

**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**
**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**
11 Laurier St. / 11, rue Laurier
Place du Portage , Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

**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 CONTROL ARCHITECTURE	
Solicitation No. - N° de l'invitation W7714-115079/A	Date 2011-03-14
Client Reference No. - N° de référence du client W7714-115079	
GETS Reference No. - N° de référence de SEAG PW-\$\$\$V-054-22437	
File No. - N° de dossier 054sv.W7714-115079	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2011-04-07	
Time Zone Fuseau horaire Eastern Daylight Saving Time EDT	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Brault, Laurie	Buyer Id - Id de l'acheteur 054sv
Telephone No. - N° de téléphone (819) 956-1378 ()	FAX No. - N° de FAX (819) 997-2229
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF NATIONAL DEFENCE DEFENCE R&D CANADA - CORA 101 COLONEL BY DR. ATTN: ALEX BOURQUE OTTAWA Ontario K1A0K2 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
Science Procurement Directorate/Direction de l'acquisition
de travaux scientifiques
11C1, Phase III
Place du Portage
11 Laurier St. / 11, rue Laurier
Gatineau, Québec K1A 0S5

Delivery Required - Livraison exigée See Herein	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. Introduction

The bid solicitation document is divided into seven parts plus attachments and annexes as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, if applicable, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Financial Requirements: includes specific requirements that must be addressed by bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The annexes include the Statement of Work and the Basis of Payment.

2. Summary

The Department of National Defence has a requirement to develop a novel control architecture that allows a team of autonomous unmanned vehicles to conduct complex missions in a dynamic and uncertain environment and under limited and unreliable communications.

The Contractor must conduct a review of the scientific literature in order to recommend a novel multiple autonomous unmanned vehicle control architecture to meet the objectives stated above.

The Contractor must develop and implement the control architecture, model and implement in a simulation three (3) scenarios provided by the Technical Authority, and evaluate the performance of the control architecture using the metrics provided by the Technical Authority and through simulations of the three (3) scenarios.

The Contractor must demonstrate in a real-world environment the control architecture developed using at least two (2) autonomous unmanned vehicles.

The initial contract period is from date of award to March 31, 2013 inclusive.

The requirement is subject to the provisions of the Agreement on Internal Trade (AIT).

The requirement is subject to a preference for Canadian goods and/or services.

3. Communications Notification

As a courtesy, the Government of Canada requests that successful bidders notify the Contracting Authority in advance of their intention to make public an announcement related to the award of a contract.

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4. **Debriefings**

After contract award, 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 of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

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 (<http://sacc.pwgsc.gc.ca/sacc/index-e.jsp>) 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 (2010-10-07) 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: sixty (60) days

Insert: one hundred and twenty (120) days

2. Submission of Bids

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 bid solicitation.

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

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) 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 questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

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.

5. Maximum Funding

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The maximum funding available for the contract resulting from the bid solicitation is \$136,000.00 CAD (Goods and Services Tax or the Harmonized Sales Tax extra, as appropriate). Bids valued in excess of this amount will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

- Section I : Technical Bid - 4 hard copies and 4 soft copies on CD, without password protection or encryption
 Section II : Financial Bid - 2 hard copies
 Section III : Certifications - 1 hard copy

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

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

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use 30% recycled paper;
- (c) print double sided (duplex printing);
- (d) use a numbering system that corresponds to the bid solicitation; and
- (e) submit bound bids using cerlox, staples, etc., but no binders.

Section I : Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical bid should clearly address and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II : Financial Bid

1.1 Bidders must submit their financial bid in accordance with the following :

- (a) A Total Cost to a Ceiling Price, which must not exceed the maximum funding specified in Part 2. The total amount of Goods and Services Tax or Harmonized Sales Tax is to be shown separately, if applicable. The information should be provided in accordance with the Financial Bid Presentation Sheet at Attachment 1.
- (b) For Canadian-based bidders, prices must be in Canadian funds, Canadian customs duties and excise taxes included, and Goods and Services Tax (GST) or Harmonized Sales Tax (HST) excluded.

For foreign-based bidders, prices must be in Canadian funds, Canadian customs duties and excise taxes and GST or HST excluded. Canadian customs duties and excise taxes payable by

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Canada will be added, for evaluation purposes only, to the prices submitted by foreign-based bidders.

For the purpose of the bid solicitation, bidders with an address in Canada are considered Canadian-based bidders and bidders with an address outside of Canada are considered foreign-based bidders.

1.2 SACC Manual Clauses

C3011T (2010-01-11), Exchange Rate Fluctuation

Section III : Certifications

Bidders must submit the certifications required under Part 5._

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

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.
- (c) The evaluation team will determine first if there are three (3) or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than three responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

1.1 Technical Evaluation

Except where expressly provided otherwise, the experience described in the bid must be the experience of the Bidder itself (which includes the experience of any companies that formed the Bidder by way of a merger but does not include any experience acquired through a purchase of assets or an assignment of contract). The experience of the Bidder's affiliates (i.e. parent, subsidiary or sister corporations), subcontractors, or suppliers will not be considered.

1.1.1 Mandatory and Point Rated Technical Criteria

Refer to Attachment 2, Mandatory and Point Rated Technical Criteria.

1.2 Financial Evaluation

1.2.1 Mandatory Financial Criteria

1. The Bidder must submit a ceiling price for the Labour portion of the work which does not exceed \$68,000.00 CAD (GST/HST extra) for fiscal year 2011/2012, in accordance with Financial Bid Presentation Sheet at Attachment 1._
2. The Bidder must submit a ceiling price for the Labour portion of the work which does not exceed \$68,000.00 CAD (GST/HST extra) for fiscal year 2012/2013, in accordance with Financial Bid Presentation Sheet at Attachment 1._

1.2.2 Evaluation of Price

The price of the bid will be evaluated in Canadian dollars, the Goods and Services Tax or the Harmonized Sales Tax excluded, FOB destination, Canadian customs duties and excise taxes included.

2. Basis of Selection

2.1 Basis of Selection - Highest Rated Within Budget

To be declared responsive, a bid must:

-
- (a) comply with all the requirements of the bid solicitation;
 - (b) meet all mandatory technical evaluation criteria;
 - (c) obtain the required minimum points for each criterion and each group of criteria with a pass mark; and
 - (d) obtain the required **minimum points overall of 133 points** for the technical evaluation criteria which are subject to point rating.

Bids not meeting (a) or (b) or (c) or (d) will be declared non responsive. The responsive bid with the highest number of points will be recommended for award of a contract, provided that the total evaluated price does not exceed the budget available for this requirement. In the event that the highest number of points is obtained by more than one responsive bid, the responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify the bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

1. Certifications Precedent to Contract Award and Certifications Required with the Bid

Bidders must submit the certifications as provided below.

1.1 Certifications Precedent to Contract Award

The certifications in Attachment 3, Certifications Precedent to Contract Award, should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

1.2 Certifications Required with the Bid

Bidders must complete and submit the certifications in Attachment 4, Certifications Required with the Bid, as part of their bid.

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PART 6 - FINANCIAL REQUIREMENTS

1. Financial Capability

SACC Manual clause A9033T (2010-08-16), Financial Capability

PART 7 - RESULTING CONTRACT CLAUSES

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

1. Statement of Work

The Contractor must perform the Work in accordance with the Statement of Work at Annex A and the Contractor's technical bid entitled _____, dated _____.

1.1 Work Authorization - GO/NO GO

Despite any other condition of the Contract, the Contractor is only authorized to perform the Work required to complete Phases 1 and 2 of the Contract. Upon completion of Phases 1 and 2, the Work will be reviewed before the Contractor is authorized to commence any Work for Phase 3. Depending on the results of the review and evaluation of the Work, Canada will decide at its discretion whether to continue with the Work.

If Canada decides to continue with Phase 3, the Contracting Authority will advise the Contractor in writing to commence work on Phase 3. The Contractor must immediately comply with the notice.

If Canada decides not to proceed with Phase 3, the Contracting Authority will advise the Contractor in writing of the decision and the Contract will be considered completed at no further costs to Canada. In no event will the Contractor be paid for any cost incurred for unauthorized work.

1.2 Confirmation of Contract Award

The Contractor was notified of contract award by e-mail on date of award. The Work specified in the notice, if any, must not be duplicated.

2. 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 (<http://ccua-sacc.tpsgc-pwgsc.gc.ca/pub/acho-eng.jsp>) Manual issued by Public Works and Government Services Canada.

2.1 General Conditions

2040 (2010-08-16), General Conditions - Research & Development, apply to and form part of the Contract.

2.2 Supplemental General Conditions

The following supplemental general conditions apply to and form part of the Contract:

4002 (2010-08-16), Software Development or Modification Services

3. Term of Contract

3.1 Period of Contract

The period of the Contract is from date of Contract to March 31, 2013 inclusive.

4. Authorities

4.1 Contracting Authority

The Contracting Authority for the Contract is:

Laurie D Brault
Supply Officer

Public Works and Government Services Canada
Acquisitions Branch
Science Procurement Directorate
Place du Portage, Phase III, 11C1
11 Laurier Street
Gatineau, Quebec
K1A 0S5

Telephone: (819) 956-1378
Facsimile: (819) 997-2229
E-mail address: laurie.brault@tpsgc-pwgsc.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.

4.2 Technical Authority

The Technical Authority for the Contract is:

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

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

(Information to be inserted at the time of contract award)

4.2.1 Deputy Technical Authority

The Deputy Technical Authority for the Contract is:

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

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

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(Information to be inserted at the time of contract award)

The Technical Authority and the Deputy Technical Authority are the representatives 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 Technical Authority and/or the Deputy Technical Authority; however, the Technical Authority and Deputy Technical Authority have 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.

4.3 Contractor's Representative

The Contractor's Representative for the Contract is:

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

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

(Information to be inserted at the time of contract award)

4.4 Procurement Authority

The Procurement Authority for the Contract is:

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

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

(Information to be inserted at the time of contract award)

The Procurement Authority is the representative of the department or agency for whom the Work is being carried out under the Contract. The Procurement Authority is responsible for the implementation of tools and processes required for the administration of the Contract. The Contractor may discuss administrative matters identified in the Contract with the Procurement Authority however the Procurement Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of Work can only be made through a contract amendment issued by the Contracting Authority.

5. Payment

5.1 Basis of Payment

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work, as determined in accordance with the Basis of Payment in Annex B, to a ceiling price of \$_____ (**amount to be inserted at contract award**). Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

The ceiling price is subject to downward adjustment so as not to exceed the actual costs reasonably incurred in the performance of the Work and computed in accordance with the Basis of Payment.

5.2 Limitation of Price

SACC Manual Clause C6000C (2007-05-25), Limitation of Price

5.3 Method of Payment

5.3.1 Progress Payments

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work up to 90 percent of the amount claimed and approved by Canada if:
 - (a) an accurate and complete claim for payment using form PWGSC-TPSGC 1111 (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/1111.pdf>) and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - (b) the amount claimed is in accordance with the Basis of Payment;
 - (c) the total amount for all progress payments paid by Canada does not exceed 90 percent of the total amount to be paid under the Contract;
 - (d) all certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.
3. Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the right to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

5.4 SACC Manual Clauses

A9117C (2007-11-30), T1204 - Direct Request by Customer Department

C2000C (2007-11-30), Taxes - Foreign-based Contractor

C0305C (2008-05-12), Cost Submission

5.5 Time Verification

SACC Manual Clause C0711C (2008-05-12) Time Verification

6. Invoicing Instructions - Progress Claim

1. The Contractor must submit a claim for progress payment using form PWGSC-TPSGC 1111 (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/1111.pdf>).

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
- (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;

Each claim must be supported by:

- (a) a copy of time sheets to support the time claimed;
 - (b) a copy of the monthly progress report.
2. Goods and Services Tax (GST) or Harmonized Sales Tax (HST), as applicable, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no GST/HST payable as it was claimed and payable under the previous claims for progress payments.
 3. The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Contracting Authority for certification.

The Contracting Authority will then forward the original and two (2) copies of the claim to the Technical Authority for appropriate certification after inspection and acceptance of the Work takes place, and onward submission to the Payment Office for the remaining certification and payment.

4. The Contractor must not submit claims until all work identified in the claim is completed.

7. Certifications

- 7.1 Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the entire contract period. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

7.2 SACC Manual Clauses

A3060C (2008-05-12), Canadian Content Certification

8. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____ **(to be inserted at contract award)**.

9. 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 4002 (2010-08-16) Software Development or Modification Services;
- (c) the general conditions 2040 (2010-08-16) General Conditions - Research & Development;
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (f) the Contractor's bid dated _____.

10. Defence Contract

SACC Manual clause A9006C (2008-05-12), Defence Contract

11. Foreign Nationals (Canadian Contractor)

SACC Manual clause A2000C (2006-06-16), Foreign Nationals (Canadian Contractor)

OR

11. Foreign Nationals (Foreign Contractor)

SACC Manual clause A2001C (2006-06-16), Foreign Nationals (Foreign Contractor)

(Applicable clause will be inserted at the time of contract award)

12. Insurance

SACC Manual clause G1005C (2008-05-12), Insurance

13. Site Regulations

The Contractor must comply with all rules, instructions and directives in force on the site where the Work is performed.

ATTACHMENT 1**FINANCIAL BID PRESENTATION SHEET**

1. **LABOUR:** at firm all-inclusive hourly rates, inclusive of overhead and profit, GST/HST extra, F.O.B. Destination (for goods), in accordance with the following:

BIDDERS ARE REQUESTED TO QUOTE ONE RATE PER CATEGORY OF LABOUR REQUIRED, PER FISCAL YEAR PERIOD.

1.1 FISCAL YEAR 2011/2012

Labour Category	From Contract Award to March 31, 2012 Fiscal Year 2011/2012		Extended Total per Category
	Firm All Inclusive Hourly Rates	Total Est. Hours	
	\$ /hr		\$
	\$ /hr		\$

Estimated Labour for Fiscal Year 2011/2012 to a Ceiling Price: \$ _____
(GST/HST extra)

1.2 FISCAL YEAR 2012/2013

Labour Category	April 1, 2012 to March 31, 2013 Fiscal Year 2012/2013		Extended Total per Category
	Firm All Inclusive Hourly Rates	Total Est. Hours	
	\$ /hr		\$
	\$ /hr		\$

***Estimated Labour for Fiscal Year 2012/2013 to a Ceiling Price: \$ _____
(GST/HST extra)

*** The total estimated labour hours proposed for each labour category for the Fiscal Year 2012/2013 should include the proposed hours of work for Work Authorization: GO/ NO GO - Phase 3, as described in Annex A, Statement of Work.

2. TOTAL ESTIMATED COST TO A CEILING PRICE

- The Estimated Labour for each Fiscal Year must not exceed to a Ceiling Price of \$68,000.00 CAD (GST/HST extra), as per article 1.2.1 of Part 4 of this bid solicitation.

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054sv

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-
- The Total Estimated Cost to a Ceiling Price equals the sum of all total values under 1.1 and 1.2 above, and must not exceed \$136,000.00 CAD (GST/HST extra), as per Article 5. of Part 2 of this bid solicitation.

ESTIMATED COST TO A CEILING PRICE: \$ _____
(GST/HST extra)

ATTACHMENT 2

MANDATORY AND POINT RATED TECHNICAL CRITERIA

1. Mandatory Technical Criteria

At bid closing time, the Bidder must comply with the following mandatory technical criteria and provide the necessary documentation to support compliance. Any bid which fails to meet the following mandatory technical criteria will be declared non-responsive. Each criterion should be addressed separately.

M1 The primary resource proposed as the Principal Investigator must have successfully completed a PhD in Science or Engineering from an accredited university as listed by the International Association of Universities (IAU) (<http://www.iau-aiu.net/onlinedatabases/list.html>). The Bidder must provide a copy of the post secondary degree obtained by the primary resource proposed.

M2 Any secondary resource proposed must have successfully completed a post-secondary degree in Science or Engineering from an accredited university as listed by the International Association of Universities (IAU) (<http://www.iau-aiu.net/onlinedatabases/list.html>). The Bidder must provide a copy of the post secondary degree obtained by each secondary resource proposed.

2. Point Rated Technical Criteria

The maximum total score for the rated criteria (Sections R.1, R.2 and R.3) is **190 points**.

The minimum total score to be compliant (Sections R.1, R.2 and R.3) is **133 points**.

R.1 Primary Resource's Curriculum Vitae

The Bidder should submit the curriculum vitae (CV) for the Principal Investigator using the Résumé Summary Sheet as found in Appendix 1 of Attachment 2 to clearly demonstrate that it meets all of the requirements of this solicitation.

The Principal Investigator's CV will be evaluated against sub-criteria R1.1, R1.2, R1.3 and R1.4. The total maximum points available is 90 points.

Sub-criteria	Point Descriptor	MAX POINTS AVAILABLE	MIN POINTS REQUIRED
R.1.1 Publication	The Bidder will score 3 points for demonstrating every peer-reviewed scientific publication authored by the proposed Principal Investigator in the field of unmanned vehicles, up to a maximum of 60 points. The Bidder must achieve at least 45 points. Each publication must have been published in the last twenty years of the date of solicitation closing.	60	45
R.1.2 Supervision	The Bidder will score 2 points for demonstrating every qualified individual ¹ that was continuously and directly supervised by the proposed Principal	10	N/A

¹ A qualified individual is defined as someone who had already completed at the time of supervision a post-secondary degree in science or engineering from an accredited university as listed by the International Association of Universities (IAU) (<http://www.iau-aiu.net/onlinedatabases/list.html>).

	Investigator for at least two years, up to a maximum of 10 points		
R.1.3 R&D Project	The Bidder will score 2 points for demonstrating every R&D project completed by the proposed Principal Investigator, up to a maximum of 10 points. Each R&D project must have been conducted for at least one year and project(s) cited must have been for client(s) external to the Bidder's organization. The following project summaries will not be considered: for any organization that is related to the Bidder (e.g.: parent company or subsidiary of the Bidder and the Bidder's internal clients).	10	N/A
R.1.4 Demonstration	The Bidder will score 2 points for demonstrating previous demonstration(s) of unmanned vehicle(s) by the proposed Principal Investigator, up to a maximum of 10 points. The unmanned vehicle(s) must have been at least one meter in length.	10	N/A
TOTAL		90	45
The Bidder must achieve a minimum score of 45 points to be deemed responsive in this section.			

R.2 Research Outline

The Bidder should submit a two page research outline written in its own vocabulary, which should:

- a) Discuss the inherent problems in meeting the objective stated in Section 3 of the SOW; and
- b) Propose an approach and methodology to meet the objective stated in Section 3 of the SOW; and
- c) Cite scientific publications to support its statements made in response to a) and b) above.

The citation list does not count towards the two-page research outline.

The research outline will be evaluated against sub-criteria R.2.1, R.2.2, and R.2.3. The total maximum points available is 50 points.

R.2.1 Problem Statement

The Bidder will score up to a maximum of 20 points for discussing the inherent problems in meeting the objective stated in Section 3 of the SOW. The Bidder should provide, in its own vocabulary, a clear description of the:

- a) Challenges and limitations in conducting multiple unmanned vehicle operations;
- b) Risks and impacts related to these challenges and limitations; and
- c) Deficiencies and shortfalls of current multiple unmanned vehicle control architecture design in overcoming the challenges and limitations outlined.

Sub-criteria	Point Descriptor	MAX POINTS AVAILABLE	MIN POINTS REQUIRED
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R.2.1.1 Challenges and Limitations	The Bidder will score 2 points per significant challenge or limitation identified in conducting multiple unmanned vehicle operations, up to a maximum of 10 points. The Bidder should provide supporting information to describe each of the challenges and limitations in conducting multiple unmanned vehicle operations. The Bidder must achieve at least 6 points.	10	6
R.2.1.2 Risks and Impacts	The Bidder will score 1 point for identifying the significant risk(s) and impact(s) related to one identified challenge or limitation, up to a maximum of 5 points. The Bidder should clearly demonstrate how the significant risk(s) and impact(s) will prevent it from meeting the objective in Section 3 of the SOW. The Bidder must achieve at least 3 points.	5	3
R.2.1.3 Deficiencies and Shortfalls	The Bidder will score 1 point per significant deficiency or shortfall of current multiple unmanned vehicle control architecture design in overcoming the challenges and limitations outlined, up to a maximum of 5 points. The Bidder should clearly demonstrate how each significant deficiency or shortfall of current multiple unmanned vehicle control architecture design will impede it from overcoming the challenges and limitations in conducting multiple unmanned vehicle operations. The Bidder must achieve at least 3 points.	5	3
TOTAL		20	12
The Bidder must achieve a minimum score of 12 points to be deemed responsive in this section			

R.2.2 Proposed Solutions

The Bidder will score up to a maximum of 18 points for discussing solutions meeting the objective stated in Section 3 of the SOW. The Bidder should provide, in its own vocabulary, a clear description of the:

- a) Approach and method(s) proposed to address the deficiencies and shortfalls identified in Section 3 of the SOW;
- b) Applicable prior research results to the approach and method(s) proposed; and
- c) Risk and related impacts associated with the approach and method(s) proposed.

Sub-criteria	Point Descriptor	MAX POINTS AVAILABLE	MIN POINTS REQUIRED
R.2.2.1 Approach	The Bidder will score 2 points per deficiency or shortfall identified in Section 3 of the SOW addressed by the approach and method(s) proposed, up to a		

and method(s)	maximum of 10 points. The Bidder should clearly demonstrate how the approach and method(s) proposed address the deficiency or the shortfall. The Bidder must achieve at least six (6) points.	10	6
R.2.2.2 Applicable Research Results	The Bidder will score 6 points for demonstrating applicable research results to the approach and method(s) proposed		
	No details provided or the Bidder did not cite scientific publication(s) demonstrating that there are applicable research results to the approach and method(s).	0	0
	The Bidder cited scientific publication(s) demonstrating that there are applicable research results to the approach and method(s).	6	N/A
R.2.2.3 Risks and Impacts	The Bidder will score 2 points for clearly demonstrating the risks and impacts of the approach and method(s) proposed. The Bidder should clearly demonstrate how the significant risk(s) and impact(s) will prevent it from meeting the objective in Section 3 of the SOW.		
	No details provided or the Bidder did not clearly demonstrate the risks and impacts of the approach and method(s) proposed.	0	0
	The Bidder has clearly demonstrated the risks and impacts of the approach and method(s) proposed	2	N/A
TOTAL		18	6
The Bidder must achieve a minimum of 6 points to be deemed responsive in this section			

R.2.3 Scientific Literature Citation

Sub-criteria	Point Descriptor	MAX POINTS AVAILABLE	MIN POINTS REQUIRED
R.2.3 Scientific Literature Citation	The Bidder will score 1 point per scientific publication cited to support statements made in response to R.2.1 and R.2.2, up to a maximum of 12 points.	12	N/A

R.3 Work Breakdown Structure

The Bidder should submit a work breakdown structure (WBS) in an Excel 2003 compatible spreadsheet. The WBS should address, at a minimum, for each phase:

- a) The expected duration of each task required;
- b) The allocation of resources to each task required; and
- c) The planned delivery dates for all required tasks and deliverables.

The Bidder will score up to a maximum of 50 points for a clear, complete and thorough WBS.

The Bidder will score up to a maximum of 20 points for the WBS submitted for Phase 1. Points will be scored as follows:

Points	Point Descriptor
0	No details provided or the Bidder's response does not meet the requirement or the requirement's intent.
4	The Bidder's WBS is weak; it poorly demonstrates the expected duration's of each task; the allocation of resources to each task is insufficient; and the planned delivery dates for all tasks and deliverables are unrealistic.
10	The Bidder's WBS is average; it generally demonstrates the expected duration's of each task; the allocation of resources to each task is adequate; and the planned delivery dates for all tasks and deliverables are reasonable.
16	The Bidder's WBS is good; it clearly demonstrates the expected duration's of each task; the allocation of resources to each task is complete; and the planned delivery dates for all tasks and deliverables are suitable.
20	The Bidder's WBS is excellent; it precisely and thoroughly demonstrates the expected duration of each task; the allocation of resources to each task is clear and concise; and the planned delivery dates for all tasks and deliverables are highly suitable and realistic.

The Bidder will score up to a maximum of 20 points for the WBS submitted for Phase 2. Points will be scored as follows:

Points	Point Descriptor
0	No details provided or the Bidder's response does not meet the requirement or the requirement's intent.
4	The Bidder's WBS is weak; it poorly demonstrates the expected duration's of each task; the allocation of resources to each task is insufficient; and the planned delivery dates for all tasks and deliverables are unrealistic.
10	The Bidder's WBS is average; it generally demonstrates the expected duration's of each task; the allocation of resources to each task is adequate; and the planned delivery dates for all tasks and deliverables are reasonable.
16	The Bidder's WBS is good; it clearly demonstrates the expected duration's of each task; the allocation of resources to each task is complete; and the planned delivery dates for all tasks and deliverables are suitable.
20	The Bidder's WBS is excellent; it precisely and thoroughly demonstrates the expected duration of each task; the allocation of resources to each task is clear and concise; and the planned delivery dates for all tasks and deliverables are highly suitable and realistic.

The Bidder will score up to a maximum of 10 points for the WBS for the Work Authorization GO/NO GO - Phase 3. Points will be scored as follows:

	Point Descriptor
0	No details provided or the Bidder's response does not meet the requirement or the requirement's intent.
2	The Bidder's WBS is weak; it poorly demonstrates the expected duration's of each task; the allocation of resources to each task is insufficient; and the planned delivery dates for all tasks and deliverables are unrealistic.
4	The Bidder's WBS is average; it generally demonstrates the expected duration's of each task; the allocation of resources to each task is adequate; and the planned delivery dates for all tasks and deliverables are reasonable.
8	The Bidder's WBS is good; it clearly demonstrates the expected duration's of each task; the allocation of resources to each task is complete; and the planned delivery dates for all tasks and deliverables are suitable.
10	The Bidder's WBS is excellent; it precisely and thoroughly demonstrates the expected duration of each task; the allocation of resources to each task is clear and concise; and the planned delivery dates for all tasks and deliverables are highly suitable and realistic.

APPENDIX 1 TO ATTACHMENT 2**RÉSUMÉ SUMMARY SHEET**

Bidders should use the following "Résumé Summary Sheet" template to demonstrate the education and relevant experience of the proposed Principal Investigator.

Full legal name of the Principal Investigator	
M1 – Primary Resource Education	<p>PhD Degree:</p> <ol style="list-style-type: none"> 1. Academic discipline of PhD degree granted from an accredited university; 2. Year that the PhD degree was granted; 3. Name of the institution; 4. Thesis title and abstract.
R.1.1 - Publication	<p>Experience # 1:</p> <ol style="list-style-type: none"> 1. Author(s); 2. Title; 3. Name of the peer-reviewed publication; 4. Any additional information to identify the publication (e.g., volume, number, page(s), date of publication); 5. Abstract.
	<p>N.B. Add as many descriptors (e.g., experience #2, experience #3, as required to demonstrate relevant experience).</p>
R.1.2 - Supervision	<p>Experience #1</p> <ol style="list-style-type: none"> 1. Name of qualified individual supervised by the proposed Principal Investigator; 2. Start and end dates of supervisory period; 3. Type and academic discipline of the highest post secondary degree from an accredited university completed prior to the supervisory period by the qualified individual; 4. Year the degree was granted.
	<p>N.B. Add as many descriptors (e.g., experience #2, experience #3, as required to demonstrate relevant experience).</p>

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R1.3 - R&D Project

Experience # 1:

1. Title of R&D project completed by the Principal Investigator;
2. Start and end dates of the R&D project;
3. Client organization;
4. Scope and deliverables of the R&D project;
5. Roles and responsibilities of the proposed Principal Investigator throughout the duration of the project.

N.B. Add as many descriptors (e.g., experience #2, experience #3, as required to demonstrate relevant experience).

R.1.4 - Demonstration

Experience # 1:

1. Title and scope of unmanned vehicle(s) demonstration;
2. Size and length of unmanned vehicle (s) involved in the demonstration;
3. Start and end dates of demonstration.

N.B. Add as many descriptors (e.g., experience #2, experience #3, as required to demonstrate relevant experience).

ATTACHMENT 3

CERTIFICATIONS PRECEDENT TO CONTRACT AWARD

1. Federal Contractors Program - Certification

1.1 Federal Contractors Program - over \$25,000 and below \$200,000

Suppliers who are subject to the Federal Contractors Program (FCP) and have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive federal government contracts over the threshold for solicitation of bids as set out in the *Government Contracts Regulations*. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

- (a) is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;
- (b) is not subject to the FCP, being a regulated employer under the *Employment Equity Act*, S.C. 1995, c. 44;
- (c) is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, having not bid on requirements of \$200,000 or more;
- (d) has not been declared an ineligible contractor by HRSDC, and has a valid certificate number as follows: _____.

Further information on the FCP is available on the HRSDC Web site (<http://www.hrsdc.gc.ca/eng/labour/equality/fcp/index.shtml>).

2. Former Public Servant Certification

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, bidders must provide the information required below.

Definitions

For the purposes of this clause,

"former public servant" is any former member of a department as defined in the *Financial Administration Act*, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- (a) an individual;
- (b) an individual who has incorporated;
- (c) a partnership made of former public servants; or
- (d) a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, in the context of the fee abatement formula, a pension or annual allowance paid under the Public Service Superannuation Act (PSSA), R.S., 1985, c. P-36, and any increases paid pursuant to the Supplementary Retirement Benefits Act, R.S., 1985, c. S-24 as it affects the PSSA. It does not include pensions payable pursuant to the Canadian Forces Superannuation Act, R.S., 1985, c. C-17, the Defence Services Pension Continuation Act, 1970, c. D-3, the Royal Canadian Mounted Police Pension Continuation Act, 1970, c. R-10, and the Royal Canadian Mounted Police Superannuation Act, R.S., 1985, c. R-11, the Members of Parliament Retiring Allowances Act, R.S., 1985, c. M-5, and that portion of pension payable to the Canada Pension Plan Act, R.S., 1985, c. C-8.

Former Public Servant in Receipt of a Pension

Is the Bidder a FPS in receipt of a pension as defined above? **YES () NO ()**

If so, the Bidder must provide the following information:

- (a) name of former public servant;
- (b) date of termination of employment or retirement from the Public Service.

Work Force Reduction Program

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of a work force reduction program? **YES () NO ()**

If so, the Bidder must provide the following information:

- (a) name of former public servant;
- (b) conditions of the lump sum payment incentive;
- (c) date of termination of employment;
- (d) amount of lump sum payment;
- (e) rate of pay on which lump sum payment is based;
- (f) period of lump sum payment including start date, end date and number of weeks;
- (g) number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including the Goods and Services Tax or Harmonized Sales Tax.

Certification

By submitting a bid, the Bidder certifies that the information submitted by the Bidder in response to the above requirements is accurate and complete.

3. Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

4. Education and Experience

The Bidder certifies that all the information provided in the résumés and supporting material submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

5. Language Capability

The Bidder certifies that it has the language capability required to perform the Work, as stipulated in the Statement of Work.

ATTACHMENT 4

CERTIFICATIONS REQUIRED WITH THE BID

1. Canadian Content Certification

This procurement is conditionally limited to Canadian services.

Subject to the evaluation procedures contained in the bid solicitation, bidders acknowledge that only bids with a certification that the service offered is a Canadian service, as defined in clause A3050T, may be considered.

Failure to provide this certification completed with the bid will result in the service offered being treated as a non-Canadian service.

The Bidder certifies that:

() the service(s) offered is(are) a Canadian service as defined in paragraph 2 of clause A3050T.

1.1 SACC Manual clause A3050T (2010-01-11), Canadian Content Definition

2. Technical Support and Equipment

The Bidder certifies that it has access to at least one demonstration site, one unmanned vehicle, one technician, a mean for transporting the unmanned vehicle, and equipment to control and monitor the unmanned vehicle in order to prepare and conduct the demonstration in the Work Authorization - Go/ No Go - Phase 3 of the SOW. The unmanned vehicle must be at least one meter in length.

ANNEX A

STATEMENT OF WORK

1. Title

Control Architecture for Multiple Autonomous Unmanned Vehicle Operations

2. Background

Unmanned vehicles are part of an ongoing transformation of the Canadian Forces (CF). Such vehicles are appealing because they are able to perform missions with minimal risk to humans, e.g., in mine or Improvised Explosive Device (IED) hunting. They may also open a new window of opportunities allowing militaries to do what was not previously feasible.

Expectations must, however, be tempered by the fact that these vehicles are prone to failures and operate in dynamic and uncertain environments. Limited and unreliable communications (e.g., in urban or underwater environments) further prevent remote control by a human operator and hinder the ability to conduct operations using multiple unmanned vehicles. For these reasons, designing systems that are fault-tolerant, adaptable and partially autonomous is essential.

As of the 1st of April 2010, the Center for Operational Research and Analysis (CORA) at Defence R&D Canada (DRDC) has embarked on a three-year research project to explore concepts of operations for multiple autonomous unmanned vehicles. The research team consists of several DRDC scientists with expertise in unmanned vehicle design and operations, human-machine interactions, and operational research.

This research project is divided into three complementary parts. The first part consists in exploring concepts of operations for teams of autonomous unmanned vehicles. The second part focuses in developing algorithms for vehicles to learn from observations. The third part aims at developing an architecture to control multiple autonomous unmanned vehicles in complex missions. The purpose of this requirement is to conduct research for the third part of the project.

3. Objective

The objective of the requirement is to develop a novel control architecture that allows a team of autonomous unmanned vehicles to conduct complex missions in a dynamic and uncertain environment and under limited and unreliable communications.

4. Scope of Work

The work is divided into three (3) sequential phases, with Phase 3 being authorized as per Article 1.1 (Work Authorization - GO/NO GO) of the Contract.

4.1 Phase 1 - Scientific Literature Review and Research Proposal

The Contractor must conduct a review of the scientific literature in order to recommend a novel multiple autonomous unmanned vehicle control architecture to meet the objective stated in Section 3.

4.2 Phase 2 - Development, Implementation and Evaluation

The Contractor must develop and implement the control architecture, model and implement in a simulation three (3) scenarios provided by the Technical Authority, and evaluate the performance of the control architecture using the metrics provided by the Technical Authority and through simulations of the three (3) scenarios.

4.3 Work Authorization - GO/NO GO - Phase 3 - Demonstration

The Contractor must demonstrate in a real-world environment the control architecture developed using at least two (2) autonomous unmanned vehicles.

5. Tasks and Deliverables

5.1 Phase 1 - Scientific Literature Review and Research Proposal

5.1.1 Tasks:

1. The Contractor must review the scientific literature pertinent to meet the objective stated in Section 3.
2. The Contractor must identify both the highest level of development and the challenges in the fields of single and multiple unmanned vehicle control pertinent to meeting the objective stated in Section 3.
3. The Contractor must recommend to the Technical Authority a novel multiple autonomous unmanned vehicle control architecture to meet the objective stated in Section 3.

5.1.2 Deliverables:

1. Research Proposal

The Contractor must create and submit to the Technical Authority a draft and final written report formatted as a DRDC Contractor Report, which must at a minimum:

- a) Summarize the scientific literature reviewed;
- b) Identify both the highest level of development and the challenges in the fields of single and multiple unmanned vehicle control pertinent to meeting the objective stated in Section 3;
- c) Recommend a novel multiple autonomous unmanned vehicle control architecture to meet the objective stated in Section 3; and
- d) Support all statements made in the research proposal by citing the scientific literature.

The final research proposal must be delivered no later than 120 calendar days from the date of contract award.

5.2 Phase 2 - Development, Implementation and Evaluation

5.2.1 Tasks:

1. Following written approval of the research proposal by the Technical Authority, the Contractor must develop the control architecture proposed in Phase 1.

2. Once the development is completed, the Contractor must:
 - a) Implement the control architecture in software;
 - b) Model and implement in a simulation the three (3) scenarios provided by the Technical Authority;
 - c) Evaluate the performance of the control architecture using the metrics provided by the Technical Authority and through simulations of the three (3) scenarios.
3. Once the evaluation is completed, the Contractor must meet the Technical Authority either at the Contractor's facilities or at the Technical Authority's facilities, in Ottawa, ON; or via teleconferencing to:
 - a) Present the work performed during this phase; and
 - b) Demonstrate using the metrics provided by the Technical Authority and through simulations of the three (3) scenarios that the control architecture meets the objective stated in Section 3.
4. The Contractor must also create and submit a written manuscript documenting the work performed during this phase to a peer-reviewed scientific journal or peer-reviewed scientific conference, only after written approval of the final copy of the manuscript by the Technical Authority. The Contractor must attain written approval, from the Technical Authority, that the scientific journal is an acceptable publication or that the scientific conference is an acceptable forum.

5.2.2 Deliverables:

1. Computer Files

The Contractor must submit to the Technical Authority all computer files necessary to implement, compile, and run the control architecture software and the simulation used in Phase 2, in a format compatible with the software and hardware resources of the Technical Authority.

Delivery of all computer files must be based on successful replication of the evaluation results by the Technical Authority.

The computer files must be delivered no later than 01 October 2012.

2. Development, Implementation and Evaluation Report

The Contractor must create and submit to the Technical Authority a draft and final written report formatted as a DRDC Contractor Report documenting at a minimum:

- a) The development of the control architecture and its implementation in software;
- b) The modeling of the three (3) scenarios provided by the Technical Authority and their implementation in the simulation; and
- c) The evaluation of the control architecture's performance using the metrics provided by the Technical Authority and through simulations of the three (3) scenarios.

The final report must be delivered no later than 30 October 2012.

3. Scientific Manuscript

The Contractor must:

- a) Create a draft and final written manuscript documenting in detail the overall approach and outcome from the work performed during this phase and submit it to the Technical Authority for review and approval; and
- b) Provide the written acknowledgment from the peer-reviewed scientific journal or peer-reviewed scientific authority to the Technical Authority that the submitted manuscript has been accepted for review.

The final manuscript must be delivered no later than 15 January 2013 and submitted to a peer-reviewed scientific journal or peer-reviewed scientific conference no later than 30 January 2013.

5.3 Work Authorization Go/No Go - Phase 3 - Demonstration

5.3.1 Tasks:

1. The Contractor must demonstrate to the Technical Authority at the Contractor's facilities the functionality of the control architecture using at least two (2) autonomous unmanned vehicles operating in a real-world environment.
2. The Contractor must also create and submit a written manuscript documenting the work performed during this phase to a peer-reviewed scientific journal or peer-reviewed scientific conference, only after written approval of the final copy of the manuscript by the Technical Authority. The Contractor must attain written approval, from the Technical Authority, that the scientific journal is an acceptable publication or that the scientific conference is an acceptable forum.

5.3.2 Deliverables:

1. Demonstration Report

The Contractor must create and submit to the Technical Authority a draft and final written report formatted as a DRDC Contractor Report documenting the setup and outcome of the demonstration.

The final report must be delivered no later than 01 March 2013.

2. Scientific Manuscript

The Contractor must:

- a) Create a draft and final written manuscript documenting in detail the overall approach and outcome from the work performed during this phase and submit it to the Technical Authority for their review and approval; and
- b) Provide the written acknowledgment from the peer-reviewed scientific journal or peer-reviewed scientific authority to the Technical Authority that the submitted manuscript has been accepted for review.

The final manuscript must be delivered no later than 01 March 2013 and submitted to a peer-reviewed scientific journal or peer-reviewed scientific conference no later than 15 March 2013.

6. Deliverable Format

1. The Contractor must submit each deliverable to the Technical Authority in accordance with the following:
 - Must be created using either Microsoft MS Word or LaTeX; and
 - Must be submitted electronically.
2. Any Contractor Report must use the Defence R&D Canada - CORA Technical Report Template and follow the DRDC publication standards, while any scientific manuscript must follow the template and publication standards of the journal or conference to which it is submitted.
3. The Contractor must submit each final report or final manuscript within 20 business days of receiving comments from the Technical Authority on each draft report or draft manuscript. The Contractor must address any comments received by the Technical Authority in each final report or final manuscript.

7. Publications

7.1 Acknowledgment

The Contractor must acknowledge DRDC in any external publications or presentations resulting from the work described herein.

7.2 Authorship

The Contractor must include the names of both Technical Authority and the Deputy Technical Authority in the author's list of any external publications (reports, articles, conference proceedings, posters) documenting the work described herein.

8. Meetings

The Contractor must attend a mandatory meeting at the start of each phase held either at the Contractor's facilities or at the Technical Authority's facilities, in Ottawa, ON; or via teleconferencing.

9. Progress Reporting

1. The Contractor must submit monthly reports on the progress of the Work in one (1) copy to the Technical Authority and one (1) copy to the Contracting Authority.
2. The progress report must contain two (2) parts:
 - (a) PART 1:

The Contractor must answer the following three (3) questions:

- (i) Is the contract on schedule?
- (ii) Is the contract within budget?

- (iii) Is the contract free of any areas of concern in which the assistance or guidance of Canada may be required?

Each negative response must be supported with an explanation.

- (b) PART 2:

A narrative report, brief, yet sufficiently detailed to enable the Technical Authority to evaluate the progress of the Work, containing as a minimum:

- (i) A description of the progress of each task and of the Work as a whole during the period of the report. Sufficient sketches, diagrams, photographs, etc., must be included, if necessary, to describe the progress accomplished.
 - (ii) An explanation of any variation from the work plan.
 - (iii) A description of trips or conferences connected with the Contract during the period of the report.
3. Progress updates, via telephone calls, will be scheduled as required.

10. Government Furnished Support, Equipment, and Information

The Technical Authority will provide to the Contractor three (3) scenarios and metrics to evaluate the control architecture at the start of Phase 2. Any hardware or software the Contractor uses during the performance of the Work is the responsibility of the Contractor.

The Technical Authority will provide to the Contractor an electronic copies of the Defence R&D Canada - CORA Technical Report Template and the DRDC publication standards.

11. Language of Work

All meetings must be conducted and all deliverables must be submitted in English or French. The Contractor must be able to communicate in English in both verbal and written form.

12. Location of Work

The work will be conducted at the Contractor's facilities.

ANNEX B**BASIS OF PAYMENT**

1. **LABOUR:** at the following firm all inclusive hourly rates, inclusive of overhead and profit:

Labour Category	Contract Award to March 31, 2012 Fiscal Year 2011/2012		Extended Total per Category
	Firm All Inclusive Hourly Rates	Total Est. Hours	
	\$ /hr		\$
	\$ /hr		\$

Estimated Labour for Fiscal 2011/2012 to a Ceiling Price: \$ _____
(GST/HST extra)

Labour Category	Contract Award to March 31, 2013 Fiscal Year 2012/2013		Extended Total per Category
	Firm All Inclusive Hourly Rates	Total Est. Hours	
	\$ /hr		\$
	\$ /hr		\$

Estimated Labour for Fiscal 2012/2013 to a Ceiling Price: \$ _____
(GST/HST extra)

Estimated Cost to a Ceiling Price: \$ _____
(GST/HST extra)

With the exception of the firm rate(s) and price(s), the amounts shown in the various items specified above are estimates only. Minor changes to these estimates will be accepted for billing purposes as the Work proceeds, provided that these changes have the prior approval of the Technical Authority, and provided that the estimated cost does not exceed the aforementioned Ceiling Price.