



**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving Public Works and Government
Services Canada/Réception des
soumissions/Travaux publics et Services
gouvernementaux Canada**
See herein for bid submission
instructions/
Voir la présente pour les
instructions sur la présentation
d'une soumission
NA
Ontario

**REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

| | |
|---|--|
| Title - Sujet Global Navigation Satellite (GNSS) Simulator | |
| Solicitation No. - N° de l'invitation W0114-210005/A | Date 2021-10-05 |
| Client Reference No. - N° de référence du client W0114-210005 | |
| GETS Reference No. - N° de référence de SEAG PW-\$KIN-535-8475 | |
| File No. - N° de dossier KIN-1-56062 (535) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM Eastern Daylight Saving Time EDT on - le 2021-11-05 Heure Avancée de l'Est HAE | |
| F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Carriere, Nancy | Buyer Id - Id de l'acheteur kin535 |
| Telephone No. - N° de téléphone (613) 286-5423 () | FAX No. - N° de FAX () - |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF NATIONAL DEFENCE Royal Military College of Canada 19 General Crerar Cres, Room 4100 KINGSTON Ontario K7K7B4 Canada | |

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Public Works and Government Services / Travaux publics et
services gouvernementaux
Kingston Procurement
Des Acquisitions Kingston
86 Clarence Street, 2nd floor
Kingston
Ontario
K7L 1X3

| | |
|--|--|
| Delivery Required - Livraison exigée See Herein – Voir ci-inclus | Delivery Offered - Livraison proposée |
| Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur | |
| Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur | |
| Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie) | |
| Signature | Date |

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PART 1 - GENERAL INFORMATION

1.1 Requirement

The requirement is detailed under Article 6.2 of the resulting contract clauses.

1.2 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

1.3 epost Connect service

This bid solicitation allows bidders to use the epost Connect service provided by Canada Post Corporation to transmit their bid electronically. Bidders must refer to Part 2 entitled Bidder Instructions, and Part 3 entitled Bid Preparation Instructions, of the bid solicitation, for further information.

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The **2003** (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of **2003**, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days
Insert: 90 days

2.2 Submission of Bids – epost only

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the RFP.

PWGSC Ontario Region Bid Receiving Unit

Only bids submitted using epost Connect service will be accepted. The Bidder must send an email requesting to open an epost Connect conversation to the following address:

TPSGC.orreceptiondessoumissions-orbidreceiving.PWGSC@tpsgc-pwgsc.gc.ca

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions **2003**, or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

It is the Bidder's responsibility to ensure the request for opening an epost Connect conversation is sent to the email address above at least six days before the solicitation closing date.

Bids transmitted by facsimile or hardcopy to PWGSC will not be accepted.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than seven (7) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as

such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.4 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

2.5 Bid Challenge and Recourse Mechanisms

- (a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.
- (b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada's [Buy and Sell](#) website, under the heading "[Bid Challenge and Recourse Mechanisms](#)" contains information on potential complaint bodies such as:
 - Office of the Procurement Ombudsman (OPO)
 - Canadian International Trade Tribunal (CITT)
- (c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

- The Bidder must submit its bid electronically, Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. The epost Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid
Section II: Financial Bid
Section III: Certifications

Due to the nature of the bid solicitation, bids transmitted by facsimile will not be accepted.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Section I: Technical Bid

In their technical bid, Bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment.

3.1.1 Electronic Payment of Invoices – Bid

If you are willing to accept payment of invoices by Electronic Payment Instruments, complete Annex “C” Electronic Payment Instruments, to identify which ones are accepted.

If Annex “C” Electronic Payment Instruments is not completed, it will be considered as if Electronic Payment Instruments are not being accepted for payment of invoices.

Acceptance of Electronic Payment Instruments will not be considered as an evaluation criterion.

3.1.2 Exchange Rate Fluctuation

[C3011T](#) (2013-11-06), Exchange Rate Fluctuation

Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria

The Bidder must comply with the mandatory technical criteria specified below. Bidders which fail to meet each of the Mandatory Technical Criteria will be declared non-responsive and will receive no further evaluation.

| Item | Mandatory Technical Criteria | Quote Specific Page in Proposal |
|------|---|---------------------------------|
| 1. | Must have the ability to simulate GNSS signals including: GPS (L1-C/A, L1C, L1-P, L2-P, L2-C, L5) Galileo (E1, E51, E5b, E5AltBOC, PRS-Noise, HAS-Noise) QZSS (L1-C/A, L5), BeiDou-2 (B1, B2), BeiDou-3 (B1C, B2a) and GLONASS (G1, G2). | |
| 2. | Must have the ability to simulate SBAS signals including: (WAAS, MSAS, EGNOS, SDCM, GAGAN). | |
| 3. | Must have a minimum of two (2) RF Outputs. | |
| 4. | Must have the ability to simulate advanced in-band and out-of-band jamming signals with the ability to control the power level, interference signal type, and antenna pattern AND simulate spoofing signals for all available simulated GNSS signals. | |
| 5. | Must have a minimum simulation iteration rate of 1000 Hz | |

4.1.2 Financial Evaluation

4.1.2.1 Mandatory Financial Criteria

Any bid which fails to meet the following mandatory requirements will be deemed non-responsive and will receive no further consideration:

1) Provide Firm Unit prices for **all** items listed in Annex B – Basis of Payment, Pricing Basis A. If the Bidder leaves any price blank, Canada will treat the price as “\$0.00” for evaluation purposes and may request that the Bidder confirm that the price is, in fact, \$0.00. No Bidder will be permitted to add or change a price as part of this confirmation. Any Bidder who does not confirm that the price for a blank item is \$0.00 will be declared non-responsive.

2) Not alter the format of the Basis of Payment in Annex B.

3) Bidders must complete and submit its financial offer in accordance with Annex “B”, Basis of Payment. All prices are in Canadian dollars, applicable taxes excluded, Incoterms 2010 Delivered Duty Paid (DDP), Canadian Customs duties and excise taxes are included.

4.1.2.2 Financial Evaluation

The Bidder’s Firm Unit Prices will be multiplied by the quantity to calculate the extended firm Unit Price. The evaluated price is total of all Extended Firm Unit Price(s).

4.2 Basis of Selection

4.2.1 A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid, but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame provided will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real property agreement of the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](https://www.canada.ca/en/employment-social-development/canada/esdc-labour) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

5.2.3 Additional Certifications Precedent to Contract Award

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5.2.3.1 Board of Directors Certification

In accordance with the [Ineligibility and Suspension Policy](#), Section 17, Bidders are required to provide a list of their Board of Directors as part of their bid. Bidders are requested to complete Annex "D" Additional Certification Information 1. Board of Directors.

5.2.3.2 Procurement Business Number (PBN)

In accordance with Section 2, Procurement Business Number, of the Standard Instructions, Contractors are required to have a Procurement Business Number (PBN) as part of their bid. Bidders are requested to complete Annex "D" Additional Certification Information 2. Procurement Business Number (PBN). Suppliers may register for a PBN online at [Supplier Registration Information](#) (SRI). For non-Internet registration, suppliers may contact the InfoLine at 1-800-811-1148 to obtain the telephone number of the nearest Supplier Registration Agent.

PART 6 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

6.1 Security Requirements

6.1.1 There is no security requirement applicable to the Contract.

6.2 Requirement

The Contractor must provide all the items detailed under the Requirement at Annex A.

6.3 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

6.3.1 General Conditions

[2010A](#) (2020-05-28), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.3.2 Supplemental General Conditions

[4001](#) (2015-04-01) Hardware Purchase, Lease and Maintenance; and
[4003](#) (2010-08-16) Licensed Software, apply to and form part of the Contract.

6.4 Term of Contract

6.4.1 Period of the Contract

The period of the Contract is from contract award to 30 June 2022.

6.4.2 Delivery Date

- A. The GNSS Simulator must be received on or before 31 March 2022. Units can be shipped at any time prior to the mandatory delivery date.

While delivery is mandatory by 31 March 2022, the best delivery date that could be offered is

_____.

6.4.3 Shipping Instructions – Delivery Duty Paid

Incoterms 2010 “Delivered Duty Paid”, 19 General Crerar Cres, Room 4100, Kingston, Ontario.

6.4.4 Delivery Points

Delivery of the requirement will be made to the delivery point specified in Annex “A” of the Contract.

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Nancy Carrière
Title: Supply Specialist
Public Works and Government Services Canada
Acquisitions Branch
Address: 86 Clarence Street, 2nd Floor
Kingston, Ontario
K7L 1X3
Telephone: 613-286-5423
E-mail address: Nancy.Carriere@pwgsc-tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

6.5.2 Project Authority(To be completed at Contract Award)

The Project Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: _____
Facsimile: _____
E-mail address: _____

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority, however the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

6.5.3 Contractor's Representative (To be completed by the Bidder)

General enquiries:

Name: _____
Title: _____
Address: _____
Telephone: _____
Facsimile: _____
E-mail address: _____

Delivery follow-up:

Name: _____
Title: _____
Address: _____
Telephone: _____
Facsimile: _____
E-mail address: _____

6.6 Payment

6.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm lot price, as specified in Annex A, for a cost of \$ _____ (**insert the amount at contract award**). Customs duties are included and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

6.6.2 Limitation of Price

SACC Manual clause [C6000C](#) (2017-08-17) Limitation of Price

6.6.3 Single Payment

SACC Manual clause [H1000C](#) (2008-05-12) Single Payment

6.6.4 Taxes - Foreign-based Contractor (if applicable)

SACC Manual clause [C2000C](#) (2007-11-30) Taxes - Foreign-based Contractor

6.6.5 Electronic Payment of Invoices – Contract

The Contractor accepts to be paid using any of the following Electronic Payment Instrument(s):

- a. Visa Acquisition Card;
- b. MasterCard Acquisition Card;
- c. Direct Deposit (Domestic and International);
- d. Electronic Data Interchange (EDI);
- e. Wire Transfer (International Only)

6.7 Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

2. Invoices must be distributed as follows:

- a. The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
- b. One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

6.8 Certifications and Additional Information

6.8.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

6.9 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ (*insert the name of the province or territory as specified by the Bidder in its bid, if applicable*).

6.10 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the supplemental general conditions [4001](#) (2015-04-01) Hardware Purchase, Lease and Maintenance;
- (c) the supplemental general conditions [4003](#) (2010-08-16) Licensed Software;
- (d) the general conditions [2010A](#) ,(2020-05-28), General Conditions - Goods (Medium Complexity);
- (e) Annex A, Requirement ;
- (f) Annex B, Basis of Payment;
- (g) the Contractor's bid dated _____.

6.11 SACC Manual Clauses

SACC Manual clause [A9062C](#) (2011-05-16) Canadian Forces Site Regulations
SACC Manual clause [D2001C](#) (2007-11-30) Labelling
SACC Manual clause [D9002C](#) (2007-11-30) Incomplete Assemblies
SACC Manual clause [G1005C](#) (2016-01-28) Insurance - No Specific Requirement
SACC Manual clause [B1501C](#) (2018-06-21) Electrical Equipment

6.12 Dispute Resolution

- (a) The parties agree to maintain open and honest communication about the Work throughout and after the performance of the contract.
- (b) The parties agree to consult and co-operate with each other in the furtherance of the contract and promptly notify the other party or parties and attempt to resolve problems or differences that may arise.

- (c) If the parties cannot resolve a dispute through consultation and cooperation, the parties agree to consult a neutral third party offering alternative dispute resolution services to attempt to address the dispute.
- (d) Options of alternative dispute resolution services can be found on Canada's Buy and Sell website under the heading "[Dispute Resolution](#)".

6.13 Inspection and Acceptance

The Project Authority is the Inspection Authority. All reports, deliverable items, documents, goods and all services rendered under the Contract are subject to inspection by the Inspection Authority or representative. Should any report, document, good or service not be in accordance with the requirements of the Statement of Work and to the satisfaction of the Inspection Authority, as submitted, the Inspection Authority will have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment.

6.14 Hardware: With respect to the provisions of Supplemental General Conditions 4001:

| | |
|---|--|
| Part III of 4001 applies to the Contract (Additional Conditions: Purchase) | [Yes] |
| Delivery Location and Installation Site | Royal Military College of Canada Department of Electrical and Computer Engineering 19 General Crerar Cres., room 4100 Kingston, ON, K7K 7C8 Attn: Mr Jean-Luc Derome (613) 541-6000 x6402 |
| Contractor must deliver Hardware Documentation | [Yes] |
| Language of Hardware Documentation | English |
| Contractor must Install Hardware at time of Delivery | [No] |
| Hardware Warranty Period | <i>Twelve (12) Months after acceptance of the deliverables. The guarantee applies to all the components of the device.</i> |
| Class of Maintenance Service | <i>On-Site Maintenance Service The required technical support is by telephone or by internet.</i> |
| Toll-free Telephone Number for Maintenance Service | <i>(to be completed with information from the Contractor at time of award)</i> _____ |

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| | |
|---------------------------------|---|
| Website for Maintenance Service | <i>(to be completed with information from the Contractor at time of award)</i> <hr/> |
|---------------------------------|---|

ANNEX "A"

REQUIREMENT

1.0 SCOPE

1.1 Objective

Royal Military College of Canada (RMC), Department of Electrical and Computer Engineering (ECE), has a requirement for the supply and delivery of an advanced GNSS simulator to accomplish the Department's educational and research requirements.

1.2 Background

The Navigation and Instrumentation Laboratory (NavINST) in the Department of ECE contains several research and experimental facilities, including GNSS receivers, GPS Spirent simulator and multi-sensor systems for positioning and navigation, which are shared resources for students across multiple courses at the undergraduate and graduate levels. Moreover, these facilities serve the needs of numerous research projects funded by the Department of National Defense (DND).

Currently, with the existence of new GNSS multi-constellation and multi-frequency signals moreover, the NavINST research group at RMCC is engaged in new research projects funded by DND / DTAES – 6 and 8 sections in the area of GNSS Jamming, Spoofing, GNSS augmentation and Receiver Autonomous Integrity Monitoring (RAIM) for Air Navigation Systems. At this stage of research, the NavINST research laboratory targets an advanced GNSS simulator with multi-constellation capabilities that supports not only the GPS constellation but also Galileo, BeiDou and GLONASS constellations while capable of providing different signal propagation simulation environment and positioning services including SBAS, DGPS, PPP and PPS.

This simulator will be used to satisfy the research requirements for the following exiting research projects:

1. Project #TC275 - Evaluation of the Performance of Receiver Autonomous Integrity Monitoring (RAIM) for Air Navigation Systems: SPS/SBAS vs. PPS/RAIM - Funded by DND / Director Technical Airworthiness and Engineering Support Air Warfare Engineering (DTAES – 6) Section.
2. Project #TC269 - Evaluation of the Performance of GPS WAAS versus PPS for Air Navigation System - Funded by DND / (DTAES-6) Section.
3. Project #7403 - An Efficient INS/GNSS Simulation Environment for Platforms Experiencing High Dynamics Under Challenging Interference Scenarios - Funded by DND / (DTAES-8) Section.

Also, the simulator will enable the experimental environment required for the following undergraduate and graduate courses at the Department of ECE inside RMC:

- a. Undergraduate Courses:
 1. EEE311 – Signals and Systems.
 2. EEE413 – Digital Signal Processing.
 3. EEE474 – Radar and Electronic Warfare.
- b. Graduate Courses:

-
1. EE517 – Adaptive Filtering Theory.
 2. EE523 – Integrated Navigation Systems.
 3. EE581 – Electronic Warfare Systems Engineering.

2.0 GENERAL REQUIREMENT

The Royal Military College of Canada (RMC), Department of ECE requires the supply and delivery of an advanced GNSS simulator designed and developed to deliver the highest standard of Global Navigation Satellite System (GNSS) signal testing and sensor simulation performance.

The simulator must support multi-constellation, multi-frequency GNSS simulation and advanced threat scenarios, including jamming, spoofing and repeater simulation. Also, it can be programmed to simulate operations with all current and future GNSS signals and simulate multiple synchronized trajectories through various instances of a simulation engine that allows testing of complex GNSS systems, such as Differential GNSS, such as Real-time Kinematics (RTK), Receiver spoofing mitigation evaluation, Multi-antenna vehicles, Attitude measurements and Simple or complex arrays of GNSS receivers.

2.1 Documentation

The contractor must provide at the time of delivery, in English, the technical specifications, warranty and related user and/or maintenance documentation specific to this system.

2.2 Delivery against the Contract

The Contractor must deliver the system to ground level loading dock in satisfaction of the contract requirements to:

Royal Military College of Canada
Department of Electrical and Computer Engineering
19 General Crerar Cres., room 4100
Kingston, ON, K7K 7C8

Attn: Mr Jean-Luc Derome
(613) 541-6000 x6402

2.3 Minimum Mandatory Technical Specifications

2.3.1 Advanced Hardware Simulator and Simulation Software

Since the NavINST research Laboratory currently uses Orolia Skydel simulation software on developing several algorithms for research projects funded by DND /DTAES 6 and 8 sections, the laboratory requires an advanced GNSS Simulator hardware, and must be compatible with the existing Orolia Skydel simulation software and the research infrastructure. The advanced Hardware Simulator and simulation software must meet the following minimum specifications:

2.3.1.1 Software Simulator Key Features

The simulation software must have the following minimum features:

- 1000Hz simulation iteration rate.
- Low-latency HIL.

-
- Live sky time synchronization.
 - On-the-fly scenario reconfiguration.
 - 6 Degrees of Freedom (DoF) receiver trajectories.
 - Flexible licensing.
 - In-field upgradability.
 - High-end performance (precision, resolution, ultra-high dynamic motion).
 - Simulate hundreds of satellites in real-time, using off-the-shelf graphics cards (GPU).
 - Multi-vehicle simulation.
 - Comprehensive and intuitive API (Python, C# and C++ open-source client).
 - Scalable and highly flexible architecture using software-defined radios.

2.3.1.2 Signal Propagation and Errors Simulation

The hardware simulator must be able to handle the following GNSS errors:

- Multipath
- Additive pseudorange ramps
- Satellite clock error modification
- Navigation message errors
- Multiple ionospheric/tropospheric models
- Antenna pattern models
- Relativistic effects
- Pseudorange/ephemeris errors

2.3.1.3 Signals

The hardware simulator must be able to generate the following signals:

- GPS: L1-C/A, L1C, L1-P, L2-P, L2C, L5, M-Noise
- GLONASS: G1, G2
- Galileo: E1, E5a, E5b, E5AltBOC, PRS-Noise, HAS-Noise
- BeiDou-2: B1, B2
- BeiDou-3: B1C, B2a
- QZSS: L1-C/A, L5
- SBAS: WAAS, EGNOS, MSAS, GAGAN, SDCM

2.3.1.4 Signal Performance Specifications

The hardware simulator must provide the following performance:

- Pseudorange Accuracy - $\pm 0.001\text{m}$
- Pseudorange Rate - $\pm 0.001\text{m/s}$
- Inter-channel bias - zero
- Spurious transmission < -45 dBc
- Harmonics < -45 dBc
- Phase noise: < 0.003 rad RMS
- Signal Dynamics
 - Maximum relative velocity: 1,500,000 m/s
 - Maximum relative acceleration: No limits
 - Maximum relative jerk: No limits
- 1000 Hz iteration rate
- RF Signal Level (GNSS)
 - Power Accuracy: +/- 0.5dB

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- Output reference power: -80 to -50 dBm, 0.1dB resolution
 - Dynamic range (relative to reference power): -45 to +30 dB
 - Total range: -125 to -20 dBm
 - RF Signal Level (Jamming): +0 to +110 J/S (with signal (S) reference power at -130dBm).

2.4 Minimum Mandatory Non-Technical Specifications

2.4.1 Hardware Warranty

The system must include a warranty with a one-year hardware warranty and software support.

2.4.2 Support

This procurement must also include phone and e-mail support for at least one year to assist in trouble-shooting configuration and usage issues.

ANNEX "B"
BASIS OF PAYMENT

The firm lot price must be an all-inclusive price in Canadian funds, including Canadian customs and duties, excise taxes, Incoterms 2010 "DDP Delivered Duty Paid" to Department of National Defence, Royal Military College of Canada, Kingston, Ontario K7K 7C8, excluding GST/HST.

Pricing Basis A

| Item # | Description | Unit | Qty | Unit Price | Extended Price |
|--------|--|------|-----|------------|----------------|
| 1 | To supply and deliver one (1) Global Navigation Satellite System (GNSS) Simulator in accordance with Annex "A", Requirement. | Lot | 1 | \$ | \$ |
| 2 | Shipping Cost | Lot | 1 | \$ | \$ |
| Total | | | | | \$ |

ANNEX "C" to PART 3 OF THE BID SOLICITATION

ELECTRONIC PAYMENT INSTRUMENTS

The Bidder accepts any of the following Electronic Payment Instrument(s):

- VISA Acquisition Card;
- MasterCard Acquisition Card;
- Direct Deposit (Domestic and International);
- Electronic Data Interchange (EDI);
- Wire Transfer (International Only)

ANNEX "D"

ADDITIONAL CERTIFICATION INFORMATION

1. Board of Directors

In accordance with the [Ineligibility and Suspension Policy](#), Section 17, Bidders are required to provide a list of their Board of Directors before contract award. Bidders are requested to provide this information in their bid.

- Director Name/Position - _____

2. Procurement Business Number (PBN)

In accordance with Section 2, Procurement Business Number, of the Standard Instructions, Contractors are required to have a Procurement Business Number (PBN) before Contract award.

Procurement Business Number - _____

Suppliers may register for a PBN online at [Supplier Registration Information](#). For non-Internet registration, suppliers may contact the InfoLine at 1-800-811-1148 to obtain the telephone number of the nearest Supplier Registration Agent.

Solicitation No. - N° de l'invitation
W0114-210005/A
Client Ref. No. - N° de réf. du client
W0114-210005

Amd. No. - N° de la modif.
File No. - N° du dossier
KIN-1-56062

Buyer ID - Id de l'acheteur
KIN535
CCC No./N° CCC - FMS No./N° VME

ANNEX "E"

BIDDERS FORMS

OEM Certification Form

This confirms that the original equipment manufacturer (OEM) identified below has authorization the Bidder named below to provide and maintain its products under any contract resulting from the bid solicitation identified below:

Name of OEM _____

Signature of authorized signatory of OEM _____

Print Name of authorized signatory of OEM _____

Print Title of authorized signatory of OEM _____

Address for authorized signatory of OEM _____

Telephone no. for authorized signatory of OEM _____

Fax no. for authorized signatory of OEM _____

Date signed _____

Solicitation Number W0114-210005/A

Name of Bidder _____