



**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Travaux publics et Services gouvernementaux  
Canada  
Place Bonaventure,  
800 rue de la Gauchetière Ouest  
Voir aux présentes - See herein  
Montréal  
Québec  
H5A 1L6  
FAX pour soumissions: (514) 496-3822

**SOLICITATION AMENDMENT**  
**MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Travaux publics et Services gouvernementaux Canada  
Place Bonaventure,  
800 rue de la Gauchetière Ouest  
Voir aux présentes - See herein  
Montréal  
Québec  
H5A 1L6

<b>Title - Sujet</b> QEYSSat - Phase A	
<b>Solicitation No. - N° de l'invitation</b> 9F064-170353/A	<b>Amendment No. - N° modif.</b> 003
<b>Client Reference No. - N° de référence du client</b> 9F064-17-0353	<b>Date</b> 2018-05-11
<b>GETS Reference No. - N° de référence de SEAG</b> PW-SMTB-545-14840	
<b>File No. - N° de dossier</b> MTB-7-40157 (545)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2018-06-06</b>	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Niquette, Caroline	<b>Buyer Id - Id de l'acheteur</b> mtb545
<b>Telephone No. - N° de téléphone</b> (514) 496-3730 ( )	<b>FAX No. - N° de FAX</b> (514) 496-3822
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

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The following precision is brought to the Request for Proposals:

**Clarification on secondary payload:**

Although the objective of this RFP is to award a contract to two prime contractors to deliver the Phase A of the QEYSSat mission, including the secondary payload, this does not preclude another contractor to partner with one of the prime contractors for the delivery of the secondary payload.

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The Request for proposals is modified as follows:

**1) On the first page of the RFP:**

**REMOVE:**

Closing date: May 30 2018 at 2 PM, Advanced Eastern Time (AET)

**INSERT:**

Closing date: June 6 at 2 PM, Advanced Eastern Time (AET)

**2) At Part 3, Section 3.1.4- Price Breakdown:**

**REMOVE:**

(d) Travel and Living Expenses: Indicate the number of trips and the number of days for each trip, the cost, destination and purpose of each journey, together with the basis of these costs which must not exceed the limits of the National Joint Council (NJC). With respect to the NJC's Directive, only the meal, private vehicle and incidental allowances specified in Appendices B, C and D of the Directive:

<http://www.njc-cnm.gc.ca/directive/travelvoyage/index-eng.php> and the other provisions of the Directive referring to "travellers", rather than those referring to "employees", are applicable. The Treasury Board Secretariat's Special Travel Authorities, also apply:

[http://www.tbs-sct.gc.ca/pubs\\_pol/hrpubs/tbm\\_113/statb-eng.asp](http://www.tbs-sct.gc.ca/pubs_pol/hrpubs/tbm_113/statb-eng.asp)

**INSERT:**

(d) Travel and Living Expenses: Indicate the number of trips and the number of days for each trip, the cost, destination and purpose of each journey, together with the basis of these costs which must not exceed the limits of the National Joint Council (NJC). With respect to the NJC's Directive, only the meal and private vehicle specified in Appendices B, C and D of the Directive:

<http://www.njc-cnm.gc.ca/directive/travelvoyage/index-eng.php>, and the other provisions of the Directive referring to "travellers", rather than those referring to "employees", are applicable and with the other provisions of the article 7 of the National Joint Council entitled "Special Travel Authorities" in the "Other related Documents" Section.

Canada will not pay the Contractor any incidental expense allowance for authorized travel.

**3) At Part 4, Section 4.2.1- Basis of Selection- Highest Rated Within Budget:**

**REMOVE:**

1. 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. meet the mandatory financial criteria;
- d. obtain the required minimum of 70 points overall for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of 100 points;
- e. obtain the required minimum 10 points for each of the following criteria: Team Expertise and Experience, Understanding of the Mission Requirements, Technology Readiness and Risk Assessment and Roadmap, and Work Plan and Technical Methodology

**INSERT:**

1. 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. meet the mandatory financial criteria;
- d. obtain the required minimum of **70 points** overall for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of 100 points;
- e. obtain the required minimum of **10 points** for each of the following criteria: P1-Team Expertise and Experience, P3-Technology Readiness and Risk Assessment and Roadmap, and P4-Work Plan and Technical Methodology;
- f. obtain the required minimum of **15 points** for the criteria: P2-Understanding of the Mission Requirements.

**4) At Attachment 1 to Part 4-Evaluation Criteria:**

**REMOVE:** Entirely

**INSERT:**

Attachment 1 to Part 4- Evaluation Criteria Rev1 attached hereto, modifying the Criteria P2- Understanding of the Mission Requirements and P5- Secondary Payload.

**ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED**

N° de l'invitation - Solicitation No.  
9F064-170353/A  
N° de réf. du client - Client Ref. No.  
20170353

N° de la modif - Amd. No.  
File No. - N° du dossier  
MTB-7-40157

Id de l'acheteur - Buyer ID  
mtb545  
N° CCC / CCC No./ N° VME - FMS

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## ATTACHMENT 1 TO PART 4

### Evaluation Criteria

#### Evaluation Criteria Summary

Item	Evaluation Criteria Title	Mandatory (M) Or Point-Rated (P)	Maximum Score	Minimum Required Score
M1	Corporate Experience with Space Projects	M	N/A	N/A
P1	Team Expertise and Experience	P	20 pts	10 pts
P2	Understanding of the Mission Requirements	P	25 pts	15 pts
P3	Technology Readiness and Risk Assessment and Roadmap	P	20 pts	10 pts
P4	Work Plan and Technical Methodology	P	20 pts	10 pts
P5	Secondary Payload	P	15 pts	0 pts
	Overall	N/A	100 pts	70 pts

## 1. Mandatory criteria

This criterion is deemed mandatory by CSA as the minimum necessary competence and capability for undertaking the work. Mandatory requirements are evaluated on a pass or fail basis and they will be evaluated very strictly as to compliancy. Therefore, no rating is associated with them. Proposals not meeting the mandatory criteria will be deemed non-responsive.

### **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; or
2. The Bidder's affiliates; or
3. The Bidder's subcontractors.

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

### **M1. Corporate Experience with Space Projects (Management Criteria)**

- 1) The Bidder must demonstrate that they have been active in business related to the following technologies being procured:
  - a. Optical Payload Design, Integration and Test
  - b. Satellite Bus, Integration and Test
- 2) The Bidder must demonstrate experience in design, manufacture, mission assurance and test of systems and software rated for operations of a satellite mission.

This criterion assesses the Bidder's experience and expertise in similar projects and how the Bidder has been active in the business related to the technology being procured.

For criteria 1), the Bidder must provide a description of at least one or more previous or current projects along with justification to demonstrate that the projects are similar or related to the two technologies being procured.

For criteria 2), the Bidder must provide a description of at least one or more previous or current projects along with justification to demonstrate that the projects are similar or related to its overall ability to deliver similar systems rated for operations in a satellite mission.

Bidders are required to provide a description of at least 2 (two) projects. In the event that the same project is used for both criteria, the Bidder must provide a description of at least one other project that meets either criteria 1) or 2).

The referenced projects must have design, manufacturing and testing phases completed.

## 2. Point-Rated Criteria

Proposals must obtain the required overall minimum points and obtain the minimum points required for each rated criterion to be assessed as responsive under the point rated technical criteria section; proposals not meeting the minimum required points will be deemed non-responsive. Only those proposals which are responsive (compliant) with all of the mandatory criteria and then achieve (or exceed) the stated minimum points required for the point rated technical criteria section will be further considered for award of a contract.

For the following criteria, when a detailed substantiation is required, Bidders are requested to provide a detailed statement of how it complies with the requirements. Cross-references to appropriate sections of the proposal should be provided when applicable and the essence of the referenced information should be summarized in the substantiation.

### P1. Team Experience with Space Projects (Management Criteria)

This criterion assesses the capability (education, knowledge, experience, expertise and complementarities) of the key resources, including subcontractors, identified to carry out the Work for Phase A, as well as the work required to accomplish the subsequent phases (B/C/D). The Bidder should demonstrate that the skills of the team include those necessary to lead teams located in different locations and through different project phases (such as requirements analysis, design, manufacturing, testing).

The Bidder must identify the Project Manager and outline his/her qualifications. The Bidder's proposed Project Manager must have been a Project Leader on a minimum of three (3) projects OR have a minimum of 5 years (60 months) of demonstrated Project Management experience within last 10 years. The demonstrated experience must be in design, manufacture and test of systems and software rated for operations of a satellite mission.

The Bidder must identify the key members of the projects' technical and management teams and state their specific qualifications and experience for the Work involved. Detailed resumes of key members must be provided in an Appendix. Names of back up personnel for key positions must also be included.

The Bidder should include an organizational chart that illustrates the structure of the proposed project team, as well as their level of effort for the Work under the Contract, as a percentage.

The key members (excluding the Project Manager) must have a combined experience in the following:

- a) Optical Payload Design, Integration and Test
- b) Satellite Bus, Integration and Test
- c) Previous or current projects delivering similar space-qualified systems

The Bidder should address the following 5 (five) capability elements:

- (1) At least one Key member has a minimum of three (3) projects OR a minimum of 5 years (60 months) of experience in optical payload design within last 10 years
- (2) At least one Key member has a minimum of three (3) projects OR a minimum of 5 years (60 months) of experience in satellite bus within last 10 years
- (3) At least one Key member has a minimum of three (3) projects OR a minimum of 5 years (60 months) of experience in delivering space-qualified systems within last 10 years

- (4) And organizational chart is included and represents all team resources
- (5) The level of effort for Phase A of each member is included

The Bidder must also include the following 3 (three) required elements in its bid:

- (1) Project Manager qualifications and experience
- (2) Key members and subcontractor qualification and experience (if subcontractors are proposed)
- (3) Backup personnel qualification and experience.

In the circumstances where sub-contractor resources are being proposed, the same requirements applicable to the prime contractor are applicable to the sub contractor's team(s).

**Level A (20 pts)**

The Bidder meets the requirements in all three (3) required elements.

-AND-

The Bidder meets 5 (five) capability elements.

**Level B (15 pts)**

The Bidder meets the requirements in all three (3) of the required elements.

-AND-

The Bidder meets 4 (four) capability elements.

**Level C (10 pts) (minimum required)**

The Bidder meets the requirements in all three (3) of the required elements.

-AND-

The Bidder meets 3 (three) capability elements.

**Level D (0 pts)**

The Bidder does not meet the minimum requirements of Level C.

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## P2. Understanding of the Mission Requirements (Technical Criteria)

The Bidder must propose a preliminary concept that demonstrates an understanding of the mission requirements, and the proposed solution must address all mandatory mission requirements provided in the User/Mission Requirements Document, CSA-MICRO-RD-0003.

The Bidder must provide requirement compliance substantiation for each requirement as listed in Table 2 hereunder. Each requirement corresponds to a specific section of the User/Mission Requirements Document, CSA-MICRO-RD-0003. Goals statements in the mission requirements (QEYS-URD-0010 to QEYS-URD-0080) do not need to be met for purposes of proposal evaluations. Table 2 should be used as a template.

“Substantiation” must be in the form of a detailed statement of how it complies with the requirements. Cross-references to appropriate sections of the proposal should be provided when applicable and the essence of the referenced information should be summarized in the substantiation.

The bidder is also asked to provide information on how they propose to potentially meet mission goals if the CSA decides to address these goals during operations phase of the mission.

**Table 2: Mission Requirements - Compliance Substantiation**

QEYSSat Mission Requirements (CSA-MICRO-RD-0003)		
Requirement Number	Requirement	Compliance Substantiation
QEYS-URD-0010	Quantum Key Distribution	
QEYS-URD-0020	Mission Duration	
QEYS-URD-0030	Satellite Re-Keying Performance	
QEYS-URD-0040	Satellite Re-Keying Reliability	
QEYS-URD-0050	Short Keys	
QEYS-URD-0060	Long-Distance Quantum Entanglement	
QEYS-URD-0070	Quantum Sources	
QEYS-URD-0080	Photon Detection Records	

**Table 3: Mission Goals - Compliance Substantiation**

<b>QEYSSat Mission Goals (CSA-MICRO-RD-0003)</b>		
<b>Requirement Number</b>	<b>Goals</b>	<b>Compliance Substantiation</b>
QEYS-URD-0090	Satellite-Based/Ground-Based Quantum Links Interface	
QEYS-URD-0100	Key Confirmation During Satellite Re-Keying	
QEYS-URD-0110	Security Certification	
QEYS-URD-0120	Uplink And Downlink Quantum Channel	

For P2 criterion, when exceeds expectations or meet expectations is required, the Bidders will be evaluated based on the following definitions:

<b>*Definition</b>	<b>Definition Description</b>
<b>Exceeds Expectations</b>	Very consistent, qualified, effective, strong, meticulous, well supported. Has a very good mastery of the topic. All of the elements are dealt with very well using a very logical approach.
<b>Meets Expectations</b>	A few small shortcomings that have an impact to some degree but not in an area of great importance; sufficient; appropriate; effective; well supported; correct; satisfactory; suitable. Has a good mastery of the topic. Most of the elements are dealt with well using a logical approach.

**Level A (25 pts)**

The proposed preliminary concept exceeds expectations\* in all 8 (eight) requirements AND compliance is fully substantiated for all 8 (eight) requirements AND the concept identifies strategy to address 4 (four) mission goals;

**Level B (20 pts)**

The proposed preliminary concept meets expectations\* in 8 (eight) requirements AND compliance is fully substantiated for 8 (eight) requirements AND the concept identifies strategy to address 2 (two) mission goals;

**Level C (15 pts) (minimum required)**

The proposed preliminary concept meets expectations\* in 8 (eight) requirements AND compliance is fully substantiated for 8 (eight) requirements;

**Level D (0 pts)**

The Bidder does not meet the requirements of Level C.

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### **P3. Technology Readiness and Risk Assessment and Roadmap**

The Bidder must elaborate its understanding of the related technology by providing an assessment of the technical risks involved with the proposed concept, as defined in section 3.3.1 in SOW. The proposal should as well identify the major assumptions upon which the project is based.

The activity planning for Phase A must be provided, as a minimum, in the form of Work Breakdown Structure (WBS) and Work Package Descriptions (WPD, CDRL 2). All activities must be cross-referenced to the Technology Development Plan such that the approach and methodology is complete and comprehensive.

To be compliant, the Bidder must address the following 3 (three) required elements:

- (1) List of CTE's (CSA-ST-FORM-0003 or Contractor format)
- (2) TRRA Report (CDRL 14 and 15 or Contractor format)
- (3) Work Package Descriptions (CDRL 2)

For P3 criterion, when exceeds expectations, meet expectations or meets some expectations is required, the Bidders will be evaluated based on the following definitions:

<b>*Definition</b>	<b>Definition Description</b>
<b>Exceeds Expectations</b>	Very consistent, qualified, effective, strong, meticulous, well supported. Has a very good knowledge of the topic. All of the main and secondary points are dealt with very well using a very logical approach.
<b>Meets Expectations</b>	A few small shortcomings that have an impact to some degree but not in an area of great importance; sufficient; appropriate; effective; well supported; correct; satisfactory; suitable. Has a good knowledge of the topic. Most of the main and secondary points are dealt with well using a logical approach.
<b>Meets Some Expectations</b>	Shortcomings in at least one major area, or many. The shortcomings may have an impact (even if limited) on some performance aspects. Sometimes makes mistakes. Some knowledge of the topic, but insufficient to deliver the service at the expected level (of quality, proficiency, etc.).  Addresses some major points and omits some secondary points (misses some elements that are key to the delivery of service).

#### Level A (20 pts)

- The Bidder addressed all 3 (three) required elements.  
-AND-
- The proposal exceeds expectations\* in presenting the technology maturity, associated risks, and required developments to meet mission needs with the proposed solution.  
-AND-
- For the given solution, the CTE's identified meet expectations\* of the essential development needs.  
-AND-
- The proposed risk mitigation activities for Phase A are fully correlated to the TRRA findings, work activities are well defined, well prioritized, decision points are clearly stated, and a clear methodology for the technology development plan is presented.

#### Level B (15 pts)

- The Bidder addressed all 3 (three) required elements.  
-AND-
- The proposal meets expectations\* in presenting the technology maturity, associated risks, and required developments to meet mission needs with the proposed solution.  
-AND-
- For the given solution, the CTE's identified meet expectations\* of the essential development needs.  
-AND-
- The proposed risk mitigation activities for Phase A are fully correlated to the TRRA findings, work activities are defined, somewhat prioritized, decision points are stated, and a methodology for the technology development plan is presented.

#### Level C (10 pts) (minimum required)

- The Bidder addressed all 3 (three) required elements.  
-AND-
- The proposal meets some expectations\* in presenting the technology maturity, associated risks, and required developments to meet mission needs with the proposed solution.  
-AND-
- For the given solution, the CTE's identified meet some expectations\* of the development needs, although gaps are present.  
-AND-
- The proposed risk mitigation activities for Phase A are somewhat correlated to the TRRA findings, work activities are defined, somewhat prioritized, decision points are stated, and a methodology for the development plan is presented.

#### Level D (0 pts)

The Bidder does not meet the minimum requirements of Level C.

#### **P4. Work Plan and Technical Methodology**

The purpose of the Work Plan is to ensure that Work is performed in the most effective manner. The Work Plan should be based on recognized management tools most applicable to the proposed project, such as a scope planning (WBS and WPD), schedule development charts (e.g. Gantt chart). Equivalent company-developed, project-tailored tools/charts are also acceptable as long as the information provided is complete and comprehensive.

This criterion assesses the suggested technical methodology and its correlation with the work plan as presented in the proposal. It also evaluates the effectiveness of the described methodology in resolving the technical challenges, in attaining the stated technical objectives of the work, in the approach for engineering development, and in meeting mission and product assurance requirements.

To be compliant, the Bidder must provide:

- (1) An overview of the technical methodology that it proposes to use. The methodology proposed must describe how the Work would be conducted through the use of analytical methods, trade studies, procedures, techniques, industry standards, best practices and the state of the art for pertinent disciplines, such as "value engineering".
- (2) The methodology and the Bidder's work plan must be consistent with the findings of the Technology Readiness & Risk Assessment and the corresponding Technology Development Plan.
- (3) Work Breakdown Structure and Work Package Descriptions for all Phase A activities
- (4) Schedule development charts (e.g. Gantt chart, etc.) for all Phase A activities that meet the SOW Milestones.

##### **Level A (20 pts)**

Bidders addressed all 4 (four) elements mentioned above and detailed substantiation is provided for all 4 (four) of the above mentioned elements.

##### **Level B (15 pts)**

Bidders addressed all 4 (four) elements mentioned above and detailed substantiation is provided for at least 3 (three) of the above mentioned elements.

##### **Level C (10 pts) (minimum required)**

Bidders addressed all 4 (four) elements mentioned above, and detailed substantiation is provided for at least 2 (two) of the above mentioned elements.

##### **Level D (0 pts)**

The Bidder does not meet the minimum requirements of Level C.

**P5. Secondary Payload**

The Bidder must provide an assessment describing how the secondary payload meets the goals mentioned in Table 5 hereunder.

**Table 5: Secondary Payload**

<b>QEYSSat Secondary Payload Evaluation</b>	
<b>Required Elements</b>	<b>Compliance Substantiation</b>
Degree of innovation – Evaluates the novelty associated with the new concepts, products and/or know-how to be developed.	High level of innovation is to be substantiated.
Compatibility with primary payload (QKD), Feasibility, Risk and Complexity Assessment – Evaluates the level of risk that the proposed technology poses to the primary mission objectives and the level of complexity (satellite bus and operations) added to the QEYSSat mission.	Low risk and low level of complexity are to be substantiated
Development of Industrial Core Capabilities – Evaluates the potential of increasing industrial capabilities through the advancement of knowledge (know-how) or improvement of the state-of-the-art.	High impact on increase of industrial capability is to be substantiated.

**Level A (15 pts)**

Bidder addressed all 3 (three) elements mentioned above AND detailed and convincing substantiation is provided for all 3 (three) of the above mentioned elements.

**Level B (10 pts)**

Bidder addressed all 3 (three) elements mentioned above AND detailed and convincing substantiation is provided for at least 2 (two) of the above mentioned elements, including “compatibility with primary payload (QKD), Feasibility, Risk and Complexity Assessment” element.

**Level C (5 pts)**

Bidder addressed all 3 (three) elements mentioned above AND detailed and convincing substantiation is provided for the “compatibility with primary payload (QKD), Feasibility, Risk and Complexity Assessment” element.

**Level D (0 pts)**

The Bidder does not meet the minimum requirements of Level C.