more detailed project scope.

The modernized WES enterprise is anticipated to achieve full operational capability in the 2031-2032 timeframe. It is anticipated that there may be several contracts as a result of procurement work. In addition, it is anticipated that there will be contract(s) for in-service support that will be initiated in the same general timeframe as the acquisition contract(s) and extend beyond the delivery of the capability. Expected duration of in-service support contract(s) is to support and sustain equipment for at least fifteen (15) years of End of Life expectancy.

3.2 National Security Exception

A National Security Exception – Special Contracting Caveat may be invoked for resulting procurement process(es).

3.3 Industrial and Technological Benefits Policy

A final determination on the application of the Industrial and Technological Benefits (ITB) Policy to the WESM project has not been made. Engagement with industry through the Request for Information (RFI) will help determine how Canada could leverage opportunities for economic benefit through this procurement.

3.4 Security

While there is no security clearance requirement as part of this RFI process, a security clearance up to secret level will be required for the WESM contract(s).

4. Schedule:

Canada is in Option Analysis exploring sustainement and procurement strategies, Industry day is planned for April 5, 2022, Price and Availability (P&A) and procurement schedule will be communicated under future postings to Buy and sell.

5. Contracting Authority

Interested Respondents may submit their responses to the PSPC Contracting Authority, identified below, preferably via email:

Sandra Derby
Supply Team Leader
Defence and Marine Procurement Branch
Public Services and Procurement Canada / Government of Canada
Sandra.derby@tpsgc-pwgsc.gc.ca
Tel: 873-355-4982

A point of contact for the Respondent should be included in each delivery.

Changes to this RFI may occur and will be advertised on the Government Electronic Tendering System. Canada asks Respondents to visit Buyandsell.gc.ca regularly to check for changes, if any.

6. Questions Submitted by Industry

All enquiries and other communications related to this RFI process shall be directed exclusively to the PSPC Contracting Authority identified under Article 5. While Canada intends to respond to industry questions by releasing answers periodically through subsequent RFI amendments, responding to questions will be handled on a best effort basis.

Often Canada may not be in a position to answer certain questions because requirements may not yet be finalized on various aspects of WES Modernization. Unanswered questions are still very valuable feedback as it allows Canada to see where industry may have concerns, or where a different approach to a requirement may be possible.

As industry feedback is submitted and reviewed for consideration over the course of the RFI process, Canada may periodically release updated versions of the major operational and sustainment requirements. These updated documents often answer questions submitted by industry.

7. Additional Information Requests

Throughout the RFI process, Public Services and Procurement Canada may request additional information, clarifications or site visits from respondents.

8. Fairness Monitor

Canada has engaged the services of an organization, Raymond Chabot Grant Thornton Consulting Inc., to act as an independent, third-party Fairness Monitor (FM) for the solicitation process.

ANNEX A

WEAPON EFFECTS SIMULATION MODERNIZATION (WESM)

Questions to Industry (January 2022)

Requisition Number:
DND Document # W8476-216429

Date: 01-12-2022

Prepared by:

WESM Program Team
National Defence Headquarters
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K1A 0K2

NOTICE

This documentation has been reviewed by the Technical Authority and does not contain controlled goods.

AVIS

Cette documentation a été révisée par l'Autorité technique et ne contient pas de marchandises contrôlées.

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Additional Reference

This document augments the RFI #1 Annex A, providing some update information and additional information on sustainment. It is recommended to refer back to RFI #1 Annex A for more information on the Weapon Effects Modernization (WESM) Capital Project.

1 Abstract

1.1 The Weapon Effects Simulation Modernization (WESM) project is looking forward to the future of Live Simulation for the Canadian Army (CA) and is currently in the Options Analysis (OA) phase, with potential contract(s) award in FY27/28, Initial Operational Capability (IOC) planned in FY29/30, and Final Operational Capability (FOC) planned in FY31/32. Through one or multiple contracts, it is intended that WESM will be responsible for both the acquisition of new equipment and software, and the eventual changes to the required in-service support as a result of the new Canadian Army (CA) operational requirements.

1.2 As part of the OA phase, the WESM Project team is in the process of soliciting industry perspectives and points of view around the modernization and expansion of the Canadian Weapon Effects Simulation (WES) system, including interoperability with Royal Canadian Air Force (RCAF) elements, American, British, Canadian, Australian and New Zealand (ABCANZ) forces and other North Atlantic Treaty Organization (NATO) partner forces. This feedback, in line with the latest technology and industry's expectation of where technology is likely to go in the next 10-15 years, will help with the finalization of the CA's operational requirements and the initialization of the development of the Sustainment Enterprise (SE).

1.3 The aim of this WESM Project second industry engagement is to better understand and assess options related to sustainment, ask follow-on questions related to the acquisition, and seek input on more specialize areas such as environmental, infrastructure, Innovation and Science and Economic Development Canada (ISED) for a modernized WES system in support of the current and future CA training requirements.

2 Background

2.1 The aim of the existing WES program was to provide a live simulation training capability for the CA to conduct collective training, and provide effective After-Action Reviews (AARs) to enhance the commanders' ability to train and evaluate their troops in both urban and rural training environments.

2.2 The WES capability was acquired by the CA to address a deficiency in objectively simulating realistic weapon effects during force-on-force field training exercises. Force-on-force training is based on the traditional military two-sided engagements in which one side plays the role of the opposition force. When used with a variety of communication networks and Exercise Control (EXCON), the laser and radio-based system provides the weapon effects which are nearly identical to real operations. Additionally, replays and reports are provided to the military chain of command (CoC) in order to conduct effective AAR; thereby enhancing a Commander's ability to train and evaluate their troops.

2.3 The WES system emulates the capabilities, with some limitations, of weapons and vehicle platforms operated by the CA in an integrated live simulation environment. Using lasers, geo-pairing and a variety of communication networks, the WES system permits force-on-force training in a manner that provides realistic simulation engagement effects of direct fire (small arms, tanks, etc.) and area weapons (indirect fire, minefields, etc.), while providing timely and precise feedback to the soldiers and units undergoing training.

2.4 The WES system provides the CA the flexibility to train using live simulation with any permutation or combination of the rural environment, urban environment, with or without dismounted troops, with or without vehicles and instrumented (with an EXCON) or non-instrumented (without an EXCON) exercises. The WES system must be capable of enabling training at both static and deployed sites.

2.5 Data transfer between EXCON and the exercise equipment and participants is currently achieved through a dedicated, Radio Frequency (RF) based, Data Communication Network (DCN) with Microwave relay towers. The DCN Server communicates directly with the EXCON Interface Server, and training information is recorded, monitored, displayed and reviewed at a centralized EXCON facility.

2.6 A mobility capability allows the CA flexibility to train up to Battle Group size (2,800 entities) exercises anywhere across the country with the similar capabilities to the static locations, with the exception of urban-specific components (cameras, High-Fidelity Tracking (HFT) system, etc.). These trailer-mounted components include an EXCON, two radio towers, and trailers for transporting WES equipment for the soldiers undergoing training.

2.7 There are currently four (4) live simulation static locations (Canadian Forces Base (CFB) Wainwright, CFB Petawawa, CFB Valcartier and CFB Gagetown) that either have or will have by 2022 the ability to support training in the rural and/or urban environment. The instrumented urban training capability includes cameras, speakers, high fidelity tracking and urban specific equipment, housed in building simulators. CFB Wainwright is the largest of all the static sites, with towers for permanent radio coverage of the rural training area and the support infrastructure to perform warehouse activities, conduct up to 3rd line maintenance, plus the equipment and manpower to support future integration and testing activities. There are also two (2) non-instrumented static urban sites, one at CFB Edmonton and another at CFB Shilo.

2.8 The WES program has evolved significantly since the initial project delivery back in 2006. New Army equipment and vehicles such as the C16 Automatic Grenade Launcher (AGL), the Leopard 2A, 4 tank and the Tactical Armoured Patrol Vehicle (TAPV), have been integrated into the existing WES environment. Person-worn equipment has been almost completely replaced and the procurement of a mobile trailer-based Exercise Control and remote relay tower now enables instrumented training at any CA training location across Canada.

2.9 Under the current WES in-service support, the Contractor (Cubic Global Defence) is responsible to verify that sufficient equipment is operational, to issue equipment to participants, to install kit on vehicles and to ensure all equipment is calibrated prior to an exercise debut. The Contractor, in conjunction with CA personnel, is responsible to provide training to soldiers on the use and capabilities of their WES equipment. During the exercise, the Contractor supports the equipment in the field to ensure that it is performing in accordance with specifications, conducting repairs, swap outs, and recalibration as required. Software analyst support is also required during an exercise to address issues, supervise system reboots, and provide user-interface training and guidance. At the EXCON, information is collected from which AAR material is prepared, utilizing system data and map screen replays; all is packaged by the Contractor’s Operator Analysts (OA), for presentation by the military leadership. At the end of the exercise, the Contractor removes the WES kit from the vehicles, collects all equipment issued to participants and conducts the maintenance and repairs as required in order to be ready for the next training event. A Sustainment Business Case Analysis (SBCA) is currently ongoing to determine the future requirements for contractor(s) support to the WES Program.

2.10 The WES contract was awarded to Cubic Defense Applications Inc. in 2003, and the equipment obtained FOC in 2006 has evolved throughout the years integrating different CA platforms, additional capability, and updates of systems and equipment by the Original Equipment Manufacturer (OEM). Some of the original WES equipment has been recently replaced to address obsolescence concerns while other WES equipment will require replacement in the upcoming years.

3 WES Modernization

3.1 Modernization Mission

3.1.1 The WESM project will provide the technology to support highly realistic and challenging joint and multinational instrumented collective live training up to the Canadian Mechanized Brigade Group (CBMG) level (TL7) through the use of live simulation systems within an integrated training environment in order to deliver combat effective CA units and formations.

3.2 Modernization Vision

3.2.1 The CA is modernizing its policy for training and simulation through the publication of the Future Integrated Training Environment (FITE); a vision statement detailing the employment strategy for simulation in support of CA training. The WESM Project will modernize and expand the current Canadian WES system capabilities to improve the live simulation training experience for these individual and collective training requirements.

3.2.2 This modernization aims to enable joint and multinational training with allies and Joint, Interagency, Multinational and Public (JIMP) partners also working towards the Simulation Interoperability Standards Organization (SISO) and Urban Combat Advanced Training Technology (UCATT) interoperability standards. It will also enable simulation support to training at multiple locations, both on and off military bases in Canada as well as outside of Canada. Upon completion of the system modernization, the WES system will be modular and scalable so as to enable continuous evolution and capability advancements as weapons and simulation technologies evolve.

3.2.3 The current WES system, which will be modernized through the WESM project, will adopt UCATTs standards in order to enable training in accordance with the use cases thereby allowing the CA to train with ABCANZ and NATO nations who have also adopted the UCATT standards. The WES system will also be compatible with the U.S Multiple Integrated Laser Engagement System (MILES) live simulation system in order to enable training with the U.S. Army and with the legacy WES to allow a gradual transition between the legacy and the modernized WES system and the retention of some of the legacy WES capabilities. The WES system will provide the technology to support highly realistic and challenging joint and multinational instrumented tactical field training up to the Brigade level.

3.2.4 The intent is to deliver a modernized live simulation training system capability, in line with the CA FITE vision, that will be able to replicate the complexity, stress and challenges of the full spectrum of operations from domestic aid operations through to high-level warfighting against a peer enemy. An emphasis should be placed on the ability to change and adapt rapidly to meet rapidly changing domestic and foreign fields of engagement and challenges in accordance with Close Engagement and FITE documents.

3.3 Modernization Objectives

3.3.1 The WESM Project will directly address and contribute to the following objectives:

a. Army Readiness Validation Capability Increased: The CA is able to certify the readiness of forces up to brigade level for deployment in a range of scenarios from Peace Enforcement, through to peer-opponent High Intensity Operations.

b. Training Capacity Increased: The expanded training system, at multiple CA bases (such as: Wainwright, Edmonton, Shilo, Petawawa, Valcartier, Gagetown), provides the means and equipment to train CA forces up to the Brigade level including Canadian joint military participants, NATO and other coalition military partners, participants from other government departments and non-governmental agencies and any other essential task-tailored participants. This CA training could be conducted at major CA training areas, ABCANZ or NATO training areas, other CA training areas (e.g. CFB Meaford) or at off-base Canadian locations.

c. System Technology Modernized: The adoption of Open technical standards will increase system flexibility, promote incremental capability development, diversify the supplier base and assist in driving down costs

d. Joint Training Enabled: The adoption of NATO and other allied-driven technical standards for live simulation will remove, to the extent possible, vendor-based proprietary simulation equipment solutions that limit, or restrict, training interoperability with Canadian joint partners such as the RCAF.

e. Allied Training Interoperability Achieved: The adoption of Open standards will help delivery interoperability with Canadian allies (With an end state of partner nations able to ‘Bring Their Own WES’ (BTOW) to CA WES exercises).

f. Future Evolutionary Live Simulation Capability Development Enabled: The adoption of modern, modular and standard-based live simulation technologies, will enable evolutionary and cost effective future capability development as it will be possible to progressively upgrade elements of the system and leverage the investment industries and allied partners are committing to the same technologies.

g. Soldiers Away From Home Base Time Reduced: The amount of time soldiers need to be away from home will be reduced by the ability to undergo high quality training at their home garrisons.

h. CA Future Integrated Training Environment (FITE): The FITE seeks to create a training framework which blends live simulation field training and the synthetic training environment composed of virtual simulation and constructive simulation. As such, synthetic training and field training will be part of a continuum that mitigates resource constraints and the limitations of field training. The FITE will allow training to take place in complex operational environments where threats and challenges will be diverse and rapidly changing.

   Within this training environment, live simulation training will support the assessment of the Battle Task Standards (BTS) during foundation, high readiness (HR) or continuation training. For individual training, simulated live training will support instructor assessment of planning and technical skills as well as Techniques, Tactics and Procedures (TTP) during qualification courses.

3.4 Concept of Employment (CONEMP)

3.4.1 Training Scenarios: The CA will use the WES system in a wide range of individual and collective training scenarios that will include both the regular and the reserve forces. The WES equipment will be used for extended periods of time (24-hour training days, up to 21 consecutive training days) in the following training scenarios:

a. Individual Training Courses. This type of training would involve tactical units of varying sizes using the WESM suite in support of continuation or qualification training. While not mandatory to evaluate training objectives, the suite will provide the tools to instructors to compare task planning with task execution and enable task assessments and debriefings with a focus on movements rather than engagements. The live simulation supported debriefing needs to be conducted in the same locations and the same time constraints as current AARs for individual training. This type of training would occur throughout the year and the respective training courses are to be conducted at the Combat Training Centre (CTC) in Gagetown, New Brunswick and at the Divisional Training Centres and the units which are located at the five main CA bases. (Edmonton, Alberta; Shilo, Manitoba; Petawawa, Ontario; Valcartier, Quebec; Gagetown, New Brunswick)

b. Collective Training (Section to Combat Team). This type of training (from level 2 to 5) would include a minimum of 10 soldiers including a driver, gunner and crew commander as well as the vehicle, up to 180 soldiers, 40 armoured combat vehicles and 20 support vehicles, plus an enemy force of platoon size (30-40 soldiers plus 3-4 armoured vehicles) being exercised on or off any of the 5 CA bases as well as on allied bases outside of Canada. The Combat Team level of training requires close integration of combined arms sub-unit leadership and enablers where the synchronization of arms and services becomes critical. In this case, live simulation would be enabled through leveraging the Exercise Control Sites supporting urban environment sites at the main CA bases. Deployable WESM would support training level 2 to 5 collective training anywhere in Canada or potentially deployed outside Canada (OUTCAN) with Allies. This type of training would occur throughout the year for both the regular and primary reserve forces. Units will need to train up to combat team dry training in preparation to conduct live fire exercises. Continuation training is also required to maintain combat capability and tactical skills for units in High Readiness. As the training level and complexity is increased, so too is the number of partners who require the ability to link other virtual or constructive simulation systems to the WESM suite.

c. Collective training (Battle Group and Canadian Mechanized Brigade Group). This type of training would include up to 4800 soldiers, 400 armoured vehicles and 600 support vehicles (plus opposition force) and being exercised at major CA bases, ABCANZ or NATO bases or at off-base Canadian locations up to the unit level and at major CA bases at the Brigade group level. The opposition force is typically comprised of a mechanized Battle Group size (up to 600 soldiers, 120 armoured vehicles and 200 support vehicles). Up to the unit level, those are being exercised at major CA bases or at off-base Canadian locations as well as at ABCANZ or NATO partner-nation training locations. All Level 6 training will generally take place in a joint and combined context and it is likely the EXCON capability could be mobile. Level 7 training may be multinational and may include a requirement to understand higher-level coalition operations. Increased emphasis will be placed on Full Spectrum Operations (FSO) within a JIMP context. Brigade Group training can be part of a multinational exercise that is hosting several units from different CA bases at the Canadian Maneuver Training Centre (CMTC) in Wainwright, Alberta. Due to the large number of participants, it is likely that the EXCON capability would be static. Furthermore, the time and personnel required to set up and takedown the exercise must be minimized.

3.4.2 Training Use Cases: From the collective training scenarios, the CA has identified 4 training use cases that describe different types of joint and multinational training. Interoperability and availability of sufficient quantities of training equipment are both essential requirements to conduct efficient training. Under the CA FITE vision, it is possible that a part of the training audience would be training under virtual and/or constructive simulation systems that is connected and supports the live training event. There are also requirements to incorporate force elements for both friendly and Opposition Forces (OPFOR) who will be operating in virtual or constructive simulation systems. For example, an F-18 pilot may be participating in an exercise whilst in a high-fidelity simulator. The pilot will interact with a Joint Fire Attack Controller (JFAC) deployed into the training area and the effects of delivered simulated munitions replicated in the live environment. Other field effects may be constructive such as a deep fire artillery system firing in support of live field effects.

a. Conduct up to Brigade-level training with joint and multinational elements (Wainwright). This case involves the CA hosting a multinational training event involving one or multiple members of ABCANZ or NATO countries where the contingent(s) use their own interoperability-proven Tactical Engagement Simulation System (TESS): consistent with UCATT use case 1. During the exercise, the multinational participant systems must be interoperate directly with each other.

b. Conduct up to Battalion Group training with joint and multinational elements at a Canadian Army base. Similar to the previous case, this involves the CA conducting training up to the Battle Group level that may involve joint participants and one or multiple members of ABCANZ or NATO countries. It must meet the same requirements as in the previous case, but up to level 6 only and at different locations.

c. Conduct up to Battalion Group off-base training in Canada. This case involves the CA conducting training off-base in civilian areas. This may or may not be in the vicinity of a CA Base and therefore training support must be deployable, including a mobile EXCON and communication system as well as the ability to instrument weapon systems and mobile platforms on site.

d. Conduct up to Battalion Group with joint and multinational elements (Partner nation training locations). This case involves a hosted multinational training at an ABCANZ or NATO partner nation training location that has an installed, interoperable system at an as yet undetermined training location. One or multiple visiting partner forces come to a hosting nation and bring their operational equipment, accompanying TESS and/or their EXCON and communication system. This is consistent with either UCATT use case 2 option 1 or option 2 depending upon whether only the TESS is brought or not.

3.5 High Level Mandatory Requirements

WESM High Level Mandatory Requirements (HLMR)		
#	HLMR	Description
1	Training system interoperability and mobility	1A. Provide the ability for the CA to conduct live simulation supported training with joint and multinational elements at Canadian WES-designated training locations, including, but not limited to, RCAF elements, ABCANZ forces and other NATO partner forces.
		1B. Provide the ability to control and monitor all exercise participants and mobile weapon platforms that are involved in Canadian, joint and multinational live simulation field training exercises at Canadian WES-designated training locations.
		1C. Provide the ability for the CA to conduct live simulation supported training with joint and multinational elements at partner nation operated training locations.
2	Training and Simulation environment	2A. The training environment must provide the ability for exercise participants to use, or interact with, their personal equipment, weapons and mobile platforms as they normally would and for the simulation to produce realistic battle effects based on this use.
		2B. Support the conduct of after action reviews and verification of exercise results to enable training reinforcement and confirmation that training objectives were achieved.
3	Training audience sizes and WES-designated training locations	3A. Provide the resident ability for the CA to train a Brigade sized training audience, including joint and JIMP assets and an opposing force, at the CMTC in Wainwright.
		3B. Provide the ability for the CA to train up to a Battle Group sized training audience, including joint enablers and an opposing force at the main CA garrison locations (Shilo, Manitoba; Petawawa, Ontario; Valcartier, Quebec; Gagetown, New Brunswick) and other military and non-military sites in Canada.

4 Sustainment Enterprise (SE)

4.1 Context

4.1.1 Support to Live Simulation, for the Canadian Army, in both the rural and urban environment, is currently provided by a combination of Canadian Armed Forces personnel, Canadian Public Servants and the Weapon Effects Simulation (WES) OEM Contractor. The In-Service Support (ISS) Sustainment Enterprise (SE) for the modernized WES will be defined as this Project evolves but will be based upon the support required to meet the CA Operational Requirements, and the observations and lessons learned from the current WES ISS contract and the upcoming WES Interim ISS contract. While the who and how have not been confirmed, it is expected that the requirements of the future SE will remain similar to the current SE which includes all expected support for the CA to conduct instrumented and un-instrumented live simulation exercises at dedicated WES static and deployed locations, including:

a. Operational Training Requirements Support – this capability is focused on ensuring the provision of all of the direct support to an actual exercise. It includes: support to exercise planning and preparation, EXCON, Data Communication Support by Operator Analysts (OAs),Information Technology (IT) and DCN technical; vehicle kitting/de-kitting and on-range technical support by Field Service Representatives (FSRs); , and issue/receipt support for WES equipment. In addition, it includes the equipment and software support provided to Observer, Controller, and Trainers (OCT) by WES in order to support exercises or training activities supported by live simulation.

b. Logistics and Maintenance Support – this capability includes the warehousing, maintenance and repair of the WES equipment.

c. Engineering Support – this capability includes the Engineering support to the maintenance of the WES equipment (i.e. Obsolescence identification and as requested by DND the rectification of obsolescence issues, fault investigation, and the potential integration of new CA equipment into the WES System) and to Exercises.

d. Program Management Support – this capability includes the contractor provided program management support; such as, oversight and management of contractor personnel, on-site direct liaison with Department of National Defence (DND) personnel for exercise planning and support, deliverable submissions, Risk Management, Proposals, Program Review Meetings, Contractual Reporting, Documentation Updates, etc.

4.1.2 The CA live simulation system currently has 6 static sites. CFB Wainwright is the largest of all these sites with a permanent coverage area of the training area and the support infrastructure to conduct warehouse activities, conduct up to 3rd line maintenance activities and the equipment or manpower to support integration and testing activities. Gagetown, Petawawa and Valcartier have smaller urban villages and the capability to conduct rural exercises. Whereas Edmonton and Shilo currently have only un-instrumented urban sites but do have the capability to conduct some training supported by live simulation through the use of the mobile WES equipment. One objective of WESM is to increase the Live Simulation support to training activities at the Force Generating Bases; specifically Wainwright, Gagetown, Edmonton, Shilo, Petawawa and Valcartier. The WESM equipment and support must be sufficiently robust for all systems to be employed for extended periods of time (24-hour training days, up to 21 consecutive training days).

5 Appendices – RFI # 2 Questions

- Appendix 1 - Sustainment Enterprise (SE) Questions

  Enclosed File Name: RFI # 2 - Appendix 1 - Sustainment Enterprise Questions

- Appendix 2 - Acquisition Follow-up Questions

  Enclosed File Name: RFI # 2 - Appendix 2 - Acquisition Follow-up Questions

- Appendix 3 - Environment Questions

  Enclosed File Name: RFI # 2 - Appendix 3 - Environment Questions

- Appendix 4 - Infrastructure Questions

  Enclosed File Name: RFI # 2 - Appendix 4 - Infrastructure Questions

- Appendix 5 - Innovation, Science and Economic Development Questions

  Enclosed File Name: RFI # 2 - Appendix 5 - Innovation, Science and Economic Development Questions

- Appendix 6 – Indigenous Businesses Questions

  Enclosed File Name: RFI # 2 - Appendix 6 - Indigenous Businesses Questions

- Appendix 7 - List of Acronyms
  Enclosed File Name: RFI # 2 - Appendix 7 - List of Acronyms

Appendix 1 – Sustainment Enterprise (SE) Questions

Applicable System(s) or Area(s): Principal Systems and Original Equipment Manufacturers	
Item #	**Question**
1	What are the main elements of your live simulation systems and sub-systems? (For WESM: Principal system refers to Live Simulation System which we refer to as WES and the sub-systems refers to our sub-capabilities specifically: Field equipment (includes: Vehicle Systems, Soldier Systems and Tactical Aviation Systems); EXCON; DCN; and Physical Framework (includes: ability to monitor participants (cameras, high fidelity tracking etc.), ability to provide environmental and cognitive effects (such as smoke and aroma generators, and audio effect) and ability to provide physical and functional training effects (such as breachable doors, dummy electrical panels, etc.). More specifically the main elements refers to the system and sub-systems with the higher level of effort, higher cost, or higher complexity that will drive our future in-service support requirements.
2	Who are the Original Equipment Manufacturers (OEMs) for the systems and sub-systems used within your live simulation solution?
3	a) Do you have any key lessons learned from working with other contractors/OEMs to provide In-Service Support (ISS)? b) Have your company ever participated in a shared support relationship with another provider and how did that work? If yes, what was the total duration of the partnership?
4	a) What experience does your company have in direct delivery of In-Service Support (ISS)? b) Please provide your experience, but not limited to: i. Experience in operational support, such as: Operator Analyst (OA), Field Service Representatives (FSR), Training Support etc. Was the support provided in as urban and/or rural environment? ii. Were you the prime contractor or relied on sub-contractors to provide the support? iii. What was the length of contract? iv. What was your spare parts management plan? v. Any specific experiences/lessons learned from providing ISS to other customers/clients, that you believe we should consider in developing the Canadian solution.
5	In regards to performing In-Service Support (ISS), to what extent would your company, as the OEM of a Live Simulation System, have access to the data/Intellectual Property of the OEMs of the sub-systems that make up your live sim solution? If the sub-systems (as defined in question #1 above) are procured by DND from different OEMs; are there any differences if one company is designated as the Prime contractor?

Appendix 1 – Sustainment Enterprise (SE) Questions

Applicable System(s) or Area(s): Concept of Maintenance	
Item #	**Question**
6	Canada has initiated the process of developing its In-Service Support solution. To help with the Options Analysis for In-Service Support, Canada is interested in knowing the facts, best practices and lessons learned associated with these potential top level work breakdown structure (WBS) elements from your company's perspective? a) Management (governance, program management, etc.) b) Engineering (technical service and support, engineering service and support, FSR, etc.) c) Maintenance (corrective, preventive, level 1 to 4, etc.) d) Material (procurement, repair parts, consumable, forecasting, warehousing, distribution) e) Technical Data and Publications (logistics support analysis, spare parts lists, equipment manuals, etc.) f) Training (Operator Training, Technical Training, etc.) g) Infrastructure (storage, workshop, training, etc.) h) Support and test equipment (Specialized Tool & Test Equipment (STTE), calibration, etc.) i) Electronic Information Environment (data collection and storage, data analytics, etc.) j) Support to Training events (Subject matter expertise support to Exercise Planning and Preparation (EPP), Operator Analyst (including AAR prep), Kitting/Dekitting of vehicles and weapon systems, shipment and setup of equipment for mobile exercises, etc.)
7	What are the facts, best practices and lessons learned Canada should consider when developing the options for sustaining the platform. Please be specific in terms of: i. Levels and Lines of maintenance; ii. Supply Chain; iii. Engineering Support including reach-back and configuration management; iv. Logistics (Purchasing, Warehousing and Distribution); and v. Any other relevant aspects.
8	a) What are the typical intervals (operating hours and calendar time) between scheduled and unscheduled maintenance events and the associated level of effort? b) Do these intervals vary for different sub-systems, if so explain the differences?
9	What is the expected life cycle of the System and each of the sub-systems including maintenance, upgrade, life extension, etc.?
10	While Canada has identified the requirement for a maintenance program, the specifics have not yet been defined. In consideration of your products, what type of technical/maintenance support has your company provided at the site (i.e. first-

	line, second-line maintenance, third line maintenance, other maintenance support)? For your live simulation solution, what level of engineering support is required for ISS? More specifically: a) What specific responsibilities do you suggest should be provided by the ISS provider and the associated Level of Effort? Would your answer be different if you were not the only OEM? b) How and why might the level of effort change over the life cycle of the product? c) What would be the location of the maintenance, technical and engineer effort? (e.g. On-site, at contractor repair facility located at a Canadian Army facility or at an OEM facility)
11	Is there any requirements for annual maintenance on system and how could this be managed? If yes, would this fall in the category of preventative maintenance?
12	a) What Enterprise Resource Planning System are you currently using for Finance & Control, Production Planning, Material Management and Warehouse Management? b) Are they all integrated or some of them integrated? Please explain. c) Canada's National Defence is currently using Systems Applications and Products in Data Processing (SAP) for Finance & Control and Material Management to improve efficiency, avoid duplication, improve data accuracy and visibility. We are exploring providing Contractor(s) access to SAP for Material Management in an integrated way; for example, to have visibility on: Spares level, location, inventory, maintenance/ repair and to issue material. Do you see any issue, advantages or disadvantages with using an integrated system with your clients?

Applicable System(s) or Area(s): In-Service Support (ISS) Delivery	
Item #	**Question**
13	a) Describe your company's current in-service support capabilities for a live simulation system and its sub-systems. b) What goods and services does your Company provide in comparison to subsidiaries, subcontractors and your supply chain? c) What services does your Company, or its subsidiaries, currently provide that are similar to this In-Service Support requirement?
14	From your company's perspective, describe the breadth of support activities available for In-Service Support. Include the facts, best practices and lesson learned related to who typically performs the different activities for this System (for example: generally performed by contractor, military personnel or government employees).
15	To what extent is In-Service Support (ISS) available through authorized or licensed companies in support of COTS (Commercial off-the Shelf) provided equipment?

Appendix 1 – Sustainment Enterprise (SE) Questions

16	What are the considerations, best practices and lesson learned for the phase-in of the in-service support solution in relation to the acquisition sequence of events (First delivery, Initial Operational Capability (IOC), Full Operational Capability (FOC) and final delivery) for a new sub-system/capability?
17	In relation to transitioning from acquisition of the capability to delivering in-service support, what are the typical key milestones and timing?

Applicable System(s) or Area(s): Technical Data and Intellectual Property (IP)/License	
Item #	**Question**
18	a) What nature of technical data (Maintenance Manuals, Parts Catalogues, Work Instructions, Operating Manuals, etc.) and training manuals are they typically provided with your products? b) In comparison to the receipt of new equipment, what would be the optimum timeline for when the documents would be provided?
19	What rights and restrictions are typically associated with the technical data/license for your live simulation solution?
20	What levels and or lines of maintenance does technical data typically support?
21	Are there typically restrictions in distributing technical data/licenses to third parties that could restrict Canada's options for sourcing sustainment goods and services?
22	What are the technical data/license provided by each of the OEMs within the System that your company provides?

Applicable System(s) or Area(s): Performance	
Item #	**Question**
23	What are the typical metrics used to monitor the delivery of in-service support and how are they applied? Please explain by including but not limited to the following metrics: • Support personnel available and capable of supporting exercise at static location and deployed location exercises. • Readiness level (time for packaging & setup, status of equipment, etc.) of simulation equipment to be moved different locations. • Time for preventative and corrective maintenance. • Tracking/monitoring of equipment availability at static/storage locations and repair & overhaul. • Status of software and hardware upgrades. • Spares & consumables status and location.
24	What is the typical Mean Time Between Failure (MTBF) of the System and its main sub-systems (including OEM developed and COTS/Sub-contractor equipment)?

Appendix 1 – Sustainment Enterprise (SE) Questions

25	What main elements, of your live simulation system, have a first order impact on performance in terms of availability, reliability and fit for purpose?
26	What are the significant operations or maintenance variables that impact actual performance?

Applicable System(s) or Area(s): Value for Money	
Item #	**Question**
27	Describe the main elements, of your live simulation solution, that drive 80% of the maintenance cost and describe the nature of the cost (spare parts, repair and overhaul, replace, etc.)?
28	Are there main elements, of your live simulation solution, that are available as commercial off-the-shelf?
29	What are the typical opportunities for improvement (efficiency gains, learning curves, upgrades, value stream mapping, etc.) in delivery of sustainment that have been proven to be beneficial over the course of the System's life?

Applicable System(s) or Area(s): Life Cycle	
Item #	**Question**
30	Characterize the different phases of the life cycle for the System plus each of the sub-systems, including: Phase in, wear in; mid-life; wear out, late life maintenance (characterized by obsolescence, and dwindling supply chains) and phase-out. What are the typical duration of each phase and, what is the required level of expenditure on a relative basis?
31	From your perspective, what would be the process of integrating new sub-capabilities or sub-systems into the In-Service Support (ISS); specifically considering: the delivery of the different anchor projects as part of the WESM Capital Project, and/or the integration of future Canadian Army capabilities into the WES System after the WESM Capital Project has been completed?
32	The WES System, upon completion of the WESM Capital Project, is expected to include the sustainment of technologies that are evolving rapidly, such as software. As Canada will be developing its in-service support solution, what are the facts, best practices and lessons learned with regards to the rapid evolution of the equipment that we should be considering, specifically: a) Usage of mid-life upgrade versus continuous upgrade or other industry best practice (specify) b) Software c) Hardware d) Support e) Typical intervals between upgrades (hardware and software) f) Describe the breadth of support activities available for in-service support upgrades

	g) Typical length of down-times associated with the upgrades (hardware and software) h) Any other relevant aspect
33	Are there technology advances anticipated over the System life cycle with a positive return on investment relating to sustainment that Canada should consider?

Applicable System(s) or Area(s): Post-delivery Warranty	
Item #	**Question**
34	What are the standard post-delivery warranty terms for the System and are there any differences at the sub-system level? What is typically covered and what are the typical exclusions?
35	What are the consideration and the options for extended warranty; including, optional “service plans”?

Applicable System(s) or Area(s): ISS Elements included with Acquisition	
Item #	**Question**
36	What In-Service Support (ISS) elements are automatically included with the acquisition from the System provider (x years of licenses for tech manuals, initial training, on-site field-service representative, etc.)?

Applicable System(s) or Area(s): Sustainment Cyber Security	
Item #	**Question**
37	In regards to Information Technology and Information Management (IT/IM): a) What is the forecasted service level for, level 1 (password resets) and level 2 (bug fixes) IM/IT support of your solution? b) Is there a well-defined software upgrade plan and path for your solution? c) Do you provide regularly scheduled updates as service packs to introduce bug fixes and new client requested features? d) How much down time can be expected during updates? e) Is your solution backwards compatible? For example; If your company was performing a system wide software update and due to scheduling or serviceability of the equipment, if some equipment is upgraded and others were not, can the upgraded and non-upgraded all interact or will the non-upgraded equipment be considered incompatible until it is upgraded.

Appendix 1 – Sustainment Enterprise (SE) Questions

Applicable System(s) or Area(s): Training	
Item #	**Question**
38	Please explain the logistical requirements (scheduling, personnel, infrastructure, etc.) to train assets on the system maintenance and support.
39	What is your experience in terms of generating and conducting training, including trainees and also training the trainers? Key areas to address are: a) Individual and collective training. b) Who is providing the training? (contractors, military, blend) c) What is your target audience?

Appendix 2 – Acquisition Follow-up Questions

Applicable System(s) or Area(s): WESM Level Questions	
Item #	**Question**
1	For your live simulation solution, what is your solution in order to mitigate issues related to power fluctuations?
2	In regards to potential Intellectual Property (IP) concerns: a) Request your thoughts on the direction live simulation is heading in regards to IP for future systems. b) If there are multiple OEMs/contractors, how do you foresee the systems working together? c) How will IP challenges/limitations will effect this kind of work arrangement?
3	From your experience, who in the training audience should use VR (Virtual Reality) technology to enable training?
4	In regards to a Live/Virtual/Constructive exercise scenario: Do you foresee being able to provide a synthetic wrap even in deployed EXCON/DCN locations provided there is internet connection?
5	From your experience, which UCATTs use-case scenario have you used to enable interoperability?
6	In regards to what your company envisions as the technical options and roadblocks to integration with the current WES systems: a) Present the basis of your current system and what standards it is currently using (in terms of MILES, UCATTS, and other standards). b) Can the Canada's current system (WES) be integrated with your solutions? (Note: the legacy WES PGS vehicle system is considered obsolete so this system will be disposed of. The new vehicle system for the MSVS and TAPV is compatible with MILES and potentially U-LEIS plus the new soldier system (IHK) is also compatible with HEXL-2C, MILES and potentially U-LEIS)

Applicable System(s) or Area(s): EXCON	
Item #	**Question**
7	The EXCON includes the responsibility for producing information for After Action Reports (AARs); Request how your live simulation system will address the following: a) Explain how your live solution addresses the nature of classified communications. b) Can your system capture data and audio? c) How do you address security concerns of the different systems? d) How do you address security for remote location training? e) Is the system classified?
8	When considering the key elements of your AAR reporting capabilities:

Appendix 2 – Acquisition Follow-up Questions

	Can you replay an event that happened during an ongoing exercise while it is still running or just at the end (which would be during the AAR)?
9	EXCON provides the capability to collect, store, and distribute data generated during a training event. How do you expect the architecture to evolve over the upcoming years and how does that impacts you current solution?
10	When considering the capabilities of your mobile EXCON solution including any limitations on capacity and functionality and considering the following: a) How do you plan to connect to the training network when deployed in a rural environment? Training data needs to be inserted in the training management system. b) What is your solution if limited network is available, does that impede completely LVC (Live, Virtual, Constructive) training from occurring?
11	Elaborate on how you have demonstrated compliance with integration of Constructive and Virtual Simulation, if it was practically achieved or is it just in theory?
12	In regards to how your EXCON supports urban engagements including: a) How seamless is the transition from the rural to urban environment tracking? b) What is the decision point to change tracking system? c) How do they mitigate that transition area?

Applicable System(s) or Area(s): DCN	
Item #	**Question**
13	From your company's perspective, explain the advantages and disadvantages of an LTE/LORA (high capacity, low-latency network).
14	The DCN provides the data communication links between entities in the field and EXCON. a) Currently there are many "dead zones" in Canada. How do you recommend addressing areas with limited to no LTE (cell phone coverage)? b) If considering using LTE or LORA - how will you address the different frequency bands used by the different allies (Europe vs, North America vs Australia, etc.)? c) Do you have a multi-band capability?
15	When considering how your DCN solution provides flexibility for training with existing CA and allied equipment, including the US and UK Armies and the RCAF: a) What is the benefit and limitations of the way forward you are proposing and how the solution is flexible for ranges and data rates?

	b) How does it mitigate dead zones?

Applicable System(s) or Area(s): Soldiers

Item #	**Question**
16	Do you foresee reduced fidelity for indirect fire engagements when deployed outside of a static training location?
17	How does your system guard against over-association, where a re-association attempt could inadvertently associate multiple weapons in the vicinity?
18	For your live simulation system, can soldiers associate with a weapon system that belongs to another soldier, and if so how long does it take to associate?
19	When considering data transmission between your soldier system and an EXCON, how is your system configured to seamlessly integrate future/new communication technology?
20	When considering the feedback and control interfaces your soldier system provides to the individual soldier: a) If your system is laser-based, how does your system of soldier control and feedback compensate for the line-of-sight associated with the laser-based simulation to provide a more realistic ballistic trajectory representation? b) How would the capability differ in a non-laser based system?
21	Does your soldier system support U-LEIS and MILES at the same time? If yes, then are there reductions in capability during a "mixed" exercise?

Applicable System(s) or Area(s): Vehicles

Item #	**Question**
22	In regards to including tactical aviation, Unmanned Aerial Vehicles (UAV), and fighter jets within your live simulation solution: Explain how your company envisions direct fire engagement with airborne platforms.
23	In regards to including tactical aviation, Unmanned Aerial Vehicles (UAV), and fighter jets within your live simulation solution: How will you consider and address EMI (Electromagnetic Interference) /EMC (Electromagnetic Compatibility) for air platforms with equipment?
24	In regards to including tactical aviation, Unmanned Aerial Vehicles (UAV), and fighter jets within your live simulation solution: a) Do you have a way for ground weapons to engage air assets and have effects (2 directional - ground to air and air to ground). b) If you use geopairing, is it 2D or 3D for air engagement?
25	In regards to your live simulation system for vehicles: a) Does your system lend itself to upgrades in power sources with future battery technologies becoming available?

	b) Are alternative power source adapters available with your system? c) Can your system(s) be configured to adapt to different voltage sources as available?
26	In regards to your live simulation system detection system for vehicles: a) Does your system require retro-reflectors? b) Does your system engage/detect systems that are different from yours - i.e. with/without a retro-reflector? c) What is the max range for engagement, i.e. can it support 4000m for the tanks?
27	In regards to confirming your vehicle kits are working correctly: a) How does your system verify that the lasers have maintained their alignment? b) How can this be confirmed in training? c) How much of this could be automated and/or AI (Artificial Intelligence) driven?
28	In regards to the technology used to track your vehicle and soldier systems location in the field: How does your system adapt to geographical locations outside your local geostationary satellite range(s)? In example, moving from North America to Europe.
29	In regards to your live simulation system providing visual feedback to the gunner: a) How do you indicate fall of shot so that gunners can correct the shot? b) Can your system integrate an augmented feedback such as a realistic flash-bang-smoke to simulate direct fire and/or target strike points?
30	In regards to the signal your live simulation system uses to inform vehicle crews and the other players that a vehicle has been damage: a) On a standard clear day what is the visual range of your LEDs/Lights indicating hits/damage to vehicles? b) Do you have a display inside for the vehicle crew to review messages or is it just audio/visual cues?
31	From your experience, for vehicle systems, explain the impact of using different lasers and detectors in regards to strength and capacities. (Note: considering the impact if sub-capabilities are provided by different OEMs)

Applicable System(s) or Area(s): Urban Capability	
Item #	**Question**
32	In regards to how your company has applied video (or other) capabilities and technologies in order to monitor participants in an urban environment: a) Do you see a technological solution to overcome the limitations in video feed monitoring, specifically but not limited to the amount of data? b) Are your solutions usable during night exercises and training?

Appendix 2 – Acquisition Follow-up Questions

Applicable System(s) or Area(s): Acquisition Cyber Security	
Item #	**Question**
33	The WES system will need to be resilient to threats within the cyber domain and electromagnetic spectrum. This will mean that measures are taken to ensure that the WESM Project's delivered capability can face cyber and electromagnetic threats. How does your company protect the interfaces (RF, LTE, etc) between different components of your live simulation system; for example: Player Unit to Data Communication Network; and short range interfaces (Zigbee, Bluetooth, etc) in-between the sub-system components in vehicle or soldier systems? In addition do you provide any other protection in regards to cyber domain and electromagnetic spectrum risks?
34	a) When your company's live simulation solution is connected to the various vehicle platforms such as the MSVS, TAP-V, LAV6 and the Leopard, whether that be to monitor power distribution to the peripherals or to regulate power, would there be a requirement for the live simulation system to directly communicate with: i. the underlying vehicle networks such as Controller Area Network, or ii. any other vehicle components, such as the Power Control Modules? If so, would there be any data pushed from live simulation system to the vehicle platform or is there any data pulled from the vehicle platform to your live simulation system? b) Would there be any requirements to interconnect your company's live simulation system directly to any vehicle networks such as Controller Area Network.

Applicable System(s) or Area(s): Acquisition to In-Service Support Transition Phase	
Item #	**Question**
35	a) What are the considerations, best practices and lesson learned related to the transition from Acquisition to ISS that Canada should be mindful? b) What are the areas of activities for potential risk premium?

Appendix 3 – Environment Questions

Applicable System(s) or Area(s): Energy Efficiency & Green Practices	
Item #	**Question**
1	a) Describe your company's efforts to consider options or opportunities to include a process, component or product substitution to introduce green, more energy efficient technologies and how you will look to make efficient use of resources and energy throughout the life cycle of the system? b) Describe your company's effort in optimizing Energy Efficiency of the system/equipment, hence reducing power consumption? c) Does your company offer environmentally-friendly (clean) technologies and adopt industry standards or best practices related to the above or other considerations that can be included in the contract? d) Do you evolve your products to meet future environmental requirements? Provide details.

Applicable System(s) or Area(s): Reduction of Emissions	
Item #	**Question**
2	WESM will consider options or opportunities to reduce and divert recyclable materials from landfills, particularly plastics as required by both the Defence Energy and Environment Strategy (DEES) and Greening Government Strategy (GGS). a) Are there measures to extend the useful life of the capability (e.g. re use, refill, recharge, recondition)? b) What measures are currently in place to eliminate the unnecessary use of single-use plastics (operations, events and meetings)? c) What measures are taken to address GHG emissions reduction, introduce sustainable plastics and broader environmental benefits into equipment that might have an environmental impact? How can this procurement contribute to achieving net-zero emissions by 2050? d) To what extent your company looking into reduction of radiations in their system design?

Applicable System(s) or Area(s): Current Capability/Standard Followed	
Item #	**Question**
3	a) Does the manufacturing, delivery, use or disposal of the good or service being procured have a significant impact in any of the following environmental considerations? i. Environmental considerations include but not limited to: ➢ GHG emission reductions and energy efficiency ➢ Water and wastewater efficiency ➢ Waste and packaging reduction

	➢ Sustainable plastics ➢ Reducing the use of hazardous or toxic materials ➢ Environmental certifications ➢ Embodied carbon ➢ Climate resilience b) Does your company provide a listing of environmental attributes offered within their system? c) Does your company adopt to a science-based target in line with Global Environmental agreement? Does your company's process reflect green requirements and best practices? Describe how your company will integrate, assess and prioritize green requirements. d) To what extent does your company monitor your GHG emissions and environmental performance information?

Applicable System(s) or Area(s): Packaging and Transport	
Item #	**Question**
4	a) What steps does your company and your suppliers take to minimize packaging waste and make the packaging re-useable or recyclable? b) How does your company optimize transportation of goods and mobility of personnel to reduce negative environmental impact?

Applicable System(s) or Area(s): Environmental Performance	
Item #	**Question**
5	a) How well equipped is your company's live simulation system to operate/sustain effectively, without incurring damage in harsh environment? Including but not limited to all environmental hazards, dust, cold, humidity, heat, moisture and mold, etc. b) What is the impact of the snow and freezing rain on system operation?
6	a) What is the impact on battery life by colder temperatures (i.e. at -20C, at -40C)? b) What are your future plans for batteries for your live simulation solution, in terms of new technologies with higher capacity, smaller size, and environmental friendly? c) Do you have a central wireless battery system for system like but not limited to vehicles, soldiers etc.? d) Does your live simulation solution have a different solution for cold weather operations or does it require the acceptance of degradation of power (duration of batteries, etc.)?

Appendix 4 – Infrastructure Questions

Applicable System(s) or Area(s): Infrastructure	
Item #	**Question**
1	a) What are the minimum storage requirements for your equipment? Areas to focus on include but not limited to: Outdoors on a pallet, carport, unheated garden shed, climate-controlled warehouse, etc. b) Explain the requirement for both short term and long term if they are different.
2	How much maintenance does your equipment require? a) Technician hours per 1000 hours of service. b) Typical break/fix rates.
3	What sort of workspace / equipment does a technician require? Areas to focus on include but not limited to: a) Tailgate of a truck, dust-free environment, overhead crane, etc.
4	a) Do you need to be indoor to install the sensors and instrumentation? If so, what kind of indoor space (covered, heated, etc.)? b) Is the requirement the same for calibration activities? Please explain.
5	a) What is the approximate storage space (area and height) required to store the players and vehicles kits in their storage cases, per 100 kits? b) Do you recommend storing your kits in their cases or grouped by separate Line Replacement Units (LRUs)?
6	a) What amount and type of storage space is required for battery storage and charging? b) What power requirements are needed for charging? (Request response indicate requirements for every 500 soldier kits and every 50 vehicle kits. Plus indicate if there are any considerations that arise with large quantities; such as: for 6000 soldier kits is it simply 12 times the requirement for 500 soldier kits or are there other factors)
7	a) What is the requirement to house the equipment while in use – roof, climate-controlled building, waterproof shed, or can it be left outside? b) What is the requirement to house the equipment while in storage – sea container, stored indoors in climate-controlled environment, or can it be left outside? c) What is the usual power demand for the system, so we can verify if our existing electrical substations can provide sufficient power? d) If the equipment is within a mobile sea-container, how it is powered?
8	a) Does your system have servers/equipment that need separate climate-controlled facility with adequate ventilation? b) Do you expect the equipment to be heavy that will require additional flooring reinforcement to the traditional building structures?

Appendix 5 - Innovation, Science and Economic Development Questions

The Industrial and Technological Benefits (ITB) Policy may be applied on the **Weapon Effects Simulation Modernization (WESM) project.** Engagement with industry through the Request for Information (RFI) will help determine the application of the ITB Policy and how Canada could leverage opportunities for economic benefit through this procurement.

Canada's ITB Policy

The ITB Policy is an investment attraction tool and companies awarded defence procurement contracts are required to undertake business activities in Canada equal to the value of the contract. The ITB Policy encourages companies to establish or grow their presence in Canada, strengthen Canada's supply chains, and develop Canadian industrial capabilities.

The goal of the ITB Policy is to support the long-term sustainability and growth of Canada's defence sector, including small and medium-sized enterprises in all regions of the country, to enhance innovation through R&D in Canada, to support skills development and training, and to increase the export potential of Canadian-based firms. The ITB Policy includes the Value Proposition (VP), which requires bidders to compete on the basis of the economic benefits to Canada associated with its bid. Winning bidders are selected on the basis of price, technical merit and their VP. VP commitments made by the winning bidder become contractual obligations in the ensuing contract.

For more information about the ITB Policy, please visit www.canada.ca/itb.

Key Industrial Capabilities:

To maximize the economic impact that can be leveraged through the VP, Canada will look to use the ITB Policy to motivate defence contractors to invest in Key Industrial Capabilities (KICs). KICs align with Canada's defence policy, *Strong, Secure, Engaged*, and the *Innovation and Skills Plan* by supporting the development of skills and fostering innovation in Canada's defence sector. The KICs represent areas of emerging technology with the potential for rapid growth and significant opportunities, established capabilities where Canada is globally competitive, and areas where domestic capacity is essential to national security.

Based on initial analysis of WESM project, this procurement encompasses the KIC of **Training and Simulation** where Canada has world leading capabilities. Canada will be seeking to motivate high value economic opportunities and partnerships to support the growth of Canada's defence sector, as well as enhance supply chain participation and skills development opportunities for Canadian industry.

The definition for the relevant KIC for this project are:

Training and Simulation

End-to-end training and simulation capabilities that span the full breadth of live, virtual and constructive training solutions. These include simulator design, manufacture, integration and modification, training courseware development, design and integration of targets and training aids, and the provision of live, virtual, and classroom-based training services.

Appendix 5 - Innovation, Science and Economic Development Questions

Applicable System(s) or Area(s): Defence Sector
The Industrial and Technological Benefits (ITBs) Policy seeks to promote economic development and long-term sustainment of Canadian businesses engaged in the manufacturing and delivery of products and services used in government defence and security applications.

Item #	**Question**
1	Based on the High Level Mandatory Requirements (HLMRs) put forward by the Department of National Defence, please describe what Direct Work activities your company could foresee undertaking in Canada for the production and sustainment of the modernized WES capability? a) What are the highest value areas in which Canadian capabilities could be used? b) What opportunities and constraints are there to performing this work in Canada?

Applicable System(s) or Area(s): Supplier Development
The ITB Policy seeks to improve the competitiveness of Canadian industry by encouraging Canadian industrial participation and the scaling up of Canadian companies including small and medium-sized businesses (SMB).

Item #	**Question**
2	The Industrial and Technological Benefit (ITB) Policy requires that at least 15% of the contractor's ITB obligation (equal to the value of the contract) be represented by work with Canadian Small Medium Businesses (SMBs) with less than 250 employees. To what extent can you commit to a SMB requirement of over 15% in order to nurture the development of Canadian SMBs within the defence sector? Includes both, direct work and indirect work in other business areas for the production and sustainment of the modernized WES capability.
3	As a result of the WESM project, please indicate what new supply chain opportunities could be made available to Canadian suppliers (production and sustainment). Please include in your response information on: a) Which opportunities could be specifically targeted at Canadian SMBs. b) Supplier development opportunities that could be performed in the Key Industrial Capabilities (KICs) identified above.

Applicable System(s) or Area(s): Skills Development and Training
The ITB Policy fosters the development and sustainment of a diverse, talented, and innovative Canadian workforce through access to training, education, opportunities and programs.

Item #	**Question**

Appendix 5 - Innovation, Science and Economic Development Questions

4	What types of Skills, Development and Training investments would produce the maximum benefit for Canadians (defence or commercial sector)? a) What Skills Development and Training opportunities are available in the Key Industrial Capabilities (KICs) identified above? Examples: i. Work integrated learning programs (e.g., co-operative education; work placements); ii. Apprenticeship programs; iii. A new or existing skills development program at or through a post-secondary institution; iv. Support for security certifications (e.g.: Top Secret, ITAR) or cybersecurity compliance certifications for Canadian companies, especially small and medium-sized businesses.

Applicable System(s) or Area(s): Research and Development (R&D)
The ITB Policy promotes scientific investigation that explores the development of new goods and services, new inputs into production, new methods of producing goods and services, or new ways of operating and managing organizations.

Item #	**Question**
5	What R&D investments could Canada motivate bidders to make as a result of this procurement? a) Please identify to what extent Research and Development (R&D) investments could be performed in Key Industrial Capabilities (KICs) identified above.
6	Is there potential to develop research consortia or centres of excellence in partnership with Canadian post-secondary or publicly-funded research institutions, and if so, what research areas might your company pursue? a) If not, what other research or development partnerships could be formed to support technology development related to the WESM project and/or in the KIC identified above?

Applicable System(s) or Area(s): Export
The ITB Policy promotes the ability of Canadian companies, including SMBs, to successfully tap into export markets, thereby increasing their productivity, and competitiveness in the global market.

Item #	**Question**
7	Please describe any high value export opportunities from Canada, whether commercial or defence, which could be leveraged as a result of this procurement. a) To what extent do export opportunities exist in the Key Industrial Capabilities (KICs) identified above?

8	Is it feasible to secure sufficient intellectual property (IP) rights and an exclusive global product mandate to export from your Canadian-based operations, including subsidiaries and supply chain partners?

<table>
<tr><td colspan="2">Applicable System(s) or Area(s): Other</td></tr>
<tr><td>Item #</td><td>Question</td></tr>
<tr><td>9</td><td>Are there other relevant KICs which align with the work to be conducted for the WESM project? If yes, please indicate which KICs should be considered and why. As part of your response, please describe how the proposed KICs would enhance the opportunities that could be leveraged through the Value Proposition for Canadian industry. (Please see the link in the Key Industrial Capabilities section above for descriptions of the KICs.)</td></tr>
<tr><td>10</td><td>Are there opportunities to involve Employment Equity Groups (as defined by the Employment Equity Act) either directly on the acquisition and/or sustainment of the WESM project, or in other related areas?</td></tr>
<tr><td>11</td><td>Is your company currently involved in any activities related to clean technology? Are there opportunities either directly within the WESM project, or in other areas of business within your company, to incorporate clean technology?
a) Examples of clean technology include:
i. Energy-efficient or emissions reducing propulsion systems (e.g., hybrid electric, electric), power distribution and management systems, and low-carbon intensity fuel sources (e.g., hydrogen, biofuels) for vehicle platforms;
ii. Energy storage systems (e.g., pumped hydro storage, flywheel energy storage, zinc-ion batteries, lithium-ion batteries, flow batteries);
iii. Renewable energy generation (i.e., solar, wind, hydropower, geothermal, wave energy, tidal current energy, river hydrokinetic energy, small modular reactors for nuclear fission, nuclear fusion);
iv. Energy management & distribution systems (e.g., power system automation, automatic generation control, smart grids, micro grids) that improve energy efficiency, energy security, or reduce emissions; software and equipment used to measure, monitor and analyze the environmental impacts of pollution (e.g., particulates), waste (e.g., solid waste, waste heat, waste water), noise, or emissions;
v. Equipment and processes that directly reduce or eliminate pollution, waste, noise, or emissions; and, equipment and processes for water purification, water re-use, or that result in more efficient water-usage on vehicle platforms, or in forward operating bases, deployed camps, or other remote locations.</td></tr>
</table>

Appendix 6 – Indigenous Businesses Questions

<table>
<tr><td colspan="2">Applicable System(s) or Area(s): Indigenous Businesses
The federal Indigenous procurement strategy, launched as the Procurement Strategy for Aboriginal Business (PSAB) has been instrumental in encouraging Indigenous businesses to procure with the federal government of Canada. More details can be found at the following link: https://www.sac-isc.gc.ca/eng/1100100032802/1610723869356</td></tr>
<tr><td>Item #</td><td>Question</td></tr>
<tr><td>1</td><td>Are you considering Indigenous involvement in your development and/or sustainment of the system, if you are delivering it to Canada?</td></tr>
</table>

Appendix 7 - List of Acronyms

Term	Abbreviation
AAR	After Action Review
ABCANZ	America Britain Canada Australia New Zealand
AGL	Automatic Grenade Launcher
AUS	Australia
BIT	Built-in Test
BDA	Battle Damage Assessment
BTS	Battle Task Standards
CA	Canadian Army
CAS	Close Air Support
CBRN	Chemical Biological Radioactive Nuclear
CFB	Canadian Forces Base
CMTC	Canadian Manoeuver Training Centre
COTS	Commercial Off-The-Shelf
COE	Center of Expertise
CSWG	Cyber Security Working Group
CTC	Combat Training Centre
DATE	Decisive Action Training Environment
DCN	Data Communication Network
DIS	Distributed Interactive Simulator
DLR	Directorate of Land Requirements
DND	Department of National Defence
DO	Dynamic Object
EXCON	Exercise Control
FITE	Future Integrated Training Environment
FOC	Final Operational Capability
FOO	Forward Observation Officer
FSO	Full Spectrum Operations
FSR	Field Service Representative
HFT	High Fidelity Tracking
HLA	High Level Architecture

Appendix 7 - List of Acronyms

HLMR	High Level Mandatory Requirements
HR	High Readiness
IED	Improvised Explosive Device
IOC	Initial Operational Capability
IP	Intellectual Property
ISS	In-Support Service
ISED	Innovation, Science and Economic Development Canada
IT	Information Technology
ITB	Industrial Technological Benefits
JFAC	Joint Fire Attack Controller
JIMP	Joint, Interagency, Multinational and Public
JTAC	Joint Terminal Attack Controller
KIC	Key Industrial Capabilities
LDU	Laser Detector Unit
LORA	Long Range
LTE	Long-Term Evolution
MILES	Multiple Integrated Laser Engagement System
NATO	North American Treaty Organization
NSE	National Security Exception
NZ	New Zealand
OA	Operator Analyst
OA	Options Analysis
OCT	Observer Controller Trainer
OEM	Original Equipment Manufacturer
OPFOR	Opposition Forces
RCAF	Royal Canadian Air Force
RF	Radio Frequency
RFP	Request for Proposal
SBCA	Sustainment Business Case Analysis
SE	Sustainment Enterprise
SISO	Simulation Interoperability Standards Organization

Appendix 7 - List of Acronyms

SRR	Short Range Radio
TAPV	Tactical Armoured Patrol Vehicle
TDO	Training Development Officer
TESS	Tactical Engagement Simulation System
TOW	Tube-launched, Optically tracked, Wire guided
TTP	Techniques, Tactics and Procedures
UAV	Unmanned Aerial Vehicle
UCATT	Urban Combat Advanced Training Technology
UK	United Kingdom
U-LEIS	UCATT's Laser Engagement Interface Standard
US	United States
USAF	United States Air Force
USMC	United States Marine Corps
UTE	Urban Training Equipment
VR	Virtual Reality
WES	Weapon Effects Simulation
WESM	Weapon Effects Simulation Modernization