



**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 0B2 / Noyau 0B2  
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**

**THIS DOCUMENT CONTAINS A SECURITY REQUIREMENT / DOCUMENT CONTIENT DES EXIGENCES RELATIVES À LA SÉCURITÉ**

**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

<b>Title-Sujet</b> Space-based radar surface moving target applications research	
<b>Solicitation No. - N° de l'invitation</b> W7714-176242	<b>Date</b> 2017-04-11
<b>Client Reference No. - N° de référence du client</b> W7714-176242	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-17-00775984	
<b>File No. - N° de dossier</b> 035sv W7714-176242	<b>CCC No./N° CC - FMS NO. / N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b>  at - à 2:00 PM on - le 2017-05-23	<b>Time Zone</b> Fuseau horaire Eastern Daylight Time (EDT)
<b>F.O.B. - F.A.B</b>  Plant-Usine : <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Joseph Hulse	<b>Buyer Id - Id de l'acheteur</b> 035SV
<b>Telephone No. - N° de téléphone</b> 873-469-4832	<b>FAX No. - N° de FAX</b> 819-957-2229
<b>Destination of Goods, Services and Construction:</b> <b>Destinations des biens, services et construction :</b>  Specified Herein Précisé dans les présentes	

**Instructions : See Herein**

**Instructions : voir aux présentes**

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



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## **PART 1 - GENERAL INFORMATION**

### **1. Introduction**

The bid solicitation 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, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Security, Financial and Other 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, the Basis of Payment, and DND 626 Task Authorization form.

### **2. Summary**

Canada wishes to issue a contract for 2 resources:

1. RADAR Data Specialist
2. SMTI Research Scientist

The resources are to work with Canada on the research and development (R&D) of the Space-based radar surface moving target applications research. The work will focus on: calibration of the Radarsat-2 SMTI mode data, determination of the SMTI measurement limits of Radarsat-2, determination of measurement capabilities required for a future, operational, space-based SAR-SMTI radar system, detection and measurement of typical moving targets in land and marine arctic environments, development and testing of measurement and information extraction algorithms and development, testing and integration of modules for the DRDC SAR-SMTI processor.

All SMTI measurements are based on the analysis of MODEX signal data that have been pre-processed to analyzable form by the DRDC SMTI preprocessor. Surface truth data (when it is available) will be analyzed and correlated with SMTI measurement results.

The resulting contract is for a period of 2 years, with 3 additional, 1 year option periods, and a 6 month optional transitional period.

There is a security requirement associated with this requirement.



This procurement is subject to the Controlled Goods Program. The Defence production Act defines Canadian Controlled Goods as certain goods listed in Canada's Export Control List, a regulation made pursuant to the Export and Import Permits Act (EIPA).

Bidders must provide a list of names, or other related information as needed, pursuant to section 01 of Standard Instructions 2003.

For services requirements, Bidders in receipt of a pension or a lump sum payment must provide the required information as detailed in attachment 3 of Part 5 of the bid solicitation.

The requirement is limited to Canadian goods and/or services.

Canada will own the Intellectual Property Rights in the Foreground Information.

This procurement is subject to the Agreement on Internal Trade (AIT)

"There is a Federal Contractors Program (FCP) for employment equity requirement associated with this procurement; see Part 5 - Certifications, Part 7 - Resulting Contract Clauses and the attachment named Federal Contractors Program for Employment Equity - Certification."

#### **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.

#### **5. Communications**

As a courtesy and in order to coordinate any public announcements pertaining to this contract, the Government of Canada requests that successful Bidders notify the Contracting Authority 5 days in advance of their intention to make public an announcement related to the recommendation of a contract award, or any information related to the contract. The Government of Canada retains the right to make primary contract announcements.

#### **6. Conflict of Interest**

The Work described herein and the deliverable items under any resulting Contract specifically exclude the development of any statement of work, evaluation criteria or any document related to a bid solicitation. The Contractor, its Sub-contractor(s) or any of their agent(s) directly or indirectly involved in the performance of the Work and/or in the production of the deliverables under any resulting Contract will not be precluded from bidding on any potential future bid solicitation related to the production or exploitation of any concept or prototype developed or delivered under any resulting Contract.



## **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 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 (2016-04-04) 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: 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. Former Public Servant**

Contracts awarded to 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 awarded to FPSs, bidders must provide the information required in Attachment 3 before contract award. If the answer to the questions and, as applicable the information required have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply with Canada's request and meet the requirement within the prescribed time frame will render the bid non-responsive.

### **4. Communications - Solicitation Period**

All enquiries must be submitted in writing to the Contracting Authority no later than 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.

## **5. 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.

## **6. Improvement of Requirement During Solicitation Period**

Should bidders consider that the specifications or Statement of Requirement contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least 5 days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

## **7. Basis for Canada's Ownership of Intellectual Property**

The Department of National Defence has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds:

- i. where statutes, regulations or previous obligations of Canada to a third party or parties preclude Contractor ownership of the Intellectual Property Rights in Foreground Information.
- ii. to generate knowledge and information for public dissemination
- iii. to augment an existing body of Crown Background as a prerequisite to the transfer of the augmented Background to the private sector, through licensing or assignment of ownership (not necessarily to the original Contractor), for the purposes of Commercial Exploitation



## **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 1 soft copy on CD in .doc 2013, or earlier, format)

Section II: Financial Bid (1 hard copy and 1 soft copy on CD in .doc 2013, or earlier, format)

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 a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or 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 in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly 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 Financial Bid Preparation Instructions**

Bidders must submit their financial bid in accordance with "Attachment 1" - Financial Bid Presentation Sheet. The total amount of Applicable Taxes must be shown separately.

### **1.2 Evaluation of Price - Canadian / Foreign Bidders**

A0222T (2014-06-26) Evaluation of Price - Canadian / Foreign Bidders

### **1.3 Exchange Rate Fluctuation**

C3011T (2013-11-06) 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.

#### **1.1 Technical Evaluation**

##### **1.1.1 Bidder Experience**

Except where expressly provided otherwise, the experience described in the bid must be the experience of one or more of the following:

- 1. 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); or
- 2. The Bidder's affiliates (i.e. parent, subsidiary or sister corporations, maximum of 2), provided the Bidder identifies and demonstrates the transfer of know-how, the use of toolsets and the use of key personnel from the affiliate for the applicable criterion; or
- 3. The Bidder's Subcontractors (maximum of 2), provided the Bidder identifies the roles and responsibilities of all parties under the resulting contract and how their work will be integrated.

The experience of the Bidder's suppliers will not be considered.

##### **1.1.2 Supporting Information**

In the event that the Bidder fails to submit any supporting information pursuant to PART 3 - Bid Preparation Instructions, at the sole discretion of the Contracting Authority, Canada may request it thereafter in writing, including after the closing date of the bid solicitation. It is mandatory that the Bidder provide the supporting information within three (3) business days of the written request or within such period as specified or agreed to by the Contracting Authority in the written notice to the Bidder.

### **1.2 Mandatory and Point Rated Criteria**

Mandatory and Point Rated Technical evaluation criteria are included in Attachment 2.

### **1.3 Financial Evaluation**

#### **1.3.1 Evaluation of Price**

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, Canadian customs duties and excise taxes included.

For evaluation purposes only, the price of the bid will be determined as detailed in Attachment 1, Financial Bid Presentation Sheet.

## **2. Basis of Selection**

### **2.1 Basis of Selection - Highest Combined Rating of Technical Merit and Price**



*In this clause, Technical Merit refers to the Technical Evaluation Score*

1. To be declared responsive, a bid must:
  - (a) comply with all the requirements of the bid solicitation;
  - (b) meet all mandatory criteria; and,
  - (c) obtain the required minimum pass scores for the technical evaluation criteria which are subject to point rating.
2. Bids not meeting (a) or (b) or (c) will be declared non-responsive.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 60 % for the technical merit and 40 % for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained divided by the maximum number of points available multiplied by the ratio of 60 %.
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 40 %.
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating, calculated to 2 decimal points.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract. In the event that two or more responsive bids have the same combined rating of technical merit and price, the responsive bid with the lowest evaluated price will be recommended for award of a contract.

The table below illustrates an example where all three bids are responsive and the selection of the Contractor is determined by a 60/40 ratio of technical merit and price, respectively. The total available points equals 135 and the lowest evaluated price is \$45,000 (45).

**Basis of Selection - Highest Combined Rating Technical Merit (60%) and Price (40%)**

	<b>Bidder</b>		
	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>
<b>Overall Technical Score</b>	120/135	102/135	115/135
<b>Bid Evaluated Price</b>	\$55,000.00	\$50,000.00	\$45,000.00
	<b>Calculations</b>		
<b>Technical Merit Score</b>	$120/135 \times 60 = 53.33$	$102/135 \times 60 = 45.33$	$115/135 \times 60 = 51.11$
<b>Pricing Score</b>	$45/55 \times 40 = 32.73$	$45/50 \times 40 = 36.00$	$45/45 \times 40 = 40.00$
<b>Combined Rating</b>	86.06	81.33	91.11
<b>Overall Rating</b>	<b>2nd</b>	<b>3rd</b>	<b>1st</b>



## “ATTACHMENT 1” FINANCIAL BID PRESENTATION SHEET

For evaluation purposes only, the price of the bid will be determined as follows:

1. The Bidder must complete the following table and indicate a firm all inclusive hourly rate for year one through year five and the Transitional period.
2. The estimated level of effort per year specified is only an approximation of requirements.
3. Total Bid Price for Evaluation Purposes = Cumulative Total for all work categories. Each work category total will be calculated as follows:  $h = (a \times b) + (a \times c) + (a \times d) + (a \times e) + (a \times f) + \{(a \times g)/2\}$
4. All Prices are in CAD

Quantity	Labour Category		Period		Option Period 1	Option Period 2	Option Period 3	Optional Transitional Period	
		<b>Firm All Inclusive Hourly Rate Per Resource</b>							
		Estimated total level of effort per year (a)	Year 1 (b)	Year 2 (c)	Year 3 (d)	Year 4 (e)	Year 5 (f)	6 month (g)	Total (h) = (a x b) + (a x c) + (a x d) + (a x e) + (a x f) + {(a x g) ÷ 2}
1	RADAR Data Specialist	500 hours	\$	\$	\$	\$	\$	\$	
1	SMTI Research Scientist	1725 hours	\$	\$	\$	\$	\$	\$	
Total Evaluated Bid Price:									



## **“Attachment 2” Mandatory and Point Rated Technical Criteria**

In their proposals, bidders must demonstrate they meet the following mandatory criteria. Failure to meet any of the mandatory criteria will render the bid non-compliant and it will be given no further consideration.

### Information Delineation

- a) The Bidder must submit the supporting information of each proposed resource for each labour category to demonstrate the resources experience in response to the mandatory and point rated technical criteria.
- b) The Bidder must demonstrate its experience and each proposed resource's experience in terms of months. Unless otherwise specified, 1 year of experience is equivalent to 1200 hours. For the purpose of calculating months and years of experience, overlapping experience will only be counted once (e.g. Project #1 time frame is July 2016 to December 2016; Project #2 time frame is October 2016 to January 2017; the total experience for these two project references is seven (7) months).
- c) University degree requirements specified under the labour categories must be from a recognized Canadian university, or the equivalent, as established by a recognized Canadian academic credentials assessment service\*, if obtained outside Canada.  
  
\* The list of recognized organizations can be found under the Canadian Information Centre for International Credentials website, at the following Internet link:  
<http://www.cicic.ca/indexe.stm>
- d) Where the post-secondary degree or diploma was completed and obtained outside of Canada, Canada reserves the right to request a Canadian equivalency document to be provided by the Bidder and issued by recognized academic credentials assessment organization showing the academic level obtained.
- e) Unless otherwise specified, in evaluating resource past performance experience, compliance must be demonstrated through a well written, coherent, brief (if possible), past project description containing the following as a minimum:
  - Name of the project.
  - Description of the project.
  - Resources' position.
  - Resources' work start date.
  - Resources' work completion date.
  - Duration of the experience in months.
  - Description of the project and other relevant details that document how this experience has been acquired by the Bidder (for corporate level criteria) and proposed resources (for proposed resource criteria).
  - An explanation of how this experience meets the specific criteria of this solicitation.
- f) If the Bidder submits more than 1 resource for the any resource category, Canada will evaluate only the first named resource.



**1. Mandatory Criteria**

- 1.1 At bid closing time, the Bidder must comply with the following mandatory criteria and provide the necessary documentation to support compliance. Any bid which fails to meet the following mandatory criteria will be declared non-responsive. Each criterion should be addressed separately.
- 1.2 The following criteria will be applied to the evaluation. This table should be completed and submitted by each Bidder.

**Resource: SMTI Research Scientist**

#	Mandatory Requirements	Cross Reference to supporting information (Demonstrate compliance with the requirement)
<b>M1.</b>	The Bidder’s proposed resource must have a Master’s degree in one of the following disciplines: mathematics, physics, engineering, computer science, oceanography or geomatics from a Canadian University or equivalent from a foreign institution.	

**Resource: Radar Data Specialist**

#	Mandatory Requirements	Cross Reference to supporting information (Demonstrate compliance with the requirement)
<b>M2.</b>	The Bidder’s proposed resource must have a Bachelor degree in one of the following disciplines: mathematics, physics, engineering, computer science, oceanography or geomatics from a Canadian University or equivalent from a foreign institution.	
<b>M3.</b>	The Bidder’s proposed resource must have a minimum of two years of experience, attained within the last five years of the date of solicitation closing, in programming and analyzing data in a Linux environment using the Matlab programming language.	



## 2. POINT-RATED EVALUATION CRITERIA

Each Technical Proposal that meets all the Mandatory Requirements specified above will be evaluated and scored in accordance with the following point-rated evaluation criteria.

### Resource: SMTI Research Scientist

#	Evaluation Criteria	Scoring Method	Self-evaluative Score	Cross Reference to supporting information (Demonstrate compliance with the requirement)
<b>R.1</b>	<p>The Bidder's proposed resource has a PhD degree in any one of the following disciplines: mathematics, physics, engineering, computer science, oceanography or geomatics from a Canadian University or equivalent from a foreign institution.</p> <p>This can be demonstrated via:</p> <ul style="list-style-type: none"> <li>- copy of the PhD certificate, or</li> <li>- Letter from the University</li> </ul>	5 points		
<b>R.2</b>	<p>The Bidder's proposed resource has authored professional, peer-reviewed, publications on Radar R&amp;D topics, including SAR-SMTI theory and research result, in refereed journals, reports or conferences.</p> <p>Only publications since January 1, 2006 will be accepted.</p> <p>All references to professional publication must be verifiable by Canada, and should be in a MLA (Modern Language Association) or equivalent, work cited format.</p>	1 point per publication, up to 10 points.		
<b>R.3</b>	The Bidder's proposed resource's authored	1 point per citation, up		



	<p>professional publications, cited in response to point-rated criteria R.2, on Radar R&amp;D topics, are creditable.</p> <p>This can be demonstrated by the Bidder proving that the subject publications have received citations in professional journals or professional conference papers, positively supporting the subject publications or used to support other arguments.</p> <p>Only citations since January 1, 2006 will be accepted.</p> <p>All references to citations must be verifiable by Canada and should be in a <b>MLA</b> (Modern Language Association) or equivalent, work cited format.</p>	<p>to 10 points.</p>		
<b>R.4</b>	<p>The Bidder's proposed resource has performed research and has written technical notes and/or reports on coherent radar signals.</p> <p>Only technical notes or reports written after January 1, 2011 will be accepted.</p>	<p>1 point for each technical note or report, up to 5 points.</p>		
<b>R.5</b>	<p>The Bidder's proposed resource has experience performing research and writing technical notes and/or reports on the detection and measurement of moving targets using radar data.</p> <p>Only technical notes or reports written after January 1, 2011 will be</p>	<p>1 point for each technical note or report, up to 5 points.</p>		





	accepted.			
<b>R.6</b>	The Bidders proposed resource has written or modified a synthetic aperture radar ground moving target signal processor.  Only experience from January 1, 2011 will be accepted.	1 point = 1 project 3 points = 2 projects 5 points = more than 2 projects		
<b>Maximum Points Available:</b>		<b>40</b>		
<b>Minimum Pass Score Required:</b>		<b>20</b>		
<b>Bidder's Self-Score:</b>				

**Resource: Radar Data Specialist**

<b>Radar Data Specialist: RATED EVALUATION CRITERIA</b>				
	<b>Evaluation Criteria</b>	<b>Scoring Method</b>	<b>Score</b>	<b>Cross Reference to supporting information (Demonstrate compliance with the requirement)</b>
<b>R7.</b>	The Bidder's proposed resource has formal scientific or technical training, beyond a Bachelor's degree, in radar science or software development.  Acceptable demonstration will be a copy of the course completion certificate for each science or engineering course taken from universities, professional organizations, government agencies or specialized companies.	2 Points = 1 course taken 4 Points = 3 courses taken 5 Points = 4 or more courses taken.		
<b>R8.</b>	The Bidder's proposed resource has experience maintaining and supporting a computer system that is focused on	Points will be awarded based on years		



	<p>research and development activities.</p> <p>Only experience from January 1, 2011 will be accepted.</p>	<p>of experience, as outlined below, to a maximum of 5 points.</p> <p>1 to &lt; 2 years = 1 point</p> <p>2 to &lt; 3 years = 2 points</p> <p>3 to &lt; 4 years = 3 points</p> <p>4 to &lt; 5 years = 4 points</p> <p>5 or more years = 5 points</p>		
<b>R9.</b>	<p>The Bidder's proposed resource has experience developing and/or testing and/or maintaining research and development software for radar signal data analysis.</p> <p>Only experience from January 1, 2011 will be accepted.</p>	<p>Points will be awarded based on years of experience, as outlined below, to a maximum of 5 points.</p> <p>1 to &lt; 2 years = 1 point</p> <p>2 to &lt; 3 years = 2 points</p> <p>3 to &lt; 4 years = 3 points</p> <p>4 to &lt; 5 years = 4 points</p> <p>5 or more years = 5 points</p>		
<b>R.10</b>	<p>The Bidder's proposed resource has experience in processing and analysis of radar moving target data.</p>	<p>Points will be awarded based on years of experience,</p>		



	<p>Only experience from January 1, 2011 will be accepted.</p>	<p>as outlined below, to a maximum of 5 points.</p> <p>1 to &lt; 2 years = 1 point</p> <p>2 to &lt; 3 years = 2 points</p> <p>3 to &lt; 4 years = 3 points</p> <p>4 to &lt; 5 years = 4 points</p> <p>5 or more years = 5 points</p>		
<b>R.11</b>	<p>The Bidder's proposed resource has experience in developing graphical user interface software.</p> <p>Only experience from January 1, 2011 will be accepted.</p>	<p>Points will be awarded based on years of experience, as outlined below, to a maximum of 5 points.</p> <p>1 to &lt; 2 years = 1 point</p> <p>2 to &lt; 3 years = 2 points</p> <p>3 to &lt; 4 years = 3 points</p> <p>4 to &lt; 5 years = 4 points</p> <p>5 or more years = 5 points</p>		
	<b>Maximum Points Available:</b>		<b>25</b>	
	<b>Minimum Pass Score Required:</b>		<b>15</b>	
	<b>Bidders Self-Score:</b>			



	Section	Bidders Self-Score
	<b>Resource: SMTI Research Scientist</b> (40 Max Points)	
	<b>Resource: Radar Data Specialist.</b> (25 Max Points)	
	<b>TOTAL Points (65 Max Points)</b>	



## PART 5 - CERTIFICATIONS

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

The certifications provided by bidders to Canada are subject to verification by Canada at all times. 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 may render the bid non-complaint or constitute a default under the Contract.

### 1.0 Certifications Required Precedent to Contract Award

#### 1.1 Integrity Provisions – Required Documentation

In accordance with the Ineligibility and Suspension Policy (<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.

#### 1.2 FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a Contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit [Employment and Social Development Canada \(ESDC\)-Labour's](#) website.

Date: \_\_\_\_\_ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

( ) A1. The Bidder certifies having no work force in Canada.

( ) A2. The Bidder certifies being a public sector employer.

( ) A3. The Bidder certifies being a federally regulated employer being subject to the Employment Equity Act.

( ) A4. The Bidder certifies having a combined work force in Canada of less than 100 employees (combined work force includes: permanent full-time, permanent part-time and temporary employees [temporary employees only includes those who have worked 12 weeks or more during a calendar year and who are not full-time students]).

A5. The Bidder has a combined workforce in Canada of 100 or more employees; and



( ) A5.1. The Bidder certifies already having a valid and current Agreement to Implement Employment Equity (AIEE) in place with ESDC-Labour.

**OR**

( ) A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

( ) B1. The Bidder is not a Joint Venture.

**OR**

( ) B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

### **1.3 Former Public Servant - Competitive Requirements**

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, 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**

As per the above definitions, is the Bidder a FPS in receipt of a pension? Yes ( ) No ( )

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

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

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

### **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.

## **1.4 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 (technical evaluation must be equal or higher). 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.



### **1.5 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.

### **1.6 Canadian Content Certification**

This procurement is limited to Canadian services.

The Bidder certifies that:

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

### **1.7 SACC Manual clause A3050T (2014-11-27), Canadian Content Definition**

## **2. Acknowledgment:**

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

The bid must contain no condition. Any condition, whatsoever, will render the bid non-responsive.

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_





## **PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

### **1. Security Requirement**

1. Before award of a contract, the following conditions must be met:
  - a) The Contractor must, at all times during the performance of the Contract, hold a valid Facility Security Clearance at the level of Secret, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
  - b) This contract includes access to **Controlled Goods**. Prior to access, the Contractor must be registered in the Controlled Goods Program of Public Works and Government Services Canada (PWGSC).
  - c) The Contractor personnel requiring access to CLASSIFIED information, assets or sensitive work site(s) must EACH hold a valid personnel security screening at the level of Secret, granted or approved by CISD/PWGSC.
  - d) The Contractor MUST NOT remove any CLASSIFIED information from the identified work site(s), and the Contractor must ensure that its personnel are made aware of and comply with this restriction.
  - e) Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.
  - f) The Contractor must comply with the provisions of the:
    - a. Security Requirements Check List and security guide (if applicable), attached at Annex C
    - b. *Industrial Security Manual* (Latest Edition).

### **2. Financial Capability**

*Manual SACC clause A9033T (2012-07-16) Financial Capability*

### **3. Controlled Goods Requirement**

*SACC Manual clause [A9130T](#) (2014-11-27) Controlled Goods Program*



## PART 7 - RESULTING CONTRACT CLAUSES

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

### 1.0 Statement of Work

The Contractor must perform the work in accordance with the Statement of Work at Annex A.

### 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 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.

#### 2.1 General Conditions

2040 (2016-04-04) General Conditions – Research and Development Services as modified by:

#### 2.3 Supplemental General Conditions

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

#### 2.3 SACC Manual Clauses

K3410C (2015-02-25) Canada to Own Intellectual Property Rights in Foreground Information  
K3315C (2008-05-12) License to Intellectual Property Rights in Canada-owned Information  
K3310C (2008-05-12) No Right for Contractor to Sub-license  
K3305C (2008-05-12) License to Intellectual Property Rights in Foreground Information  
B4060C (2011-05-16) Controlled Goods

### 3. Security Requirement

- a) The Contractor must, at all times during the performance of the Contract, hold a valid Facility Security Clearance at the level of Secret, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).
- b) This Contract includes access to Controlled Goods. Prior to access, the Contractor must be registered in the Controlled Goods Program of Public Works and Government Services Canada (PWGSC).
- c) The Contractor personnel requiring access to CLASSIFIED information, assets or sensitive work site(s) must EACH hold a valid personnel security screening at the level of Secret, granted or approved by CISD/PWGSC.
- d) The Contractor MUST NOT remove any CLASSIFIED information from the identified work site(s), and the Contractor must ensure that its personnel are made aware of and comply with this restriction.
- e) Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.
- f) The Contractor must comply with the provisions of the:



- a. Security Requirements Check List and security guide, attached at Annex C
- b. *Industrial Security Manual* (Latest Edition).

#### **4. Term of Contract**

##### **4.1 Period of the Contract**

The Contract is for a 2 year period from date of contract award.

##### **4.2 Option to Extend the Contract**

The Contractor grants to Canada the irrevocable option to extend the term of the Contract by up to 3 additional 1 year periods under the same conditions. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

Canada may exercise this option at any time by sending a written notice to the Contractor at least 1 calendar day prior to the Contract expiry date. The option may only be exercised by the Contracting Authority, and will be evidenced for administrative purposes only, through a contract amendment.

##### **4.3 Transition Period**

The Contractor acknowledges that the nature of the services provided under the Contract requires continuity and that a transition period may be required at the end of the Contract. The Contractor agrees that Canada may, at its discretion, extend the Contract by a period of 6 months under the same conditions to ensure the required transition. The Contractor agrees that, during the extended period of the Contract, it will be paid in accordance with the applicable provisions as set out in the Basis of Payment.

The Contracting Authority will advise the Contractor of the extension by sending a written notice to the Contractor at least 1 calendar days before the contract expiry date. The extension will be evidenced for administrative purposes only, through a contract amendment.

#### **5. Authorities**

##### **5.1 Contracting Authority**

The Contracting Authority for the Contract is:

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

Telephone: (873) 469-4832  
Facsimile: (819) 997-2229



E-mail address: [Joseph.Hulse@pwgsc.gc.ca](mailto:Joseph.Hulse@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.

## 5.2 Technical Authority

The Technical Authority for the Contract is:

(To be entered at contract award)

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Organization: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_ - \_\_\_\_ - \_\_\_\_

Facsimile: \_\_\_\_ - \_\_\_\_ - \_\_\_\_

E-mail address: \_\_\_\_\_

The Technical 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 Technical Authority; however, the Technical 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.

## 5.3 Procurement Authority

The Procurement Authority for the Contract is:

(To be entered at 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.

## 5.4 Contractor's Representative

(To be entered at contract award)

## 6. Proactive Disclosure of Contracts with Former Public Servants

[SACC Manual Clause A3025C \(2013-03-21\)](#)

## 7. Payment

### 7.1 Basis of Payment



## 7.2 Limitation of Expenditure

1. The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work, if applicable, as determined in accordance with the Basis of Payment in Annex B , to a limitation of expenditure of \$\_\_\_\_\_ (amount to be inserted at contract award). Customs duties are included and Applicable Taxes are extra.
2. No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum;
  - (a) when it is 75 percent committed, or
  - (b) four (4) months before the Contract expiry date, or
  - (c) as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work, inclusive of any revisions,whichever comes first.
3. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

## 7.3 Method of Payment

H1008C (2008-05-12) Monthly Payment

## 7.4 SACC Manual Clauses

A9117C (2007-11-30), T1204 - Direct Request by Customer Department  
C0711C (2008-05-12), Time Verification  
C0305C (2014-06-26), Cost Submission  
C2000C (2007-11-30), Taxes - Foreign-based Contractor  
C2605C (2008-05-12), Canadian Customs Duties and Sales Tax - Foreign-based Contractor

## 7.5 Discretionary Audit (may be deleted by the contracting authority, at its sole discretions, at contract award)

C0705C (2012-01-11), Discretionary Audit - Commercial Goods and/or Services

## 8. 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.

Each invoice must be supported by:

- a. a copy of time sheets to support the time claimed;



- c. a copy of the invoices, receipts, vouchers for pre-approved all travel and living expenses;
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.

## **9. Certifications**

### **9.1 Compliance**

Compliance with the certifications and related documentation 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, provide the related documentation or if 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.

### **9.2 Federal Contractors Program for Employment Equity - Default by the Contractor**

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "[FCP Limited Eligibility to Bid](#)" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

### **9.3 SACC Manual Clause**

A3060C (2008-05-12) Canadian Content Certification

## **10. 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).

## **11. Priority of Documents**

If there is a discrepancy between the wordings 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.

- (1) the Articles of Agreement;
- (2) supplemental general conditions K3410C (2015-02-25) ) Canada to Own Intellectual Property Rights in Foreground Information
- (3) 4002 (2010-08-16) Software Development or Modification Services;
- (4) the general conditions 2040 ([2016-04-04](#)), General Conditions - Research & Development;
- (5) Annex A, Statement of Work;
- (6) [Annex B, Basis of Payment](#);



- (7) Annex C, DND 626 Task Authorization Form; [and](#),
- (8) the Contractor's bid dated \_\_\_\_\_.

## **12. Insurance**

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

## **13. Foreign Nationals (Canadian Contractor)**

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

## **14. Canadian Forces Site Regulations**

The Contractor must comply with all standing orders or other regulations, instructions and directives in force on the site where the Work is performed.

## **15. Controlled Goods Program**

A9131C (2014-11-27) Controlled Goods Program



## **ANNEX A Statement of Work**

### **1. TITLE**

Space-based radar surface moving target applications research

### **2. BACKGROUND**

RADARSAT-2 was launched on December 14, 2007. Incorporated into the satellite design is a set of experimental synthetic aperture radar (SAR) operating modes that have been designed to detect moving objects on and near the surface of the earth and to measure their properties. This set of Surface Moving Target Indication (SMTI) modes is titled Moving Object Detection Experiment (MODEX) and was developed under the Department of National Defence (DND). Defence Research and Development Canada (DRDC) Ottawa has developed the mode properties and data analysis capabilities to understand the science that underlies these measurements and to develop tools for their processing and exploitation. Internationally, other organizations have developed and flown related satellite radar modes.

The DRDC work to date has been accomplished by DRDC Ottawa personnel with the assistance of contract staff. During the course of this research, considerable expertise, a SMTI signal processor and a large suite of custom data analysis tools have accumulated at DRDC Ottawa and a number of government to government research activities have been initiated. Because of licensing arrangements and the structure of the data processing systems, many of the processing and analysis tools must be used on site at DRDC Ottawa.

During the coming research period, the focus has shifted from the development of moving target measurement science to the application of this learning to support DND operating objectives and investigations are focusing on the problem of how to use the existing experimental tools to define possible future capabilities and the space systems needed to achieve an operational space-based SAR-SMTI capability. Ongoing research and development (R&D) work will focus on: calibration of the Radarsat-2 SMTI mode data, determination of the SMTI measurement limits of Radarsat-2, determination of measurement capabilities required for a future, operational, space-based SAR-SMTI radar system, detection and measurement of typical moving targets in land and marine arctic environments, development and testing of measurement and information extraction algorithms and development, testing and integration of modules for the DRDC SAR-SMTI processor.

All SMTI measurements are based on the analysis of MODEX signal data that have been pre-processed to analyzable form by the DRDC SMTI preprocessor. Surface truth data (when it is available) will be analyzed and correlated with SMTI measurement results.

DRDC requires two resources to complete the Work:

1. RADAR Data Specialist
2. SMTI Research Scientist

Some of the software products developed under this work will be controlled technical data.

### **3. ACRONYMS**

CG	Controlled Good
DND	Department of National Defence
DRDC	Defence Research and Development Canada
MODEX	Moving object detection experiment





RCS	Radar cross section
SMTI	Surface moving target indication This term is considered to be equivalent to the more common term GMTI (ground moving target indication)
SOW	Statement of Work
TA	Technical Authority
SAR	Synthetic Aperture Radar

#### 4. TECHNICAL ENVIROMENT

##### **RADAR Data Specialist**

The Radar Data Specialist will be working with the following software and software tool environment

- Linux; Computer operating system
- Windows7 Computer operating system
- SAMBA: Computer interface
- BACULA: System backup software for Linux
- Webmin: System configuration
- MySQL: Database management
- PostgresSQL Database
- C or C++ Programming language
- Python Programming language
- Matlab High-level programming language
- XML Mark-up language
- Firefox Web browser
- MS Office 10 Software suite
- LaTeX Publishing software (optional)
- Subversion Software development control
- MDA PPM Radarsat-2 GMTI custom pre-processor
- M3SAR DRDC custom GMTI SAR processor
- Openstreetmap Map data base (data source DRDC ProMap server)
- DRDC GMTI wiki

The Radar Data Specialist will be working with a networked server system that includes a 6 TB Raid disk archive.

##### **SMTI Research Scientist**

The SMTI Research Scientist will be working with the following software environment

- Linux Computer operating system
- Windows 7 Computer operating system
- Matlab High-level programming language
- MS Office 10 Software suite
- LaTeX Publishing software (optional)
- XML Mark-up language
- M3SAR DRDC custom GMTI SAR processor
- Firefox Web Browser
- DRDC GMTI Wiki



## 5. TASKS TO BE PERFORMED

### **5.1 (Radar Data Specialist) Radarsat-2 SMTI signal data ordering and data preprocessing**

The Contractor must decrypt and preprocess Radarsat-2 SMTI signal data received from the satellite receiving station using the DRDC Radarsat-2 SMTI preprocessor software to generate sets of floating point, complex signal data suitable for SAR-SMTI processing. The Contractor must configure the preprocessor using settings required by the data set.

5.1.1 The Contractor must prepare SAR-SMTI data orders, submit these to the DRDC order desk in advance of the RADARSAT-2 EMOC deadline and must respond to order desk queries.

5.1.2 The Contractor must perform quality control testing on the pre-processed data using tools available in the pre-processor and custom software and must correct corrigible problems discovered in the data generated.

5.1.3 The Contractor must configure the preprocessor control to deliver the preprocessor output to a named directory in the DRDC Ottawa, GMTI data repository.

5.1.4 The Contractor must manage the DRDC SAR-GMTI data archive, processor and preprocessor and the data storage and data processing equipment.

5.1.5 The Contractor must manage the DRDC SAR-GMTI system configuration and software (including licenses)

5.1.6 The Contractor must maintain and augment the SAR-GMTI database.

### **5.2 Radarsat-2 SMTI signal processing**

The Contractor must process Radarsat-2 SMTI signal data to detect, extract and measure moving targets in the data set.

5.2.1 (Radar Data Specialist) When new data are received, the contractor must perform an initial data quality analysis processing run to assess channel coherence, scene content, metadata completeness and accuracy. If data quality issues are detected the Contractor will return to the preprocessing step using additional information from the processing test and will issue a problem report that details the issues found. The Contractor must update the Radarsat-2 GMTI Wiki Imagery database with metadata derived from the quality control processing metadata.

5.2.2 (SMTI Research Scientist) The Contractor must use knowledge of SAR-SMTI theory, properties of the satellite radar mode and knowledge of the target types to be measured to define the processor configurations to be used to address specific research problems. When defining the processor configuration, the Contractor must use target type and scene content knowledge to identify and minimize sampling ambiguity artifacts that degrade moving target identification and measurements. Several processing iterations may be required depending on the specific R&D problem being addressed.

5.2.3 (SMTI Research Scientist) The Contractor must investigate SAR-SMTI signal processing artifacts discovered in signal processing work and determine mitigation procedures.

5.2.4 (SMTI Research Scientist) The Contractor must refine and test existing SAR-SMTI processor modules or must write and test new SAR-SMTI processor modules based on advances on SAR-SMTI theory or in response to R&D knowledge gained during this contract.



### **5.3 (SMTI Research Scientist) SMTI signal data analysis**

The Contractor must analyze Arctic and selected other SAR-SMTI MODEX data sets to detect, measure and characterize land and marine moving targets and must compile and report analysis results.

5.3.1 The Contractor must investigate the use of synthetic moving targets to determine the target radar cross section (RCS) and target velocity measurement limitations of the Radarsat-2 SAR-SMTI radar system. The moving target RCS must be defined in square meters with respect to the radar noise floor in the SAR-SMTI scene.

5.3.2 The Contractor must analyze received static and moving target data to refine and validate the calibration of the Radarsat-2 MODEX modes.

5.3.3 The Contractor must propose and investigate new and refined SMTI signal processing and information extraction algorithms. Where promising new or improved approaches are revealed, the Contractor must develop new information extraction tools and must develop new SMTI processor software when this is appropriate.

5.3.4 The Contractor must report moving target results from each scene analyzed and must determine and report the measurement tolerances or reliability estimates for each target found.

### **5.4 (SMTI Research Scientist) SMTI R&D investigations**

Subject to data availability and schedule pressures resulting from R&D outcomes the Contractor's R&D investigations must address:

5.4.1-Radarsat-2 SMTI target detection limits in terms of target type, target RCS and target speed in Arctic land and marine terrain under winter and summer conditions.

5.4.2 Radarsat-2 SMTI mode calibration.

5.4.3 SMTI signatures of moving targets typically found in the Canadian Arctic.

5.4.4 Land-water interface boundaries (land mask) along Arctic shipping routes.

5.4.5 Typical Arctic vehicle motion patterns that are detectable by Radarsat-2 SMTI measurements of communities and transportation routes.

### **5.5 (SMTI Research Scientist) Future space-based SAR-SMTI design recommendations**

The Contractor must evaluate the SAR SMTI knowledge developed by DRDC and must investigate requirements for a future space-based SAR-SMTI system that can be derived from available evidence.

## **6. DELIVERABLES**

### **6.1 Deliverables for task 5.1**

6.1.1 For task 5.1.1 the Contractor must enter appropriate preprocessor metadata into the data imagery page in the DRDC SMTI Wiki. When the received data cannot be recovered, the Contractor must submit a short E-mail report to the TA that details the problem encountered. The Contractor must submit a similar report to the TA if only part of the data is recoverable.



6.1.2 For task 5.1.2 the Contractor must deliver preprocessor output files in the format generated by the preprocessor (GeoTiff, BSQ, complex real signal data and metadata) to a named data directory in the DRDC SMTI data repository.

## **6.2 Deliverables for task 5.2**

6.2.1 For task 5.2.1 the Contractor must update the Radarsat-2 GMTI Wiki imagery page with metadata from the quality control processing operations. When data quality problems are encountered, the Contractor must submit an E-mail report to the TA detailing the problems encountered and their resolution.

6.2.2 For tasks 5.2.2 and 5.2.3 The contractor must submit a processing record that details processor configurations used in accomplishing signal analysis tasks and discusses processing artifacts discovered and mitigation procedures used to the RADARSAT-2 SMTI Wiki when specific analysis tasks are completed. The Wiki records must be dated and may contain dated updates.

6.2.3 For task 5.2.4 if new or improved tools are developed and/or if SMTI processor upgrades are proposed, the Contractor must deliver software source code and the algorithm(s) that it implements to the TA in a MS Word or PDF report that details the problem addressed, the solution found and test results showing enhanced processor performance (tests will be conducted on a processor copy). If the processor improvement is accepted for inclusion in the DRDC SAR-SMTI processor, the Contractor must install the updated or new module into the DRDC SAR-SMTI processor and must update the processor documentation.

## **6.3 Deliverables for Task 5.3**

The Contractor must report analysis details and outputs from the tasks in section 5.3 as records in the Radarsat-2 SMTI Wiki and as sections of R&D reports for the tasks in section 5.4.

## **6.4 Deliverables for Task 5.4**

The Contractor must report the outcomes of tasks 5.4.1 to 5.4.5 in MS Word or PDF documents in the DRDC Contractor report format as Contractor reports to the TA. The reports must contain sections that describe analysis theory, procedures and results from the appropriate tasks in the task 5.3 group. In some cases, when directed by the TA, the contractor must contribute sections to scientific literature papers or DRDC scientific reports describing specific work done.

## **6.5 Deliverables for Task 5.5**

The Contractor must deliver recommendations for future space-based SAR-SMTI radar design features to the TA as a DRDC SMTI Wiki entry that contains the recommendations made and the evidence that supports them.

## **7. DATE OF DELIVERY**

**Deliverable 6.1:** Within 3 working days (per data set) of the receipt of new data.

**Deliverable 6.2.1:** Within one week of the receipt of preprocessor output data

**Deliverable 6.2.2:** Within one week of the completion of the tasks being reported

**Deliverable 6.2.3:** Within two months of the announcement of the discovery of a new tool, a tool upgrade of a SMTI processor upgrade

**Deliverable 6.3:** Wiki records must be inserted/updated monthly. Report sections must be delivered according to the report schedules



**Deliverable 6.4:** Contractor reports must be delivered within two months following the completion of the reported tasks and no later than one month prior to the end of the contract.

**Deliverable 6.5:** No later than one month prior to the end of the contract.

## **8. LANGUAGE OF WORK**

All work must be in English.

## **9. LOCATION OF WORK**

The work must be performed at DRDC due to the controlled goods nature of the data and the proprietary tools:

Defence Research and Development Canada – Ottawa Research Centre  
Building T86  
3701 Carling Ave  
Ottawa, Ontario.  
Postal code  
Canada

## **10. TRAVEL**

The Contractor is not required to travel.

## **11. MEETINGS**

A Contractor management representative will meet with the TA every 6 months to review progress and to adjust R&D priorities.

## **12. GOVERNMENT SUPPLIED MATERIAL (GSM)**

**GSM 1:** Access to the DRDC SMTI publication set

**GSM 2:** Access to the DRDC SMTI data archive

**GSM 3:** Access to the DRDC SMI processor and preprocessor

## **13. SPECIAL CONSIDERATIONS AND GOVERNMENT FURNISHED EQUIPMENT**

The resources will be provided with the following from the TA:

- Access (with editing rights) to the DRDC SMTI Wiki.
- Access to the DRDC GMTI project publication set.
- DreNet account.
- Access (with operating privileges) to the DRDC SMTI pre-processor.
- Access (with operating privileges) to the DRDC SMTI processor.
- Access to the DRDC SMTI computers and file system.
- DRDC Ottawa site access.
- Office space.
- Use of a SMTI project computer.
- Use of a computer



**ANNEX B  
BASIS OF PAYMENT**

**1. LABOUR:**

The Contractor will be paid firm all-inclusive hourly rates for work performed in accordance with the Contract. Customs duties are included and Applicable Taxes are extra, if applicable.

Labour Category	Contract Period		Option Period 1	Option Period 2	Option Period 3	Optional Transition Period
	<b>Firm All Inclusive Hourly Rate Per Resource</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>6 Months</b>
RADAR Data Specialist	\$	\$	\$	\$	\$	\$
SMTI Research Scientist	\$	\$	\$	\$	\$	\$

**TOTAL ESTIMATED LABOUR (Contract Period): \$ \_\_\_\_\_**  
**(Applicable Taxes extra)**

**ESTIMATED COST TO A LIMITATION OF EXPENDITURE CUMULATIVE TOTAL OF ALL TASK AUTHORIZATIONS:** \$ \_\_\_\_\_  
**(Applicable Taxes extra)**



**ANNEX C**  
**DND 626 Task Authorization form**

DEPARTMENT OF NATIONAL DEFENCE  
**TASK AUTHORIZATION**

MINISTÈRE DE LA DÉFENSE NATIONAL  
**AUTORISATION DES TÂCHES**

ALL INVOICES, SHIPPING BILLS, AND PACKING SLIPS MUST SHOW THE FOLLOWING AGREEMENT, REFERENCE NUMBERS.  
TOUTES LES FACTURES, TOUS LES CONNAISSEMENTS ET BORDEREAUX D'EMBALLAGE DOIVENT INDIQUER LES NUMÉROS SUIVANTS RELATIFS AU CONTRAT.

Cost Centre	Organisation Code Code d'organisation	COMFEM/ FMAS	S.A. Sous Rep	WBS/Internal Order	G/L Account	Amount Montant	*Agreement/Contract No. **No de la convention ou du contrat
9-15	22-27	28-34	35-36	37-41	42-46	47-56	
						\$ (including GST)	Requ. No. - No de la demande TASK No.

TO - A

Company Name and Address:

ATTN: Company Contract Manager Name

DELIVER TO - EXPÉDIEZ A

DELIVERY DATE - DATE DE LIVRAISON

**TO THE CONTRACTOR**

You are requested to supply the following materiel/services in accordance with the terms of the above reference contract. Only materiel/services included in the contract shall be supplied against this task.  
Each delivery shall be accompanied by a packing note or delivery slip.  
Please advise the undersigned if the delivery date cannot be met. Invoices shall be prepared in accordance with the instructions set out in the contract.

**A L'ENTREPRENEUR**

Vous êtes prié de fournir le matériel ou les services suivants en conformité des termes du contrat mentionné ci-dessus. Seuls le matériel ou les services mentionnés dans le contrat doivent être fournis à l'appui de cette demande. Chaque livraison doit être accompagnée d'un bordereau d'emballage ou de livraison. Prière d'aviser le signataire si la livraison ne peut se faire dans les délais prescrits. Les factures doivent être établies selon les instructions énoncées dans le contrat.

Date

for Department of National Defence  
Pour le Ministère de la Défense Nationale

Date

for DRDC Procurement Authority  
Pour l'autorité d'approvisionnement du RDDC

Contract Item No. No d'article du contrat	Materiel/Services Matériel/Services	Cost Prix

GST/HST  
TPS/TVH

Total

APPLICABLE ONLY TO PWGSC CONTRACTS: The Contract Authority signature is required when the total value of the DND 626 exceeds the threshold specified in the contract.

NE S'APPLIQUE QU'ÀUX CONTRATS DE TPSCG : La signature de l'autorité contractante est requise lorsque la valeur totale du formulaire DND 626 est supérieure au seuil précisé dans le contrat.

for the Department of Public Works and Government Services  
pour le ministère des Travaux publics et services gouvernementaux





Instructions for completing DND 626 - Task Authorization	Instructions pour compléter le formulaire DND 626 - Autorisation des tâches
<p><b>Contract no.</b> Enter the PWGSC contract number in full.</p>	<p><b>N° du contrat</b> Inscrivez le numéro du contrat de TPSGC en entier.</p>
<p><b>Task no.</b> Enter the sequential Task number.</p>	<p><b>N° de la tâche</b> Inscrivez le numéro de tâche séquentiel.</p>
<p><b>Amendment no.</b> Enter the amendment number when the original Task is amended to change the scope or the value.</p>	<p><b>N° de la modification</b> Inscrivez le numéro de modification lorsque la tâche originale est modifiée pour en changer la portée.</p>
<p><b>Increase/Decrease</b> Enter the increase or decrease total dollar amount including taxes.</p>	<p><b>Augmentation/Réduction</b> Inscrivez le montant total de l'augmentation ou de la diminution, y compris les taxes.</p>
<p><b>Previous value</b> Enter the previous total dollar amount including taxes.</p>	<p><b>Valeur précédente</b> Inscrivez le montant total précédent, y compris les taxes.</p>
<p><b>To</b> Name of the contractor.</p>	<p><b>A</b> Nom de l'entrepreneur.</p>
<p><b>Delivery location</b> Location where the work will be completed, if other than the contractor's location.</p>	<p><b>Expédiez à</b> Endroit où le travail sera effectué, si celui-ci diffère du lieu d'affaires de l'entrepreneur.</p>
<p><b>Delivery/Completion date</b> Completion date for the task.</p>	<p><b>Date de livraison/d'achèvement</b> Date d'achèvement de la tâche.</p>
<p><b>for the Department of National Defence</b> Signature of the DND person who has delegated Authority for signing DND 626 (level of authority based on the dollar value of the task and the equivalent signing authority in the delegation of financial authorities). <b>Note:</b> the person signing in this block ensures that the work is within the scope of the contract, that sufficient funds remain in the contract to cover this task and that the task is affordable within the Project/UNIT budget.</p>	<p><b>pour le ministère de la Défense nationale</b> Signature du représentant du MDN auquel on a délégué le pouvoir d'approbation en ce qui a trait à la signature du formulaire DND 626 (niveau d'autorité basé sur la valeur de la tâche et le signataire autorisé équivalent mentionné dans les délégations des pouvoirs financiers). <b>Note :</b> la personne qui signe cette attache de signature confirme que les travaux respectent la portée du contrat, que suffisamment de fonds sont prévus au contrat pour couvrir cette tâche et que le budget alloué à l'unité ou pour le projet le permet.</p>
<p><b>Matériel/Services</b> Define the requirement briefly (attach the SOW) and identify the cost of the task using the contractor's quote on the level of effort. The Task must use the basis of payment stipulated in the contract. If there are several basis of payment then list here the one(s) that will apply to the task quote (e.g. milestone payments; per diem rates/labour category hourly rates; travel and living rates; firm price/ceiling price, etc.). All the terms and conditions of the contract apply to this Task Authorization and cannot be ignored or amended for this task. Therefore it is not necessary to restate these general contract terms and conditions on the DND 626 Task form.</p>	<p><b>Matériel/Services</b> Définissez brièvement le besoin (joignez l'ET) et établissez le coût de la tâche à l'aide de la soumission de l'entrepreneur selon le niveau de difficulté de celle-ci. Les modalités de paiement stipulées dans le contrat s'appliquent à la tâche. Si plusieurs d'entre elles sont prévues, énumérez ici celle/celles qui s'appliqueront à la soumission pour la tâche à accomplir (p.ex. acompte fondé sur les étapes franchies; taux quotidien ou taux horaire établi selon la catégorie de main-d'oeuvre; frais de déplacement et de séjour; prix fixe ou prix plafond; etc.). Toutes les modalités du contrat s'appliquent à cette autorisation de tâche et ne peuvent être négligées ou modifiées quant à la tâche en question, il n'est donc pas nécessaire de répéter ces modalités générales afférentes au contrat sur le formulaire DND 626.</p>
<p><b>Cost</b> The cost of the Task broken out into the individual costed items in Services.</p>	<p><b>Prix</b> Mentionnez le coût de la tâche en le répartissant selon les frais afférents à chaque item mentionné dans la rubrique Services.</p>
<p><b>GST/HST</b> The GST/HST cost as appropriate.</p>	<p><b>TPS/TVH</b> Mentionnez le montant de la TPS/TVH, s'il y a lieu.</p>
<p><b>Total</b> The total cost of the task. The contractor may not exceed this amount without the approval of DND indicated on an amended DND 626. The amendment value may not exceed 50% (or the percentage for amendments established in the contract) of the original value of the task authorization. The total cost of a DND 626, including all amendments, may not exceed the funding limit identified in the contract.</p>	<p><b>Total</b> Mentionnez le coût total de la tâche. L'entrepreneur ne peut dépasser ce montant sans l'approbation du MDN, formulaire DND 626 modifié à l'appui. Le coût de la modification ne peut pas être supérieur à 50 p. 100 du montant initial prévu dans l'autorisation de tâche (ou au pourcentage prévu dans le contrat pour les modifications). Le coût total spécifié dans le formulaire DND 626, y compris toutes les modifications, ne peut dépasser le plafond de financement mentionné dans le contrat.</p>
<p><b>Applicable only to PWGSC contracts</b> This block only applies to those Task Authorization contracts awarded by PWGSC. The contract will include a specified threshold for DND sole approval of the DND 626 and a percentage for DND to approve amendments to the original DND 626. Tasks that will exceed these thresholds must be passed to the PWGSC Contracting Authority for review and signature prior to authorizing the contractor to begin work.</p>	<p><b>Ne s'applique qu'aux contrats de TPSGC</b> Le présent paragraphe s'applique uniquement aux autorisations de tâche accordées par TPSGC. On inscrira dans le formulaire DND 626 un plafond précis qui ne pourra être approuvé que par le MDN et un pourcentage selon lequel le MDN pourra approuver des modifications au formulaire DND 626 original. Les tâches dont le coût dépasse ces plafonds doivent être soumises à l'autorité contractante de TPSGC pour examen et signature avant qu'on autorise l'entrepreneur à débiter les travaux.</p>
<p><b>Note:</b> Work on the task may not commence prior to the date this form is signed by the DA Authority - for tasks within the DND threshold, and by both DND and PWGSC for those tasks over the DND threshold.</p>	<p><b>Note :</b> Les travaux ne peuvent commencer avant la date de signature de ce formulaire par le responsable du MDN, pour les tâches dont le coût est inférieur au plafond établi par le MDN, et par le MDN et TPSGC pour les tâches dont le coût dépasse le plafond établi par le MDN.</p>