



Public Works and
Government Services
Canada

Travaux publics et
Services gouvernementaux
Canada

Innovative Solutions Canada
Testing Stream Demand
Call for Proposals B2
EN578-22ISC4

**SOLUTIONS
INNOVATRICES**
C A N A D A



**INNOVATIVE
SOLUTIONS**
C A N A D A

Solicitation No.: EN578-22ISC4

GETS Reference Number: PW-22-00984336

Closing date: Please refer to the tender notice on BuyandSell.gc.ca [here](#).

Proposal Submission details are included in this Call for Proposals document.

Issuing Office:

Public Works and Government Services Canada
Services and Innovation Acquisitions Sector
Research and Development Procurement Directorate
Les Terrasses de la Chaudière
10 Wellington Street
Gatineau, Quebec K1A 0S5
Email: TPSGC.PASICVoletessai-APISCTestingStream.PWGSC@tpsgc-pwgsc.gc.ca



TABLE OF CONTENTS

PART 1 - GENERAL INFORMATION	4
1.1 SUMMARY	4
1.2 PROCUREMENT APPROACH	5
1.3 WHO CAN SUBMIT A PROPOSAL	5
1.4 TRADE AGREEMENTS	6
1.5 COVID-19 VACCINATION REQUIREMENT A3080T (2021-11-29)	7
1.6 CANADIAN CONTENT	7
1.7 CONFLICT OF INTEREST	7
1.8 POTENTIAL CONDITIONS	7
1.9 PROCUREMENT STRATEGY FOR ABORIGINAL BUSINESS	8
1.10 INNOVATIVE SOLUTIONS CANADA (ISC) TESTING STREAM DEFINITIONS	8
PART 2 - BIDDERS INSTRUCTIONS	9
2.1 Standard Instructions, Clauses and Conditions	9
2.2 Enquiries - Solicitation Period	10
2.3 Contracting Authority	10
2.4 Applicable Laws	10
2.5 Public Announcements	11
2.6 Certifications	11
PART 3 – PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS	12
3.1 Proposal Submission	12
3.2 Proposal Submission Difficulties	12
3.3 Technical Proposal	13
3.4 Financial Proposal	13
3.5 Certifications and Additional Information	13
PART 4 - EVALUATION PROCEDURES	15
4.1 Evaluation Procedures	15
4.2 Two Stage Proposal Evaluation	16
4.3 Evaluation Requirements	18
4.4 ISC Testing Stream Pool of Pre-Qualified Proposals	19
4.5 Debriefing	20
PART 5 – BASIS OF SELECTION	21
5.1 Proposal Selection	21
5.2 Consideration for Contract Award Process	22
5.3 Contract Award Process	22
PART 6 - SUBSEQUENT PURCHASES FOR TESTING STREAM	24
6.1 Objective	24
6.2 Subsequent Purchases Period	24
6.3 Framework	24
APPLICABLE APPENDICES	26
APPENDIX 1 – EVALUATION GRID	26



APPENDIX 2 – GENERAL DEFINITIONS 36
APPENDIX 3 – DRAFT RESULTING CONTRACT CLAUSES 39
APPENDIX 4 – CERTIFICATIONS AND ADDITIONAL INFORMATION 51
APPENDIX 5 – DEPARTMENTAL DEMAND PROBLEM STATEMENTS 58



PART 1 - GENERAL INFORMATION

1.1 Summary

Innovative Solutions Canada Testing Stream (ISC-TS) helps Canadian innovators by funding research and development (R&D) and testing prototypes in real-life settings.

Public Works and Government Services Canada (PWGSC) is publishing a Demand Call for Proposals (CFP) (Demand CFP), on behalf of Innovation, Science and Economic Development Canada (ISED) in support of the National Research Council (NRC), seeking innovative solutions to leverage Quantum Technology to address operational requirements.

More specifically, NRC is seeking solutions in the Quantum Technology field to address the following Departmental Demands:

- Quantum level Biophoton Optical Imager (Quantum Sensing);
- Scaled Down Dilution Refrigerator (Quantum Device Refrigeration); and
- Ultrasensitive spectroscopy system for quantum photonics (Quantum Sensing)

Details related to each Departmental Demand are attached at Appendix 5 and listed in the published Demand CFP Notice of Proposed Procurement.

The purpose of this CFP is to create a pool of pre-qualified proposals that NRC may select from to address their operational requirements.

The ISC –TS is a R&D program aimed at procuring, testing and evaluating R&D pre-commercial goods and services in the late stage development (Testing Readiness Level (TRL) 7 to 9) defined on the ISC website [here](#).

1.1.1 Funding

The maximum funding available for all Contracts resulting from this Demand CFP is: \$1.5M

The maximum funding available for any single contract resulting from this Demand CFP is \$550,000 CAD, (applicable taxes, shipping, and travel and living expenses are extra, as applicable). This approximate funding is not a contract guarantee. Disclosure is made in good faith and does not commit Canada to contract for the total approximate funding.

Should fiscal funding no longer be available, Bidders will be notified directly and a notice will be published on the Government Electronic Tendering Service (GETS), pending new fiscal year or until funds are available. The Contract Award Process will continue and proposals under contract negotiations will take priority when funding is available.



1.2 Procurement Approach

1.2.1 This Demand CFP involves Two-Step Proposal Evaluation Process:

Step 1: Proposal Submission, Evaluation and Selection

Step 2: Contract Award Process

Step 1 – Proposal Submission, Evaluation and Selection:

Bidders should consult Appendix 1 -Evaluation Grid that forms part of this Demand CFP. This evaluation grid will be used in the proposal evaluation process. Step 1 will result in a pool of pre-qualified proposals.

The pre-qualified proposals are “approved in principle” and will not constitute a guarantee on the part of Canada that a contract will be awarded. Approved in principle for contract consideration is defined as conditional acceptance of the proposal subject to meeting the requirements of Part 5 – Basis of Selection and the availability of funding.

Step 2 - Contract award Process:

1.2.2 Prequalified proposals selected for funding will move to Step 2 and be subject to the Contract Award Process that is led by the Contracting Authority.

Bidders are encouraged to view the Draft Resulting Contract Clauses that forms part of this Demand Call for Proposals, at Appendix 3 – Draft Resulting Contract Clauses and Conditions which will be used under Section 5.3 Contract Award Process. Canada reserves the right to require that all Work, including delivery of the Innovation, be completed within 12 months from the date of any resulting contract award.

1.3 Who Can Submit a Proposal

Bidders are required to certify program eligibility as part of their proposal. Selected Bidders will be required to re-certify eligibility at any phase under the ISC program. In order to remain eligible for the Testing Stream, eligibility criteria must be met at all times.

- Canadian Bidder: The Bidder must meet the definition of a Canadian Bidder.
- Canadian Content: 80% of the financial proposal costs must be Canadian goods or Canadian services, as defined in the Canadian Content certification.



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

- **Ownership:** The Bidder must be the owner of the Intellectual Property (IP) for the proposed innovation, or have a licence to the IP rights from a Canadian licensor for the proposed innovation and not be infringing on any IP rights.
- **Pre-Commercial Status:** The proposed innovation must not be openly available in the marketplace, and must not have been previously sold on a commercial basis as of the date of this bid submission.
- **Previously Pre-qualified Innovation:** The proposed innovation or any other versions of the proposed innovation must not have been previously awarded a contract or grant in the Build in Canada Innovation Program (BCIP) or its predecessor, the Canadian Innovation Commercialization Program (CICP), nor under any Innovative Solutions Canada (ISC) Streams. The proposed innovation or any other versions of the proposed innovation must not currently be active in a pool of pre-qualified innovations in any of the above.
- **A proposed Innovation that is currently active in a pool will be accepted only once the bid validity period for that proposal has expired or the Bidder has withdrawn their innovation from the relevant pool, prior to solicitation closing date, in collaboration with the Contracting Authority. The Bidder agrees that having pre-qualified into a pool does not guarantee pre-qualifying under the current solicitation.**
- **Maximum Funding:** The Bidder's Financial Proposal must not exceed \$550,000 CAD (applicable taxes, shipping, and travel and living expenses are extra, as applicable).
- **Program Eligibility:** The Bidder's proposal must be aligned with the mandate of the ISC Testing Stream where Canada procures, through a Contract, the Bidder's Innovation with the purpose of testing it in an operational environment.

1.4 Trade Agreements

Canadian Free Trade Agreement (CFTA) applies to this procurement.

Notes regarding application of the CFTA to this Call for Proposals:

The process described in this Call for Proposals has the unique outcome that the types of innovative goods and services that are being proposed are not responding to an already identified government requirement, but rather are informing that need. Therefore, only one supplier, the proponent of a pre-qualified proposal will be considered to meet the requirements of the associated procurement.

Therefore, in accordance with CFTA Articles 513 (1) (f), this procurement may choose not to apply Articles 504.5 through 504.10, Article 506, Article 507, Article 508.5, Article 508.6, Article 509.7, Article 509.8, Articles 510 through 512, Article 514 and Article 515.

World Trade Organization – Agreement on Government Procurement



Research and Development services are excluded from the application of the World Trade Organization - Agreement on Government Procurement (WTO-AGP) under Appendix 1, Annex 4 as they are not one of the applicable commodities listed in this agreement.

Canada-European Union Comprehensive Economic and Trade Agreement

Research and Development services are excluded from the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) as per Annex 19-5 as they are not one of the applicable commodities listed in this agreement.

Comprehensive and Progressive Agreement for Trans-Pacific Partnership

Research and Development services are excluded from the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) as per Chapter 15 A, Section E.1.

1.5 COVID-19 vaccination requirement A3080T (2021-11-29)

This requirement is subject to the COVID-19 Vaccination Policy for Supplier Personnel. Failure to complete and provide the COVID-19 Vaccination Requirement Certification as part of the bid will render the bid non-responsive.

1.6 Canadian Content

A3050T (2020-07-01) Canadian Content Definition

This requirement is limited to Canadian goods and Canadian services.

The Bidder must be Canadian. A Canadian bidder is defined as a Bidder having a place of business in Canada where the Bidder conducts activities on a permanent basis that is clearly identified by name and accessible during normal working hours.

1.7 Conflict of Interest

The Contractor, its subcontractor(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 proposal solicitation related to the production or exploitation of any concept or prototype developed or delivered.

1.8 Potential Conditions

The following conditions may apply to any resulting contract(s), based on the Innovation and the Government of Canada organizations' requirements:

1.8.1 Security Requirements



A security requirement may be associated with this requirement. For more information on personnel and organization security screening or security clauses, Bidders should refer to the Public Works and Government Services Canada [Industrial Security Program \(ISP\) Website](#).

1.8.2 Controlled Goods Program

Any resulting contract may be subject to the Controlled Goods Program. Refer to [Controlled Goods Program Website](#).

1.8.3 Employment Equity

The Federal Contractors Program (FCP) for employment equity may apply to this procurement. Refer to Appendix 4 – Certifications and Additional Information.

1.8.4 Comprehensive Land Claim Agreements (CLCA)

The region of delivery for the goods and/or services may be subject to Comprehensive Land Claims Agreements (CLCAs).

1.9 Procurement Strategy for Aboriginal Business

Requirements that are set aside under the federal government Procurement Strategy for Aboriginal Business will be identified as such in the individual Testing Stream tender notice. For more information on Aboriginal business requirements of the Set-aside Program for Aboriginal Business, refer to [Annex 9.4](#) of the Supply Manual.

1.10 Innovative Solutions Canada (ISC) Testing Stream Definitions

The definitions, at Appendix 2 – General Definitions, outline the terminology employed throughout this solicitation and are complementary to the terms and conditions of the solicitation and any resulting contract.



PART 2 - BIDDERS INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

Term (used in this document)	Term (2003 Standard Instructions)
Call for Proposals (CFP)	Solicitation
Proposal	Bid

All instructions, clauses and conditions identified in the proposal 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>) issued by Public Works and Government Services Canada.

Bidders who submit a proposal agree to be bound by the instructions, clauses and conditions of this Call for Proposals solicitation and accept the clauses and conditions of the resulting contract at Appendix 3.

The 2003 (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the proposal solicitation, and are amended as follows:

a) Section 05, Submission of Bids, subsection 2(d)

Delete: In its entirety.

b) Section 05, Submission of Bids, subsection 4:

Delete: Proposals will remain open for acceptance for a period of not less than 60 days from the closing date of the proposal solicitation, unless specified otherwise in the proposal solicitation.

Insert: Proposal Validity Period

Proposals will remain open for acceptance for a period of not less than 16 months from the date of proposal submission.

Proposal Validity Extension:

Pre-qualified Bidders may be requested to extend the validity of their proposal beyond the 16 month period.

(c) **Delete** the following sections in their entirety:

Section 06 Late Bids

Section 07 Delayed Bids

Section 08 Transmission by Facsimile

Section 09 Customs Clearance



(d) Section 14, Price Justification:

Delete: In the event that the Bidder's bid is the sole responsive bid received, the Bidder must provide, on Canada's request, one or more of the following price justification:

Insert: For all Pre-Qualified Proposals eligible for Contract award, the Bidder must provide, on Canada's request, one or more of the following price justification:

2.2 Enquiries - Solicitation Period

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the solicitation closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the solicitation documents to which the enquiry relates. Care should be taken by Bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidders do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.3 Contracting Authority

The Contracting Authority for this Call for Proposals solicitation is:

Public Works and Government Services Canada
Procurement Branch
Research and Development Procurement Directorate (RDPD)
Email: TPSGC.PASICVoletessai-APISCTestingStream.PWGSC@tpsgc-pwgsc.gc.ca

2.4 Applicable Laws

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

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice at time of the Contract award process.



2.5 Public Announcements

2.5.1 For Department of National Defence (DND)

For the Department of National Defence (DND), The Government of Canada retains the right to make primary contract announcements. Canada and the Contractor shall consult with each other, after contract award, about all proposed news releases or public announcements relating to the Contract. This is to provide all parties sufficient notice of key project communications, and, where appropriate, the time to determine a course of action (including a mutually agreed date and location), line up representatives and prepare joint material. Notwithstanding the advance notice requirement, consent shall not be unreasonably withheld by either Party if a news release or public announcement must be issued in less than 15 business days as the result of unforeseeable circumstances, including matters of public safety or where an emergency response is required.

2.5.2 For Non-DND

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

2.6 Certifications

[A3015T \(2014-06-26\) – Certifications - Bid](#)

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



PART 3 – PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

3.1 Proposal Submission

- 3.1.1 Bidders are solely responsible for ensuring their proposal is received by PWGSC by the solicitation closing date and time. Proposals received after the specified period will not be considered.
- 3.1.2 Bidders must submit their proposal using the Testing Stream Electronic Proposal Submission Form. The form can be found by clicking the “Submit your Proposal” button on the ISC website. Proposals that are submitted in an alternate format will not be accepted unless prior approval has been obtained from the Contracting Authority at: TPSGC.PASICVoletessai-APISCTestingStream.PWGSC@tpsgc-pwgsc.gc.ca
- 3.1.3 When a proposal is submitted, an automated email is sent to the Bidder. This email serves as confirmation of receipt.
- 3.1.4 If a large number of Bidders access the web-based system at the same time, the electronic submission of proposals may be delayed.
- 3.1.5 Bidders who are not able to submit their proposal using the web-based system must contact the Contracting Authority at TPSGC.PASICVoletessai-APISCTestingStream.PWGSC@tpsgc-pwgsc.gc.ca to arrange delivery of their proposal. This includes the submission of proposals with a security level exceeding Protected B.
- 3.1.6 All proposals submitted will be bound by the same terms, conditions and limitations. For all proposals submitted, any text submitted above the character limit specified in the Electronic Proposal Submission Form will not be evaluated.
- 3.1.7 In the event that a proposal is submitted electronically and through an alternate mean for the same solution, the electronic proposal will take precedence unless otherwise specified by the Bidder.
- 3.1.8 Bidders may submit multiple proposals, ensuring that each proposal is for a different Innovation. Each proposal will be evaluated separately on its own merit. If more than one proposal is submitted for the same Innovation, only the last proposal submission will be considered. The last proposal submission will be determined by the system time stamp.

3.2 Proposal Submission Difficulties

- 3.2.1 Should there be technical difficulties accessing or using the web-based system, or the Testing Stream Electronic Proposal Submission Form, Bidders must advise the Contracting Authority at: TPSGC.PASICVoletessai-APISCTestingStream.PWGSC@tpsgc-pwgsc.gc.ca



3.3 Technical Proposal

- 3.3.1 The Bidder's responses to the criteria presented in the electronic Proposal Submission Form will form the Bidder's Technical Proposal. Bidders should respond to each criterion in a thorough, concise and clear manner within the allotted character count for each criterion. Bidders should explicitly demonstrate, in sufficient detail, how all criteria are met.
- 3.3.2 To maintain the integrity of the evaluation, Evaluators will consider only information presented in the proposal. No information will be inferred and personal knowledge or beliefs will not be utilized in the assessment. Canada will not evaluate information such as references to Web site addresses where additional information can be found.

3.4 Financial Proposal

- 3.4.1 Bidders must complete the Financial Proposal set out in the Electronic Proposal Submission Form. Responses provided in the Electronic Proposal Submission Form will form the bidder's financial proposal under the CFP.
- 3.4.2 The Bidder's Financial Proposal must not exceed the selected Component's maximum contract funding level. The maximum funding level for the Standard Component is \$550,000 CAD (applicable taxes, shipping, and travel and living expenses are extra, as applicable).
- Any dollar value exceeding the maximum contract funding amounts will be the Bidder's commitment of co-investment funding to any resulting contract.
- 3.4.3 Should a proposal be pre-qualified and a Government of Canada Organization match identified, the Financial Proposal submitted will be negotiated in accordance with the Statement of Work (SOW) and must be in accordance with the PWGSC Contract Cost Principles 1031-2. More information can be found on BuyandSell.gc.ca [here](#).
- 3.4.4 The Financial Proposal must not include costs for commercial development activities such as quantity production, supply to establish commercial viability, integration, customization, incremental adaptations and improvements to existing products or processes that have been previously commercialized, third party tested or for the cost of obtaining health and safety / regulatory certifications.
- 3.4.5 This procurement does not offer exchange rate fluctuation risk mitigation. Requests for exchange rate fluctuation risk mitigation will not be considered. All proposals including such provision will render the proposal non-responsive.

3.5 Certifications and Additional Information



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

3.5.1 Certifications required with the Bidder's proposal are identified in the Electronic Proposal Submission Form.

3.5.2 Certifications and additional information that may be required precedent to contract award are identified in Appendix 4 - Certifications and Additional Information.



PART 4 - EVALUATION PROCEDURES

4.1 Evaluation Procedures

4.1.1 Proposals will be assessed in accordance with the entire requirement and the evaluation criteria identified in the electronic Proposal Submission Form in accordance with Appendix 1 - Evaluation Grid.

4.1.2 An evaluation team (“Evaluators”) composed of the National Research Council – Industrial Research Assistance Program (NRC-IRAP), PSPC and/or subject matter experts from other government departments will evaluate the proposals. If required, Canada may use external subject matter experts to evaluate any proposal. External subject matter experts will be required to confirm they are not in a conflict of interest, and sign a non-disclosure agreement.

For the purposes of this solicitation, Canada will utilize a two stage proposal evaluation process. All proposals will be assessed for their compliance in accordance with the process outlined at section 4.2. Following the compliance review, should clarifications or additional supporting information be required for the proposal to be deemed compliant, the Contracting Authority will seek clarification by means of a Clarification Assessment Report (CAR) with the Bidder describing the issue that lead to a determination of non-compliance.

4.1.3 In addition to any other time periods established in the solicitation, if Canada seeks clarification from the Bidder, the Bidder will have up to 2 working days (or a longer period if specified in writing by the Contracting Authority) to provide the necessary information to Canada. Failure to meet this deadline may result in the proposal being declared non-responsive.

4.1.4 This Two Stage Proposal Evaluation Process shall not limit Canada’s rights under [SACC 2003 \(2020-05-28\) Standard instructions – Goods or Services – Competitive Requirements](#) nor Canada’s right to request or accept any information during the solicitation period or after solicitation closing in circumstances where the solicitation expressly provides for this right.



4.2 Two Stage Proposal Evaluation

4.2.1 Process

- Stage 1 – Proposal Review and Compliance Assessment Report (CAR) of the Mandatory (MC), Screening (SC) and Point Rated Screening (PS) criteria; and
- Stage 2 – Proposal Evaluation

4.2.1.1 Evaluators will review and assess the proposal in accordance with Stage1 – Proposal Review and Compliance Assessment Report at 4.2.2 to determine if the proposal requires clarification or additional supporting data to comply with the MC, SC, and PS evaluation requirements.

4.2.1.2 If the Contracting Authority determines that clarification or additional supporting data is needed, he/she will identify those in a Compliance Assessment Report (CAR) that will be issued to the Bidder for response within the timelines identified therein by the Contracting Authority.

4.2.1.3 Responses to the CAR are at the Bidder's sole discretion and will be made solely by the Bidder. Canada will not provide information about any other proposal or any information as to how a Bidder should complete its response, if any, to the CAR.

4.2.1.4 For those instances where a Bidder chooses not to submit a response to the CAR, only the original response for that criterion will be considered in order to complete the proposal evaluation process. The Bidder will only be provided with one opportunity to respond to the CAR.

4.2.1.5 Bidders' response to the CAR will be deemed to supplement only the information identified in the CAR and will be considered during Stage2 – Proposal Evaluation, to finalize the proposal evaluation process.

4.2.1.6 Canada requests that Bidders clearly indicate, for each response, which requirement identified in the CAR is being responded to.

4.2.1.7 Proposals that do not require clarification or additional supporting data during Stage 1 – Proposal Review and CAR, will proceed to Stage 2 – Proposal Evaluation, without notification to the Bidder and without a CAR being issued.

4.2.2 Stage 1: Proposal Review and CAR of the MC, SC and PS Evaluation Requirements

The CAR will include an overview of areas of the Bidder's proposal that require clarification(s) or additional supporting data:



- i. Where information provided in the proposal is not sufficient for evaluators to make a determination; and/or
- ii. Where there appears to be an administrative omission, which is defined as something that the Bidder inadvertently did not reference in their proposal that was required at the time of proposal submission, such as reference to a patent or certification they have but did not mention, etc.

4.2.2 Permitted Bidder Response to the CAR:

- i. Bidders may submit a response only to those items specifically identified in the CAR. The response must be in accordance with the evaluation requirements stated for that particular criteria. Any other information submitted will not be considered;
- ii. The Bidders response to items specifically identified in the CAR may include:
 - a. additional or different information to clarify and demonstrate to Canada, in accordance with the CFP, that the proposal is responsive to the CFP requirements; and/or
 - b. any administrative omissions regarding information that was available and valid at the time of proposal submission but inadvertently not referenced in the proposal.
- iii. Bidders will be provided only one opportunity to respond to a CAR.

4.2.2.2 Compliance Assessment Report (CAR)

The CAR will be issued by email to the Bidder's identified point of contact in its proposal. Bidders who receive a CAR are requested to provide written confirmation of receipt to the Contracting Authority within 24 hours.

Bidders must submit all information in response to a CAR to the Contracting Authority by email at the email addressed identified in the CAR.

Bidders will have two business days following the receipt of the CAR to provide information in response to the non-compliance(s) identified in the CAR. If a Bidder chooses not to submit information in response to a CAR, the Bidder shall be deemed to have provided a "No Change" response and the original information submitted in the original proposal shall continue to apply for all purposes of the evaluation procedures.

- 4.2.4 Bidders may only submit information necessary to render their proposal compliant with the Mandatory, Stage 1 and Stage 2 Technical Evaluation Requirements which they have failed to meet as identified in the CAR. Canada will not consider any information submitted in response to a CAR that would result in the Bidder proposing a new or different information from what was proposed in its original proposal.



4.2.3 Stage 2: Proposal Evaluation

4.2.3.1 In Stage 2, Evaluators will complete the evaluation of the MC, SC and PS Evaluation Requirements for all proposals in accordance with section 4.3.1., 4.3.2. and 4.3.3.

4.2.3.2 If Canada determines that, where applicable, notwithstanding the information received in response to a CAR, a proposal continues to be non-responsive with the MC, SC, and/or PS Evaluation Requirements, or should information submitted by a Bidder render other parts of the proposal non-compliant, Canada will declare the proposal non-responsive and the proposal will receive no further consideration.

If Canada determines that, when a CAR was issued regarding a PS Evaluation Requirement, the information received in response to a CAR allows a proposal to meet all of the PS Evaluation Requirements, the original score prior to CAR issuance will be used for the total score should the proposal reach Point Rated Evaluation.

The proposals that meet all of the MC, SC, and PS Evaluation Requirements will be evaluated against the Point Rated Evaluation Criteria set out at 4.3.4.

4.2.3.3 Only referenced material included within the Bidder's proposal, or clarified upon request by the Contracting Authority, will be evaluated. Outside reference material included in the Bidder's proposal (such as links to websites, client references, 3rd party opinions, etc.) will not be considered. It is the sole responsibility of the Bidder to provide sufficient information so that their proposal can be adequately evaluated.

4.3 Evaluation Requirements

4.3.1 Mandatory Criteria

Proposals must meet all mandatory criteria requirements identified in the online Proposal Submission Form in accordance with the evaluation grid at Appendix 1 in order to proceed to the next phase of the evaluation. Proposals that do not meet all mandatory criteria will be declared non-responsive.

4.3.2 Stage 1 Technical Evaluation

Proposals must meet all Stage 1 Technical Evaluation criteria requirements identified in the Online Proposal Submission form in accordance with the evaluation grid at Appendix 1 in order to proceed to the next phase of the evaluation. Proposals that do not meet all Stage 1 Technical Evaluation criteria will be declared non-responsive.

4.3.3 Stage 2 Technical Evaluation



Proposals must meet all Stage 2 Technical Evaluation criteria identified in the Online Proposal Submission form in accordance with the evaluation grid at Appendix 1 in order to proceed to the next phase of the evaluation. Proposals that do not meet all point-rated screening criteria will be declared non-responsive.

4.3.4 Stage 3 Technical Evaluation

Proposals that meet all of the Stage 1 and Stage 2 Technical evaluation requirements will be evaluated and scored in accordance with the Stage 3 Technical evaluation criteria identified in the evaluation grid at Appendix 1.

Proposals must obtain a total overall minimum pass mark of 115 over 192 points out of all criteria with scores in Stage 1, Stage 2 and Stage 3 Technical Evaluation Criteria. Proposals not meeting the minimum overall pass mark will be deemed non-responsive and given no further consideration.

4.4 ISC Testing Stream Pool of Pre-Qualified Proposals

4.4.1 The purpose of the pool is to create a list of potential innovations that NRC may select from.

4.4.2 Placement into the Pool does not guarantee that a proposal will be selected or that a contract will be awarded.

4.4.3 Proposals that are deemed responsive and meet all other requirements of the CFP will be considered pre-qualified and placed in a pre-qualified pool for the duration of the pre-qualification period. Once a pre-qualification period expires, a proposal is no longer considered pre-qualified and cannot be considered for contract award.

4.4.4 The Pre-Qualification period:

The pre-qualification period will begin on the date Bidders are advised, in writing, by the Contracting Authority that they are pre-qualified into the Program. (Date of successful Debrief Letter).

The pre-qualification period will end once the Program funding has expired OR 12 months from date of pre-qualification, whichever comes first.

Canada Reserves the right to modify the Pre-Qualification period at any time, for any reason.

4.4.5 The establishment of pre-qualified pools does not constitute a commitment on the part of Canada to award contracts. Contract award is conditional in accordance with Section 5.1 – Basis



of Selection. Section 5.2 Contract Award Process outlines the requirements to be considered for contract award. The pre-qualified pool will be published on the ISC Testing Stream website.

4.4.6 Set-aside of Unmatched Proposals

Canada reserves the right to set-aside any proposal that has not been matched within the pre-qualification period.

4.5 Debriefing

Each Bidder will be issued a detailed debrief letter noting the final results of the evaluation. Upon receipt of the evaluation results, Bidders may contact the Contracting Authority to discuss the final results of their proposal evaluation within 5 business days of the date of receipt of the debrief letter.



PART 5 – BASIS OF SELECTION

5.1 Proposal Selection

All proposals in the pre-qualified pool will be considered for funding. Proposals which earn the highest overall pass mark may not be the proposals selected. Selection from a pool of pre-qualified proposals does not guarantee that a contract will be awarded. The Contract Award Process outlined in section 5.3 must be completed prior to a contract being awarded.

5.1.1 Method of Selection

Once interest in a pre-qualified innovation has been expressed by National Research Council (NRC), the Innovative Solutions Canada-Testing Stream (ISC-TS) will work with the Government of Canada organization and the Bidder to develop demonstration scenarios for the pre-qualified innovation in an operational environment setting.

Should NRC express interest in a pre-qualified demonstration scenario, an assessment by ISC-TS will take place on a case-by-case basis to determine whether the program will proceed with funding approval. The following factors will be considered:

- Applicability of the innovation demonstration scenario to the mandate of the Government of Canada testing organization;
- Level of interest expressed in the innovation from across the Government of Canada (i.e. has there been significant/widespread interest expressed to the program regarding the innovation);
- Benefit of the innovation demonstration scenario to Government of Canada;
- Location(s) of the test, testing objectives, security requirements, and any other strategic considerations regarding the innovation;
- Readiness of the innovation for deployment in the operational environment identified as part of the demonstration scenario and speed of obtaining testing results;
- Alignment of project funding with program budget, considering both availability of program funding and the overall cost of the innovation stipulated in the Bidders Proposal.

The organization may select one proposal, more than one proposal or no proposal from a specific pool. The decision to select a proposal is at the sole discretion of the NRC.

Two scenarios exist for proposal selection:

1. Proposal is reviewed and selected by NRC for contract negotiations. Contract Award Process (section 5.3) will be followed.
2. Proposal is reviewed but not selected by NRC; however, it has been placed in the pre-qualified pool. Canada may revisit a pool at any time prior to the end of the pre-qualification period and make additional selections. This is at Canada's sole discretion.



The above factors are subject to change.

5.2 Consideration for Contract Award Process

To be considered for contract award a proposal must:

- a) comply with all the requirements of the CFP solicitation;
- b) be placed in a Testing Stream Pre-Qualified Pool;
- c) be selected by Government of Canada organization;
- d) successfully complete the Contract Award Process as detailed in section 5.3 – Contract Award Process of the CFP before expiry of the Pre-Qualification Period.

5.3 Contract Award Process

Recommendation for contract award will be determined based on the available budget and the success in completing the following elements:

5.3.1 Government of Canada Organization Match

ISC Testing Stream will seek to match proposals with NRC to identify a Technical Authority who will be responsible for the testing and assessment of the Innovation. Information provided in the proposal will be used to promote the Innovation to NRC. It is important to note that the ISC Testing Stream will procure Innovations based on operational needs of and for goods and services that support NRC's mandate.

Innovations that are not matched with NRC during the proposal validity period will be given no further consideration.

5.3.2 Statement of Work (SOW)

Once a NRC match has been identified, the ISC Testing Stream will facilitate collaboration between the Technical Authority and the Bidder to develop a Statement of Work (SOW), based on the proposed demonstration scenario and the Financial Proposal. The SOW is negotiated to ensure both the Bidders' and NRC's needs are met within the framework of the Program. The SOW must represent a benefit to Canada.

Once accepted by the NRC and the Bidder, the final SOW will be presented to the NRC Client Authority for approval. If approved, the SOW will be sent to the Contracting Authority for review and inclusion into the resulting Contract.

5.3.3 Financial Capability and Certifications

The Contracting Authority may request financial information to verify the Bidder's capacity to undertake the Work.



If a Bidder fails to demonstrate adequate financial resources to complete the Work a contract may not be awarded.

The following financial documents may be requested by the Contracting Authority:

- Audited and/or unaudited financial statements
- Balance sheet
- Statement of retained earnings
- Income statement
- Detailed monthly cash flow statement
- Statement showing bank account balance
- Certification from authorized signing officer attesting to the accuracy of information
- Any other financial-related documents

Should a Bidder fail to demonstrate adequate financial resources to complete the Work, or fails to provide the certifications and additional information, the proposal will be considered non-responsive and given no further consideration.

5.3.4 Contract Negotiations

Upon completion of the SOW, the Contracting Authority will initiate the negotiations for the following:

- (a) request a cost breakdown and provision of price support from the bidder to support the costs;
- (b) request additional certifications and other information required before contract award;
and
- (c) provide a draft copy of the contract terms and conditions.

The Contracting Authority will verify that all costs are fair and reasonable. If a cost cannot be supported the cost may not be included in the contract. Failure to achieve consensus on any aspect of the negotiations will result in the proposal being set aside and not given any further consideration.

5.3.5 Contract Award

Upon successful completion of the Contract Award Process the Bidder's proposal will be recommended for contract award.



PART 6 - SUBSEQUENT PURCHASES FOR TESTING STREAM

6.1 Objective

The objective of subsequent purchases Contracts is to allow the same, different or several Government of Canada organizations to conduct further testing of Innovations acquired under ISC Testing Stream in a different environment, under different conditions or in order to broaden the base of test results.

6.2 Subsequent Purchases Period

The period to award a research and development (R&D) Contract (also referred to as “subsequent purchases Contracts”) to acquire additional quantities under the subsequent purchases for testing component of the ISC Testing Stream begins on the date indicated on page 1 of the initial ISC Testing Stream contract and ends on the same date three (3) years later.

6.3 Framework

All subsequent purchases Contracts will be issued in accordance with the Treasury Board of Canada Secretariat (TBS) Contracting Policy and the following framework:

- a) Funding: Subsequent purchases R&D Contracts will be funded by the Government of Canada Organization(s).
- b) Maximum Contract Dollar value: The Contract dollar value will respect the limits of the maximum per Contract dollar value under the initial ISC Testing Stream Contract: \$550,000 CAD (Applicable Taxes, shipping and Travel and Living expenses are extra, as applicable).
- c) Eligible Innovations: Innovations eligible for subsequent purchases must be the same or improved Innovation tested under the initial ISC Testing Stream contract.
- d) Subsequent purchases quantities: A limited quantity of the Innovation may be tested. Mass production is not permitted. The definition of “limited quantity” and “mass production” are as defined at Appendix 2 - Definitions.
- e) Duration of subsequent purchases contract: Contract duration will be determined on a case by case basis. In general, the contract period for subsequent purchases will not exceed 12 months.

Parameters that could impact the contract duration include:

- i. Time required to conduct the test plan;
- ii. Seasonal requirements;



- iii. Manufacturing lead time;
 - iv. Government of Canada organization operational requirements, financial resources & personnel availability; and
 - v. Security Requirements.
- f) Contracting Authority: Public Services and Procurement Canada, Innovative Research Solutions Division (SC Division) will be the Contracting Authority for any resulting contract.
- g) Required documents: The Government of Canada organization (s) will be responsible for the development of the Statement of Work (SOW) including the Innovation demonstration scenario, performance metrics and, if applicable, the Security Requirements Check List (SRCL).
- h) Government of Canada organization Attestation: For all subsequent purchases, Canada will be required to attest that their requirement fits under the scope of the ISC Testing Stream and is meant to be for testing purposes.
- i) Support: ISC Testing Stream will support the Government of Canada Organization(s) by providing a SOW template and the original ISC Testing Stream contract SOW.
- j) Limitations of the Framework:
- i. For Innovations that involve licenced software or software as a service (SaaS) subscription:
 - a. Entity (enterprise) licences will not be permitted;
 - b. Maximum period for a software licence or SaaS subscription will be 12 months, or less, based on term of Contract; and
 - c. Licences and SaaS subscriptions must be scaled to the test plan in the SOW.
 - ii. Procurements under subsequent purchases contracts will not create a fully installed or permanent operating base for the purposes of sole-source justification for future procurements.
 - iii. There will be a limit of three subsequent purchases Contracts per Innovation.
- k) Terms and conditions: R&D contracts for subsequent purchases for testing Innovations will be negotiated under the same terms, conditions and pricing structure as the initial ISC Testing Stream contract.



APPLICABLE APPENDICES

APPENDIX 1 – EVALUATION GRID

Mandatory Criteria (MC)

MC1: Canadian Bidder

The Bidder must meet the definition of a Canadian Bidder. A Canadian Bidder is defined as a Canadian person or entity submitting a proposal on its own behalf and having a place of business in Canada where the person or entity conducts activities on a permanent basis that is clearly identified by name and accessible during normal working hours.

MC2: Canadian Content

80% of the financial proposal costs, the total proposal price to Canada, must be Canadian goods or Canadian services. For the complete Canadian content definition please refer to the Canadian Content Definition A3050T (2020-07-01) at Part 1 General Information, Article 1.5 of the solicitation documents.

MC3: Ownership

The Bidder must be the owner of the Intellectual Property (IP) for the proposed innovation, or have a licence to the IP rights from a Canadian licensor for the proposed innovation and not be infringing on any IP rights.

MC4: Notice Problem Statement

The Bidder's proposed innovation, as described and in its intended application, must provide a relevant solution to the problem described in the Problem Statement of the Demand Notice. Refer to Appendix 5 of the solicitation documents.

MC5: Pre-Commercial Status

The proposed innovation must not be openly available in the marketplace, and must not have been previously sold on a commercial basis as of the date of this bid submission. Refer to the definitions of Pre-Commercial Innovation and Commercial Sales at Appendix 2 of the solicitation documents.

MC6: Previously Pre-qualified Innovation

The proposed innovation or any other versions of the proposed innovation must not have been previously awarded a contract or grant in the Build in Canada Innovation Program (BCIP) or its predecessor, the Canadian Innovation Commercialization Program (CICP), nor under any Innovative Solutions Canada (ISC) Streams.

The proposed innovation or any other versions of the proposed innovation must not currently be active in a pool of pre-qualified innovations in any of the above. A proposed innovation that is currently active in a pool will be accepted only once the bid validity period for that proposal has expired or the Bidder has withdrawn their innovation from the relevant pool, prior to solicitation closing date.



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

A Bidder can participate more than once, as long as the proposed innovations are sufficiently different. If the proposed innovation resembles an innovation that is currently active in a pool and has not been withdrawn prior to solicitation closing, the following assessment will be used to determine sufficient difference to proceed.

Pass	<p>Sufficiently Different</p> <ul style="list-style-type: none"> • A distinct product and/or service that has undergone a completely separate path of R&D or that diverged early in technology development. • Significant modifications to the application of the previous technology or components of the technology, applied in a setting or condition which was not possible or feasible for the pre-qualified or contracted innovation; OR • A significant improvement in functionality, cost or performance over the pre-qualified or contracted innovation.
Fail	<p>Not Sufficiently Different</p> <ul style="list-style-type: none"> • Incremental improvements; • Technologies that follow a normal course of product development (i.e. the next version or release); OR • Stated differences are not quantified or are inadequately described.

MC7: Maximum Funding

The Bidder’s Financial Proposal must not exceed \$550,000 CAD not including applicable taxes, shipping costs, and travel and living expenses, where applicable.

MC8: Program Eligibility

The Bidder’s proposal must be aligned with the mandate of the ISC Testing Stream where Canada procures, through a Contract, the Bidder’s Innovation with the purpose of testing it in an operational environment.



Stage 1 Technical Evaluation – Screening Criteria (SC)

SC1: Innovation

The proposed innovation must meet **one or more** of the ISC definitions of innovation below:

- *An invention*, new technology or new process that is not currently available in the marketplace.*
- *Significant modifications to the application of existing technologies/components/processes that are applied in a setting or condition for which current applications are not possible or feasible.*
- *An improvement in functionality, cost or performance over an existing technology/process that is considered state-of-the-art or the current industry best practice.*

* An **“invention”** is defined for the purposes of the ISC as: *“A manufacturing design or any other new and useful improvement that is new or novel, that is, not commonly known or not an obvious derivative of an existing way of doing things.”*

Pass	The proposed innovation meet one or more of the ISC definitions of innovation.
Fail	<ul style="list-style-type: none"> • The proposed innovation does not meet any of the ISC definitions of innovation; OR • The proposed innovation is an incremental improvement, “good engineering”, or a technology that would go ahead in the normal course of product development (i.e. the next version or release).

SC2: Operational Readiness Validation

The Bidder must demonstrate that at the time of proposal submission, the proposed innovation is ready for testing in an operational environment, i.e. at minimum TRL 7 per the [ISC Technology Readiness Level Scale](#).

Pass	<ul style="list-style-type: none"> • The Bidder has provided evidence demonstrating that, at minimum, the proposed innovation is a functional prototype (form, fit, and function) ready for demonstration in an appropriate operational environment, at the time of proposal submission; AND • The Bidder has provided evidence supporting that an operational demonstration of the proposed innovation is feasible.
Fail	<ul style="list-style-type: none"> • The proposed innovation is not ready for demonstration in any operational environment at the time of proposal submission or the Bidder has not provided evidence to that effect; OR • The Bidder has not provided evidence supporting that an operational demonstration of the proposed innovation is feasible.



SC3: Safety Considerations

The Bidder must demonstrate that they have obtained or possess, **at the time of proposal submission**, the certifications, licences, and approvals required to safely deploy the proposed innovation, and that it poses no risks to individuals or Government of Canada organizations involved in an operational demonstration. *This is to ensure that a Government of Canada organization and personnel are not exposed to safety or privacy risks during the conduct of the operational demonstration.*

Pass	<p>At the time of proposal submission:</p> <ul style="list-style-type: none"> • The Bidder has demonstrated that they have obtained or possess the certifications, licences, and approvals required to <u>safely</u> deploy the proposed innovation; AND • No concerns remain regarding the physical safety and privacy of individuals that could be involved in an operational demonstration; AND • The proposed innovation does not pose organizational safety or security concerns for a Government of Canada organizations when used in an operational setting.
Fail	<p>At the time of proposal submission:</p> <ul style="list-style-type: none"> • The Bidder has not demonstrated they have obtained or possess the certifications, licences, and approvals required to <u>safely</u> deploy the proposed innovation; AND/OR • Concerns remain regarding the physical safety or privacy of individuals that could be involved in an operational demonstration; AND/OR • The proposed innovation may pose organizational safety or security concerns for a Government of Canada organizations when used in an operational setting.

SC4: Scope – Essential Outcomes

The Bidder must demonstrate that the proposed innovation provides a solution to the Problem Statement, and meets all of the **Essential Outcomes** identified in the Demand Notice.

Pass	<ul style="list-style-type: none"> • The proposed innovation is within the scope of the Problem Statement, and clearly addresses all Essential Outcomes identified in the Demand Notice.
Fail	<ul style="list-style-type: none"> • The proposed innovation is articulated as out of scope for the Problem Statement, OR; • The proposal does not clearly demonstrate how the proposed innovation addresses all Essential Outcomes identified in the Demand Notice, OR; • The proposed innovation is poorly described and does not permit concrete analysis, OR; • There is little to no scientific and/or technological evidence that the proposed innovation is likely to meet any of the Essential Outcomes.



Stage 2 Technical Evaluation – Point-Rated Screening Criteria (PS)

PS1: Advance on State of the Art

The Bidder must demonstrate that the proposed innovation improves upon current approaches and state of the art, or current practices relevant to its purpose or application, in a manner that yields competitive advantages.

2 points	<ul style="list-style-type: none"> The proposed innovation improves minimally upon the current state of the art, though not sufficiently enough to create competitive advantages in existing market niches; OR The stated advancements are not substantiated with specific, measurable evidence.
12 points	<ul style="list-style-type: none"> The proposed innovation offers one or two minor improvements, and no significant improvements, to the state of the art that are not likely to create competitive advantages in existing market niches; OR The stated advancements are well-described in general, but are not substantiated with specific, measurable evidence.
24 points Minimum	<ul style="list-style-type: none"> The proposed innovation offers three or more minor improvements to the state of the art, that together are likely to create competitive advantages in existing market niches; OR The proposed innovation offers one significant improvement to the state of the art, that is likely to create competitive advantages in existing market niches.
40 points	<ul style="list-style-type: none"> The proposed innovation offers two or more significant improvements to the state of the art, that are likely to create competitive advantages in existing market niches and could define new market spaces; OR The proposed innovation can be considered a new benchmark of state of the art that is clearly ahead of competitors and that is likely to define new market spaces.

PS2: Intellectual Property (IP) Strategy

The Bidder must demonstrate a suitable Intellectual Property (IP) strategy, relevant to protect IP generated by the proposed innovation and to protect the Bidder. This criteria also assesses the degree to which the strategy is appropriate to support successful commercialization.

0 points	The Intellectual Property (IP) strategy is insufficiently rationalized or substantiated, and is poorly suited for background IP or generated IP as they pertain to the proposed innovation.
8 points Minimum	<ul style="list-style-type: none"> The ongoing activities described and rationalized form a suitable IP strategy in terms of relevant background IP or generated IP, and enables the application of suitable protection where and when relevant, as they pertain to the proposed innovation; AND A path to effective monetization of the proposed innovation is generally described, and sufficiently adequate considering the maturity of the company and the sector or industry.
12 points	<ul style="list-style-type: none"> The activities described are well substantiated and form an IP strategy that addresses all relevant background IP and generated IP as they pertain to the proposed innovation, and will ensure the Bidder is protected; AND/OR The Bidder describes an IP strategy factoring considerations beyond the operational demonstration of the proposed innovation, for the effective and competitive leveraging of IP in terms of profitable exploitation and market access.



PS3: Management Team

The Bidder must demonstrate that they have filled the key roles in the management team with individuals possessing relevant background or skill set*, who can support the successful commercialization of the proposed innovation.

- | | |
|--|---|
| Role A: Company leadership
(e.g. CEO, or equivalent) | Role C: Commercialization strategy
(e.g. Business Manager, or equivalent) |
| Role B: Technology development
(e.g. CTO, or equivalent) | Role D: Financial management
(e.g. CFO, or equivalent) |

**Multiple roles could be held by the same person; similarly, a person in a given role could be further supported by others in its responsibilities. Ultimately the intent is ensuring the role is fulfilled, however and by whomever this is achieved in practice.*

0 points	<ul style="list-style-type: none"> One or more roles are not identified; OR One or more roles significantly lacks relevant background or skill set; OR One or both company leader role and technology manager role have significant and unmitigated gaps in qualifications relevant to the company’s activities, which could obstruct the company’s efforts to reach commercial launch.
4 points	All roles are identified and possess a background or skill set (education and/or experience) that is relevant to the company’s activities or their respective fields, however gaps remain that are unmitigated and have the potential to impede commercial launch and commercial success.
8 points Minimum	All roles are identified and possess, or are supported by, a background or skill set (education and/or experience) that is relevant to the company’s activities or their respective fields, and will likely enable them to reach commercial launch.
12 points	All roles are identified and possess, or are supported by, a strong background or skill set (education and/or experience) that would serve well in commercializing the proposed innovation, is clearly relevant to their respective industry, and increases the likelihood of commercial success.

PS4: Financial Capacity

The Bidder must demonstrate that they have sufficient financial resources and a credible financial strategy in order to execute their commercial launch plan, without a potential ISC Testing Stream contract.

In determining the credibility of a financial strategy, evaluators consider: funding sources, the amount of secured and unsecured funds, the degree of risk, and whether these risks are reasonable or sufficiently mitigated based on the context of the sector. Credibility, potential risks, and applicability to support launch costs should also be considered.

Financial resources must demonstrate ability to commercialize the proposed innovation.

0 points	<ul style="list-style-type: none"> The Bidder has not demonstrated they have sufficient funds to commercialize the proposed innovation; OR The Bidder has no credible plan to secure necessary funds or the costs are significantly underestimated; OR The financial strategy provided is inadequate, unrealistic, or incomplete.
8 points Minimum	The Bidder has demonstrated they have funds in place, and otherwise possesses the financial capacity to undertake production and delivery of the proposed innovation; OR



	<ul style="list-style-type: none"> The Bidder has a credible financial strategy and remaining unsecured funds will not significantly impede commercializing the proposed innovation.
12 points	The Bidder has demonstrated they have sufficient secured funds and have a credible financial strategy to successfully commercialize the proposed innovation.

Stage 3 Technical Evaluation – Point Rated Criteria (PR)

PR1: Innovation Benefits

This criterion is intended to assess the degree to which the proposed innovation could contribute to the positive economic development of the innovation ecosystem in Canada.	
0 points	Economic benefits are not identified or are insufficient.
4 points	Economic benefits to the innovation ecosystem in Canada are limited.
8 points	Economic benefits to the innovation ecosystem in Canada are significant.

PR2: Operational Demonstration Risk Mitigation Strategies

This criterion is intended to assess the degree to which the Bidder has identified all important risks in the demonstration scenario, and degree to which those risks are addressed with appropriate mitigation strategies.	
0 points	<ul style="list-style-type: none"> 2 or more important risks were not identified and/or have a high level of residual risk.
4 points	<ul style="list-style-type: none"> 1 important risk was not identified; AND/OR The risks that were outlined in the demonstration scenario have mitigation strategies that are plausible and sufficiently described.
8 points	<ul style="list-style-type: none"> All important risks have been identified; AND The risks outlined in the demonstration scenario have mitigation strategies that are plausible and sufficiently described, but there is some residual risk.
16 points	<ul style="list-style-type: none"> All important risks have been identified; AND The risks outlined in the demonstration scenario have mitigation strategies that are comprehensive and well described, and there is very little residual risk.

PR3: Equity, Diversity, and Inclusion (EDI) Benefits

This criterion is intended to assess the degree to which the Bidder has sufficient measures to effectively achieve and maintain gender balance and diversity within; their business, supply chain, or business ecosystem.	
Score levels reflect the number of the following elements the Bidder addressed in their answer:	
<ul style="list-style-type: none"> Anti-discrimination policies; Recruitment strategy and hiring process; Training available to educate the Bidder’s workforce on diversity and inclusion; How diversity and inclusion are factored into Bidder’s supplier selection methods. 	
0 points	Policies regarding gender balance and diversity are not identified, are insufficient, or do not appear genuine.
4 points	Information provided clearly demonstrates that the Bidder is implementing some measures (up to two (2) elements) to achieve and maintain gender balance and increase diversity.



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

8 points	Information provided clearly demonstrates that the Bidder is implementing most measures (two (2) or more elements) to achieve and maintain gender balance and increase diversity.	
12 points	Information provided clearly demonstrates that the Bidder is implementing all measures (all four (4) elements) to achieve and maintain gender balance and increase diversity.	



PR4: Commercialization Strategy and Market Risks

This criterion is intended for the Bidder to demonstrate that they have a credible strategy to commercialize the proposed innovation, identifying market risks and providing suitable mitigation strategies for these risks.	
0 points	<ul style="list-style-type: none"> The presented commercialization strategy, market risk strategies and mitigation strategies are inadequate, incomplete or have not been presented.
8 points	<ul style="list-style-type: none"> The presented commercialization strategy, market risk strategies and mitigation strategies could support limited target market entry; OR Shortcomings in the expertise, human resources, partners/sales channels or physical assets present unmitigated risks to successful commercialization.
24 points	<ul style="list-style-type: none"> The presented commercialization strategy, market risk strategies and mitigation strategies are clear and well-developed and, given full implementation, should support entry into the target market; AND/OR Shortcomings in the expertise, human resources, partners/sales channels and physical assets present only small risks to successful commercialization.
32 points	<ul style="list-style-type: none"> The presented commercialization strategy, market risk strategies and mitigation strategies are complete, strong, and are highly likely to support long-term and sustained entry into the target markets; AND The Bidder has the expertise, human resources, partners/sales channels and physical assets required to move forward with successful commercialization.

PR5: Adoption Potential – Features & Benefits, Target Market

This criterion is intended to assess to what degree the proposed innovation’s features and benefits are attractive to the relevant target market.	
0 points	<ul style="list-style-type: none"> Key features and benefits are limited and/or offer minimal differentiation from the competition; AND Target market is small in size, offers low growth and/or has limited long term potential.
4 points	<ul style="list-style-type: none"> Key features and benefits offer moderate differentiation from the competition; OR Target market is moderate in size, offers moderate growth and/or has adequate long term potential.
8 points	<ul style="list-style-type: none"> Key features and benefits offer either moderate or clear differentiation from the competition; AND/OR Target market is moderate in size, offers moderate growth and has adequate long term potential.
16 points	<ul style="list-style-type: none"> Key features and benefits offer clear differentiation from the competition; AND Target market is large in size, promises high growth and/or has significant long term potential.



PR6: Adoption Potential – Cost to End User

<p>This criterion is intended to assess to what degree the cost of the proposed innovation and the efforts required to adopt it are attractive and relevant for the target market. <i>The acquisition costs of the proposed innovation include the intended market price, the organizational impact, time and resources required for training and installation, and other direct costs for target market end-user (the customer) to acquire the proposed innovation.</i></p>	
0 points	In relation to the acquisition cost and key features and benefits, an unacceptable amount of time and resources are required for the end user to adopt the proposed innovation.
4 points	In relation to the acquisition cost and key features and benefits, a significant amount of time and resources are required for the end user to adopt the proposed innovation.
8 points	In relation to the acquisition cost and key features and benefits, a reasonable amount of time and resources are required for the end user to adopt the proposed innovation.
16 points	In relation to the acquisition cost and key features and benefits, virtually no time and resources are required for the end user to adopt the proposed innovation.

PR7: Scope – Additional Outcomes

<p>This criterion is intended to assess the degree to which the Bidder meets the Additional Outcomes identified in the Demand Notice. <i>If no Additional Outcomes are identified in the Demand Notice, Bidders will be awarded 16 points.</i></p>	
0 points	Insufficient or no information was provided to clearly demonstrate that the proposed innovation addresses any of the Additional Outcomes identified in the Demand Notice.
4 points	Information provided clearly demonstrates that the proposed innovation addresses some (< 50%) of the Additional Outcomes .
8 points	Information provided clearly demonstrates that the proposed innovation addresses most (50% or more and < 100%) of the Additional Outcomes .
16 points	Information provided clearly demonstrates that the proposed innovation addresses all (100%) of the Additional Outcomes .

Maximum available points from Stage 2 & Stage 3 : **192 points**

Minimum Total Score* from Stage 2 & Stage 3 to pre-qualify: 115 points

**If a PS criteria required a CAR in order to be met, the original pre-CAR score will be used for the Total Score. Refer to the solicitation documents.*



APPENDIX 2 – GENERAL DEFINITIONS

Canadian Bidder

The Bidder must be Canadian and must be submitting the bid on its own behalf. A Canadian Bidder is defined as a bidder having a place of business in Canada where the bidder conducts activities on a permanent basis that is clearly identified by name and accessible during normal working hours.

Canadian Content

A minimum of 80% of the total proposal price must consist of Canadian goods and services. For the complete Canadian content definition please refer to the [Canadian Content Definition A3050T \(2020-07-01\)](#) at Part 1 General Information, Article 1.5 of the solicitation documents.

Small Business

Small businesses eligible to submit a proposal must meet all of the following criteria:

- for profit
- 499 or fewer full-time equivalent (FTE) employees*
- research and development activities that take place in Canada
- 50% or more of its annual wages, salaries and fees are currently paid to employees and contractors who spend the majority of their time working in Canada*
- 50% or more of its FTE employees have Canada as their ordinary place of work*
- 50% or more of its senior executives (Vice President and above) have Canada as their principal residence*

* Calculations must take into account and include affiliated businesses, such as parent companies and subsidiaries that are either in or outside of Canada.

Full Time Equivalent Employee (FTE)

A full-time equivalent (FTE) employee is defined as receiving a T4 Statement of Remuneration Paid slip (or equivalent) from the applicant. One FTE is defined as at least 30 hours/week of paid labour. Part-time employees must be included as fractions of 1 FTE based on average labour hours compared to typical hours for 1 FTE employee.

Innovation

Advance on state of the art

A technology that is an advance on the highest level of development for current commercially available products or services. For the purposes of ISC, state of the art must meet the program's definition of innovation and is a key component against which innovations are evaluated to determine the level of advancement offered.

The ISC Testing Stream evaluates innovations against what is commercially available, and not against other proposals or other related pre-commercial innovations which may be a similar advance on the state of the art.

Innovation

- An invention, new technology or new process that is not currently available in the marketplace.
- Significant modifications to the application of existing technologies/process that are applied in a setting or condition for which current applications are not possible or feasible.



- An improvement to an existing technology/process that represents a significant (generally patentable) improvement in functionality, cost or performance of goods and services that are considered state of the art or the current industry best practice.
- Incremental improvements, “good engineering” and technologies that would go ahead in a normal course of product development (that is, the next version or release) are not considered “innovations” for the purposes of this program.

Invention

A manufacturing design or any other new and useful improvement that is new or novel, that is, not commonly known or not an obvious derivative of an existing way of doing things.

Technology

- The practical application of science to commerce or industry
- The science of applying scientific knowledge to practical problems
- An innovation based in scientific and industrial progress
- Specific information and know-how required for development, production or use of good or service

Commercialization

Pre-commercial innovation

Pre-commercial innovations are those in the phases of research and development prior to commercialization. Pre-commercial innovations have been developed to a Technology Readiness Level between 7 and 9. Pre-commercial innovations have not been produced in quantity, may have had some limited sales for the purpose of testing and demonstration, and are not readily available in the marketplace.

This can cover activities such as solution exploration, design and prototyping, up to the original development of a limited volume of goods or services in the form of a test series. Original development of a first good or service may include limited production or supply in order to incorporate the results of field-testing and to demonstrate that the good or service is suitable for production or supply in quantity to acceptable quality standards.

The ISC Testing Stream requires that all proposed innovations are in a state and scale such that testing may occur as of the date of proposal submission, with only limited adjustments needed depending on the needs of a testing department.

Commercial sales

Good or service that is openly available in the marketplace or has been sold to either individuals in the public or private sector, in its current state or service offering for non-testing or development purposes.

Limited quantity

Development of a first good may include limited production in quantity to achieve acceptable quality standards, but does not include quantity production to establish commercial viability.

Mass production

The standardized production of an innovation in sufficient quantities to establish commercial viability.

Configuration and Customization



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

The ISC Testing Stream permits certain changes to pre-qualified innovations matched with testing departments, while others are unacceptable. These changes fall into 2 main categories: configuration or customization. Although this distinction applies only to those innovations that have been pre-qualified and matched, understanding the difference will aid the bidder in developing and writing a test plan.

Configuration

Configuration involves arranging or setting up fully functional and fully developed components of an innovation. Configuration is the process by which an innovation is made to function properly in a specific situation, in the environment in which it was originally intended to be used. This may include changes that are not essential to the functioning of the innovation, so long as they would not alter the result of testing or validation of the innovation during its development.

Configuration is an acceptable change under this program, should a proposed innovation be pre-qualified under the ISC Testing Stream.

Customization

Customization is the process of modifying fully functional and fully developed components of an innovation to meet the requirements of individual customers.

Customization is not an acceptable change under this program, should a proposed innovation be pre-qualified under the ISC Testing Stream.



APPENDIX 3 – DRAFT RESULTING CONTRACT CLAUSES

TABLE OF CONTENTS

1. Statement of Work
2. Standard Clauses and Conditions
3. Security Requirements (if applicable)
4. Term of Contract
5. Authorities
6. Proactive Disclosure of Contracts with Former Public Servants (if applicable)
7. Payment
8. Invoicing Instructions – Progress Claim
9. Certifications and Additional Information
10. Applicable Laws
11. Priority of Documents
12. Defence Contract (if applicable)
13. Foreign Nationals (Canadian Contractor) (if applicable)
14. Insurance
15. Controlled Goods Program (if applicable)
16. Progress Reports (if applicable)
17. Canadian Forces Site Regulations (if applicable) **OR** Government Site Regulations (if applicable)
18. Draft and Final Reports (if applicable)
19. Communications Notification
20. Access to Facilities and Equipment (if applicable)
21. Travel and Living (if applicable)
22. Shipping and Transportation (if applicable)

List of Annexes:

- | | |
|-----------|--|
| Annex “A” | Statement of Work |
| Annex “B” | Basis of Payment |
| Annex “C” | Security Requirements Check List (if applicable) |
| Annex “D” | Non-disclosure Agreement (if applicable) |
| Annex “E” | Sample Accommodations and Car Rental Government Rates Letter (if applicable) |
| Annex “F” | Sample Travel and Living Expense Summary Form (as applicable) |

Appendix (Appendices) (if applicable)



The following are draft clauses and conditions that may form part of any contract resulting from the Call for Proposals solicitation. Canada reserves the right to negotiate, modify and/or add any contract terms and conditions.

1. Statement of Work

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

1.1 Work Authorization (if applicable (Phase or Task))

Despite any other condition of the Contract, the Contractor is only authorized to perform the Work required to complete (Phase or Task) of the Contract at a cost not to exceed \$_____. Upon completion of (Phase or Task) the Work will be reviewed before the Contractor is authorized to commence any Work for (Phase or Task). Depending on the results of the review and evaluation of the Work, Canada will decide at its discretion whether to continue with the Work.

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

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

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 (2021-12-02), General Conditions - Research & Development, apply to and form part of the Contract.

2.2 Supplemental General Conditions

One or more of the following supplemental general conditions may apply to and form part of the Contract:

- 4001 (2015-04-01), Hardware Purchase, Lease and Maintenance
- 4002 (2010-08-16), Software Development or Modification Services
- 4003 (2010-08-16), Licensed Software
- 4004 (2013-04-25), Maintenance and Support Services for Licensed Software
- 4005 (2012-07-16), Telecommunications Services and Products
- 4008 (2008-12-12), Personal Information

2.3 SACC Manual Clauses

The following SACC Clauses may apply to and form part of the Contract:



A9041C (2008-05-12), Salvage

A9113C (2014-11-27), Handling of Personal Information

D3010C (2016-01-28), Delivery of Dangerous Goods / Hazardous Products

A9016C (2014-06-26), Hazardous Waste Disposal - Specific Requirements

A9019C (2011-05-16), Hazardous Waste Disposal

A9015C (2011-05-16), Experimental Animals

2.4 Protection and Security of Data Stored in Databases (if applicable)

1. The Contractor must ensure that all the databases containing any information related to the Work are located in Canada or, if the Contracting Authority has first consented in writing, in another country where:
 - (a) equivalent protections are given to personal information as in Canada under legislation such as the Privacy Act, R.S. 1985, c. P-21, and the *Personal Information Protection and Electronic Documents Act*, S.C. 2000, c. 5, and under any applicable policies of the Government of Canada; and
 - (b) the laws do not allow the government of that country or any other entity or person to seek or obtain the right to view or copy any information relating to the Contract without first obtaining the Contracting Authority's written consent.

In connection with giving its consent to locating a database in another country, the Contracting Authority may, at its option, require the Contractor to provide a legal opinion (from a lawyer qualified in the foreign country) that the laws in that country meet the above requirements, or may require the Contractor to pay for Canada to obtain such a legal opinion. Canada has the right to reject any request to store Canada's data in a country other than Canada if there is any reason to be concerned about the security, privacy, or integrity of Canada's data. Canada may also require that any data sent or processed outside of Canada be encrypted with Canada-approved cryptography and that the private key required to decrypt the data be kept in Canada in accordance with key management and storage processes approved by Canada.

2. The Contractor must control access to all databases on which any data relating to the Contract is stored so that only individuals with the appropriate security clearance are able to access the database, either by using a password or other form of access control such as biometric controls).
3. The Contractor must ensure that all databases on which any data relating to the Contract is stored are physically and logically independent (meaning there is no direct or indirect connection of any kind) from all other databases, unless those databases are located in Canada (or in another country approved by the Contracting authority under subsection 1) and otherwise meet the requirements of this article.
4. The Contractor must ensure that all data relating to the Contract is processed only in Canada or in another country approved by the Contracting Authority under subsection 1.
5. The Contractor must ensure that all domestic network traffic (meaning traffic or transmissions initiated in one part of Canada to a destination or individual located in another part of Canada) is routed exclusively through Canada, unless the Contracting Authority has first consented in writing to an alternate route. The Contracting Authority will only consider requests to route domestic traffic through another country that meets the requirements of subsection 1.



6. Despite any section of the General Conditions relating to subcontracting, the Contractor must not subcontract (including to an affiliate) any function that involves providing a subcontractor with access to any data relating to the Contract unless the Contracting Authority first consents in writing.

2.5 Non-disclosure Agreement (if applicable)

The Contractor must obtain from its employee(s) or subcontractor(s) the completed and signed Non-Disclosure Agreement, attached at Annex _____, and provide it to the Contracting Authority before they are given access to information by or on behalf of Canada in connection with the Work.

3. Security Requirement (if applicable)

To be determined based on the Statement of Work, commodity and Testing Department requirements.

3.1 Contractor's Site(s) or Premises Requiring Safeguarding Measures

- 3.1.1 Where safeguarding measures are required in the performance of the Work, the Contractor must diligently maintain up-to-date the information related to the Contractor's and proposed individuals' sites or premises for the following addresses:

Street Number / Street Name, Unit / Suite / Apartment Number
City, Province, Territory / State
Postal Code / Zip Code
Country

The Company Security Officer must ensure through the Contract Security Program that the Contractor and individuals hold a valid security clearance at the required level.

4. Term of Contract

4.1 Period of Contract

The period of the Contract is from _____ to _____ inclusive.

OR

4.1 Delivery Date

All the deliverables must be received on or before _____.

4.2 Comprehensive Land Claims Agreements (CLCAs) (If applicable)

The Contract is subject to the following Comprehensive Land Claims Agreements (CLCAs):

(list here)

4.3 Delivery Points



Delivery of the requirement will be made to delivery point(s) specified at Annex "X" of the Contract.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is: **to be determined.**

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 (Testing Department)

The Technical Authority for the Contract is: **to be determined.**

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 Client Authority (Innovations Solutions Canada (ISC) Testing Stream)

The Client Authority for the Contract is: **to be determined.**

The Client Authority is the representative of the department for whom the Work is being carried out under the Contract. The Client Authority is responsible for the development of the Statement of Work and for providing the funding. The Client Authority has no authority to authorize changes to the scope of work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.4 Contractor's Representative

The Contractor's Representative for the Contract is: **to be determined.**

6. Proactive Disclosure of Contracts with Former Public Servants (if applicable)

A3025C (2020-05-04), Proactive Disclosure of Contracts with Former Public Servants

7. Payment

7.1 Basis of Payment

The Contractor will be paid in accordance with the Basis of Payment in Annex ____.

7.2 Limitation of Price



For item ____ of the Basis of Payment:

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

7.3 Method of Payment

For item _____ of the Basis of Payment:

7.3.1 Progress Payments

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

OR

For item _____ of the Basis of Payment:

7.3.1 Milestone Payments

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, up to ____ percent of the amount claimed and approved by Canada if:
 - (a) an accurate and complete claim for payment using form PWGSC-TPSGC 1111 (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/1111.pdf>), Claim for Progress



**Innovative Solutions Canada
Testing Stream Demand Call
for Proposals B2
EN578-22ISC4**

Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;

- (b) the total amount for all milestone payments paid by Canada does not exceed _____ (insert) percent of the total amount to be paid under the Contract;
 - (c) all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
 - (d) all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all Work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.

7.3.2 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

Milestone No.	Description OR Deliverable	Firm Amount	Due Date OR Delivery Date

OR

For item _____ of the Basis of Payment:

- 7.3.1** SACC Manual Clause H1000C (2008-05-12), Single Payment
- 7.3.1** SACC Manual Clause H1001C (2008-05-12), Multiple Payments
- 7.3.1** SACC Manual Clause H1008C (2008-05-12), Monthly Payment

7.4 SACC Manual Clauses

A9117C (2007-11-30), T1204 - Direct Request by Customer Department
C0305C (2014-06-26), Cost Submission
H4500C (2010-01-11), Lien - Section 427 of the *Bank Act*

7.5 Discretionary Audit

SACC Manual Clause C0101C (2010-01-11), Discretionary Audit - Non-commercial Goods and/or Services **OR**

SACC Manual Clause C0705C (2010-01-11), Discretionary Audit



7.6 Time Verification

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

8. Invoicing Instructions - Progress Claim

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

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
- (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
- (c) a list of all expenses;
- (d) the description and value of the milestone claimed as detailed in the Contract.

Each claim must be supported by:

- (a) a copy of time sheets to support the time claimed;
 - (b) a copy of the invoices, receipts, vouchers for all direct expenses, travel and living expenses;
 - (c) a copy of the monthly progress report.
2. Applicable Taxes must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
 3. The Contractor must prepare and certify an original claim on Form PWGSC-TPSGC 1111, and forward it to the Contracting Authority for certification in an electronic format to the electronic mail address identified under section entitled "Authorities" of the Contract. Portable Document Format (.pdf) format is acceptable. The Contracting Authority will then forward the certified claim, in an electronic format, to the Technical Authority for appropriate certification after inspection and acceptance of the Work takes place, and onward submission to the Payment Office for the remaining certification and payment.
 4. The Contractor must not submit claims until all work identified in this claim is completed.

9. Certifications and Additional Information

9.1 Compliance

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

9.2 Federal Contractors Program for Employment Equity - Default by the Contractor (if applicable)



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 Clauses

A3000C (2014-11-27), Aboriginal Business Certification (if applicable)
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 wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the supplemental general conditions _____ (if applicable);
- (c) the general conditions 2040 (2021-12-02), General Conditions - Research & Development;
- (d) Annex __, Statement of Work;
- (e) Annex __, Basis of Payment;
- (f) Annex __, Security Requirements Check List (if applicable);
- (g) Annex __, Non-disclosure Agreement (if applicable);
- (h) Annex __, Sample Accommodations and Car Rental Government Rates Letter (if applicable);
- (i) Annex "X", Sample Travel and Living Expense Summary Form (as applicable);
- (j) the Contractor's proposal dated _____.

12. Defence Contract (is applicable)

SACC Manual clause A9006C (2012-07-16), Defence Contract

13. Foreign Nationals (Canadian Contractor) (if applicable)

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

14. Insurance

SACC Manual clause G1005C (2016-01-28), Insurance

15. Controlled Goods Program (if applicable)

SACC Manual clause A9131C (2020-11-19), Controlled Goods Program
SACC Manual clause B4060C (2011-05-16), Controlled Goods



16. Progress Reports (if applicable)

1. The Contractor must submit monthly reports, in electronic format, on the progress of the Work, to both the Technical Authority and the Contracting Authority.
2. The progress report must contain three parts:
 - (a) PART 1: The Contractor must answer the following three questions:
 - (i) Is the project on schedule?
 - (ii) Is the project within budget?
 - (iii) Is the project free of any areas of concern in which the assistance or guidance of Canada may be required?

Each negative response must be supported with an explanation.

- (b) PART 2: A narrative report, brief, yet sufficiently detailed to enable the Technical Authority to evaluate the progress of the Work, containing as a minimum:
 - (i) A description of the progress of each task and of the Work as a whole during the period of the report. Sufficient sketches, diagrams, photographs, etc., must be included, if necessary, to describe the progress accomplished.
 - (ii) An explanation of any variation from the work plan.
 - (iii) A description of trips or conferences connected with the Contract during the period of the report.
 - (iv) A description of any major equipment purchased or constructed during the period of the report.
- (c) PART 3: The "Contract Plan and Report Form", PWGSC-TPSGC 9143 (<http://publiservice-app.tpsgc-pwgsc.gc.ca/forms/pdf/9143.pdf>), (or an equivalent form acceptable to the Contracting Authority) showing the following:
 - (i) Actual and forecast expenditure on a monthly basis for the period being covered. (Expenditures are to be outlined by month and by task.)
 - (ii) Progress of the Work against the Contractor's original Contract Plan (instructions for showing the above on the Contract Plan are detailed in Annex "_____" attached). The form will provide the basis for planning and estimating the cost of work, and reporting actual progress and cost against the plan during contract performance.

17. Canadian Forces Site Regulations (if applicable)

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

OR

17. Government Site Regulations (if applicable)



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

18. Draft and Final Reports (if applicable)

In addition to the monthly reports on the progress of the Work, the Contractor must deliver a draft final report, in electronic format, no later than 30 working days prior to the expiry date of the contract, and a final report no later than 15 working days from date of contract expiry, to the Client Authority and Contracting Authority.

19. Communications Notification

As a courtesy, the Government of Canada requests that the Contractor notify the Contracting Authority five business days in advance of their intention to make public an announcement related to this contract award.

20. Access to Facilities and Equipment (if applicable)

Canada's facilities, equipment, documentation and personnel are not automatically at the disposal of the Contractor. If access to government premises, computer systems (micro computer network), working space, telephones, terminals, documentation and personnel for consultation is required by the Contractor to perform the Work, the Contractor must advise the Contracting Authority of the need for such access in a timely fashion. If the Contractor's request for access is approved by Canada and arrangements are made to provide access to the Contractor, the Contractor, its subcontractors, agents and employees must comply with all the conditions applicable at the Work site. The Contractor must further ensure that the facilities and equipment are used solely for the performance of the Contract.

21. Travel and Living (if applicable)

The Contractor must use establishments identified in the Accommodation and Car Rental Directory, which have agreed to extend their government rates to cost reimbursable contractors, consultants or advisors working under contract for the Federal, Provincial or Territorial Governments. The Accommodation and Car Rental Directory is available at the following site: <http://rehelv-acrd.tpsgc-pwgsc.gc.ca/index-eng.aspx>.

The Contractor will be reimbursed for the authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for overhead or profit, in accordance with the meal and private vehicle allowances specified in Appendices B, C and D of the National Joint Council Travel Directive, and with the other provisions of the directive referring to "travellers", rather than those referring to "employees". Canada will not pay the Contractor any incidental expense allowance for authorized travel.

It is the responsibility of the Contractor to become familiar with the current provisions of the National Joint Council Travel Directive, the Special Travel Authorities and the Directive on Travel, Hospitality, Conference and Event Expenditures available at the following web address: National Joint Council Travel Directive.

Accommodation and car rental companies may request a letter confirming that the Contractor is on government business (see sample at Annex E).



All travel must have the prior approval of both the Client Authority and Technical Authority, in writing. The Contractor must attach to the **Travel and Living Expense Summary form (see sample at Annex X)** a copy of the approval.

The Travel and Living Expense Summary form must be submitted with PWGSC-TPSGC 1111 Claim for Progress Payment.

Canada will not accept any travel and living expenses incurred by the Contractor as a consequence of any relocation of personnel required to satisfy the terms of this Contract.

All payments are subject to government audit.

22. Shipping and Transportation (if applicable)

The Contractor must ship the Innovation and associated components, Delivery Duty Paid (DDP) – ‘city name’ – Incoterms 2013, from the Contractor’s Canadian address to the testing department site(s) in Canada. Unless otherwise directed, delivery must be made by the most economical means. The Contractor is responsible for all delivery charges, administration, costs and risks of transport and customs clearance, including the payment of customs duties and Applicable Taxes.

Applicable Annexes (if applicable)

Annex “A” – Statement of Work

The Statement of Work will be generated based on the proposed Test Plan and in collaboration between the Bidder and the Testing Department. The Statement of Work must be approved by the Client Authority.

Annex “B” – Basis of Payment

The Basis of Payment will be negotiated in accordance with the Bidder’s financial proposal and the Statement of Work.

Annex “C” – Security Requirements Check List (if applicable)

For information, see: <https://buyandsell.gc.ca/policy-and-guidelines/supply-manual/section/2/50/5>.

Annex “D” – Non-Disclosure Agreement (if applicable)

The Bidder and all proposed resources who will perform Work under the resulting Contract may be required to sign a Non-Disclosure Agreement prior to having access to information or assets.

Annex “E” – Sample Accommodations and Car Rental Government Rates Letter (if applicable)

If required, the Client Authority can provide a letter confirming that the contractor will be traveling on official government business in the performance of the contract.



APPENDIX 4 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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 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 with this request will also render the bid non-responsive or will constitute a default under the Contract.

The duly completed and signed certifications must be submitted to the Contracting Authority within the time frame specified by the Contracting Authority. Failure to comply with the request of the Contracting Authority and to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

Certifications Required Precedent to Contract Award and Additional Information

1 COVID-19 Vaccination Requirement Certification

In accordance with the COVID-19 Vaccination Policy for Supplier Personnel, all Bidders must provide with their bid, the COVID-19 Vaccination Requirement Certification attached to this bid solicitation as Annex A, to be given further consideration in this procurement process. This Certification incorporated into the bid solicitation on its closing date is incorporated into, and forms a binding part of any resulting Contract.

2 Ownership

The Bidder certifies that:

- It is the owner of the Intellectual Property (IP) rights; or
- A Canadian licensor owning the Intellectual Property (IP) rights has granted the Bidder a licence to the IP for the proposed innovation and the Bidder is not infringing on any IP rights.

3 Integrity Provisions – Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

3.1 Declaration of Convicted Offences

Pursuant to subsection Declaration of Convicted Offences of section 01 of the 2003 Standard Instructions, where a Bidder or its Affiliate is unable to certify that it has not been convicted of any of the offences referenced under the Canadian Offences Resulting in Legal Incapacity, the Canadian Offences and the Foreign Offences subsections, the Bidder must provide with its bid, a completed [Declaration Form](#), to be given further consideration in the procurement process.



3.2 Integrity Provisions - List of Names

Note to Bidders: Although a list of directors was provided prior to pre-qualification, an updated list must be provided prior to contract award.

Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder.

Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).

Bidders bidding as societies, firms or partnerships do not need to provide lists of names.

[Bidder to insert names and titles of directors in the table below]

Name	Title

4 Integrity Federal Contractors Program for Employment Equity - Bid Certification

4.1 Federal Contractors Program for Employment Equity - Bid Certification – Contract under \$1M

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity “FCP Limited Eligibility to Bid” list available from [Employment and Social Development Canada \(ESDC\) - Labour's website](#).

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



5 Price Certification

The Bidder certifies that the price proposed:

- (a) is not in excess of the lowest price charged anyone else, including the Bidder's most favoured customer, for the like quality and quantity of the goods, services or both;
- (b) does not include an element of profit on the sale in excess of that normally obtained by the Bidder on the sale of goods, services or both of like quality and quantity, and
- (c) does not include any provision for discounts to selling agents.

6 Canadian Content Certification

This procurement is limited to Canadian goods and Canadian services.

Subject to the evaluation procedures contained in the Call for Proposal solicitation documents, Bidders acknowledge that only proposals with a certification that the goods and services offered are Canadian goods and Canadian services, as defined in clause [A3050T](#), Canadian Content Definition, will be considered.

The Bidder certifies that:

"A minimum of 80 percent of the total proposal price consist of Canadian goods and Canadian services as defined in paragraph 5 of clause [A3050T](#)."

For more information on how to determine the Canadian content for a mix of goods, a mix of services or a mix of goods and services, consult [Annex 3.6.\(9\)](#), Example 2, of the Supply Manual.

7 Former Public Servant Certification

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

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 FPSs 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: 2019-01](#) and the [Guidelines on the Proactive Disclosure of Contracts](#).

Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive?

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 adjustment program.

8 Procurement Business Number

Pursuant to section 02 of the 2003 Standard Instructions, suppliers are required to have a Procurement Business Number (PBN) before contract award. Suppliers may register for a PBN online at Supplier Registration Information (<https://srisupplier.contractsCanada.gc.ca>). For non-Internet registration, suppliers may contact the InfoLine at 1-800-811-1148 to obtain the telephone number of the nearest Supplier Registration Agent.

PBN: _____

9 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 at time of the Contract award process by inserting the name of the Canadian province or territory of their choice below. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidders.

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

10 Certification Acknowledgment

By signing this document, the Bidder certifies that the information submitted herein, and the information submitted in its bid, is accurate and complete.

The Bidder has read, understands and acknowledges the instructions and the clauses and conditions contained in all parts of this document, and the solicitation document.

The Bidder certifies that he or she is an authorized signing officer of the Bidder.

Print Name: _____

Title: _____

Signature: _____

Date: _____



Annex A –COVID-19 Vaccination Requirement Certification

I, _____ (first and last name), as the representative of
_____ (name of business) pursuant to
_____ (insert solicitation number), warrant and certify that all personnel
that _____ (name of business) will provide on the resulting Contract who
access federal government workplaces where they may come into contact with public servants will be:

- a. fully vaccinated against COVID-19;
- b. for personnel that are unable to be vaccinated due to a certified medical contraindication, religion or other prohibited grounds of discrimination under the Canadian Human Rights Act, subject to accommodation and mitigation measures that have been presented to and approved by Canada; or
- c. partially vaccinated against COVID-19 for a period of up to 10 weeks from the date of their first dose and subject to temporary measures that have been presented to and approved by Canada, immediately after which period the personnel will meet the conditions of (a) or (b) or will no longer access federal government workplaces where they may come into contact with public servants under this Contract;

until such time that Canada indicates that the vaccination requirements of the COVID-19 Vaccination Policy for Supplier Personnel are no longer in effect.

I certify that all personnel provided by _____ (name of business) have been notified of the vaccination requirements of the Government of Canada's COVID-19 Vaccination Policy for Supplier Personnel, and that the _____ (name of business) has certified to their compliance with this requirement.

I certify that the information provided is true as of the date indicated below and will continue to be true for the duration of the Contract. I understand that the certifications provided to Canada are subject to verification at all times. I also understand that Canada will declare a contractor in default, if a certification is found to be untrue, whether made knowingly or unknowingly, during the bid or contract period. Canada reserves the right to ask for additional information to verify the certifications. Failure to comply with any request or requirement imposed by Canada will constitute a default under the Contract.

Signature: _____

Date: _____

Optional

For data purposes only, initial below if your business already has its own mandatory vaccination policy or requirements for employees in place. Initialing below is not a substitute for completing the mandatory certification above.



Initials: _____

Information you provide on this Certification Form and in accordance with the Government of Canada's COVID-19 Vaccination Policy for Supplier Personnel will be protected, used, stored and disclosed in accordance with the Privacy Act. Please note that you have a right to access and correct any information on your file, and you have a right to file a complaint with the Office of the Privacy Commissioner regarding the handling of your personal information. These rights also apply to all individuals who are deemed to be personnel for the purpose of the Contract and who require access to federal government workplaces where they may come into contact with public servants.



APPENDIX 5 – DEPARTMENTAL DEMAND PROBLEM STATEMENTS

1. Demand: Quantum level Biophoton Optical Imager (Quantum Sensing)

Issuing Department: NRC

Description/Problem Statement

Biophotons are ultra-weak light (ranging from 1-1000 photons/ cm²/sec) that are emitted spontaneously by biological systems, such as tissues and animals. They are considered non-thermal in origin. Although their wavelength emission spectrum and the mechanism for this emission have not been clearly identified, most of the work has been done in the visible range (due to lack of ultrasensitive detectors in the shortwave infrared window), however, there is evidence that biophotons originate from radiative decay of electronically excited molecular species in both the visible and the shortwave infrared spectrum. Although the role and function of biophotons are still under investigation, they are believed to participate in cellular communication and indicate the state of biological tissues.

The main challenge of studying biophotons is their ultra-weak intensity, which requires ultrasensitive detectors with very low noise levels. To resolve biophoton detection in biological samples, we need single-photon imaging system, spanning the visible to shortwave infrared spectrum, coupled with spectral filters to achieve spatial and spectral resolution. These components must be built in a single, flexible platform that combines sufficient sensitivity, resolution and optical tools required to perform bio-photon measurements in a diverse set of biological samples.

The National Research Council of Canada needs to push the photon detection at the quantum level for biological research applications. Innovators are invited to develop a state-of-the-art, preclinical optical imager that spans a broad optical range from 400nm to 1700nm, with high (quantum level) photon detection sensitivity (1-1000 photons/cm²/sec), and an appropriate setup for tissue to live animal imaging.

The relevance of proposed innovations will be assessed according to how they address and resolve the Problem Statement above, when specified as such in this Notice, and where specified in the Evaluation Grid.

Essential Outcomes

The following are required essential outcomes, which proposed solutions to the Problem Statement must meet according to SC4 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

The proposed innovation must:

- a) Be a practical application of quantum sensing in providing a solution to the Problem Statement.
- b) Represent a significant sensitivity improvement to be able to visualize ultra-low single photon emission from living systems, including bio-photons within integration time of 60s or less. Read noise and dark noise must be kept to an absolute minimum.
- c) Be flexible for both ex-vivo tissue and small rodent animal (mouse and rat) studies.

The proposed innovation must not:



- d) Be intended for clinical imaging applications in humans

The proposed innovation must be able to demonstrate the following minimum criteria for an optical imaging system:

- e) Ability to have sufficient quantum sensitivity to detect photon emission in the range of 1-1000 photons/cm²/sec and/or as low as the thermal radiation level detected from tissues.
- f) Ability to detect photons in the desired optical detection range of 400-1700nm.
- g) Ability to conduct fluorescence excitation studies via a multiple laser capable of exciting the sample from 400-1040nm.
- h) Ability to image more than one animal (e.g. 2-3 animals) without opening the system.
- i) Incorporate systems with video rate detection capabilities.
- j) Ability to automatically adjust and collect emission at different wavelengths (e.g. filter wheel with a minimum 8 slots or a spectral band detector).
- k) Ability to automatically adjust sample stage in the X, Y and Z direction for sample focus.
- l) Imaging system must be contained and operated in a completely dark chamber for live sample imaging.
- m) Incorporate gaseous anesthesia and gas scavenging for live animal imaging (i.e. mice and/or rats).
- n) Ability for temperature control of animal.
- o) Incorporation of catheter tubing inlets for drug injections.
- p) Incorporate automated software control of sample light exposure and/or detection, in a dynamic manner, to obtain maximum signal while avoiding system saturation at different timepoints.
- q) Incorporate software for heat map image display and analysis, including intensity normalization between various exposures and detection settings at different time points, and the ability to derive photon intensity information from captured images using various region of interest selection tools.

Additional Outcomes

The following additional outcomes of proposed solutions to the Problem Statement will be scored according to PR7 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

In order to be considered having met the additional outcomes and to what degree, the proposed innovation should demonstrate:

- a) Having complete software control of hardware (i.e. stage, lens, wavelengths, filters)
- b) Being flexible for interchanging between ex-vivo tissues to live animals.
- c) Having user friendly software for easy operation by biologists.



2. Demand: Scaled Down Dilution Refrigerator (Quantum Device Refrigeration)

Issuing Department: NRC

Description/Problem Statement

The last two decades have generated an incredible growth in new quantum technologies research, which has the potential to radically transform how our society evolves. Indeed, it is generally accepted that we are on the cusp of the Quantum 2.0 revolution (Quantum 1.0 previously involving the transistor and laser). Canada has been one of the world's leaders in fundamental research in quantum technology. The challenge now is to transfer this knowledge to new industries. It is also becoming increasingly recognized that to optimize quantum technologies hybridization of quantum platforms will be necessary. For example, while photons are the obvious platform for transmitting information over long distances because they only weakly interact with the environment the very same property makes it difficult to use photons for logic operations. Hybridization allows each quantum platform (spins, superconducting qubits, atoms, defects, Majorana Fermions etc...) to perform the task it is optimally suited for. Most quantum technologies, for coherence requirements, utilize a system that cools the quantum devices to temperatures as cold as 10 mK, namely *dilution refrigerators* (e.g. each D-wave quantum computer comes with a dilution refrigerator). The dilution refrigerator industry is currently growing at an accelerated rate of ~10% per year due to the increased demand for novel quantum technologies, but only a handful of companies outside of Canada produce them and waiting times for system purchases are long. While dilution refrigerators are based on a relatively old technology and physics concept, they underwent a revolution a decade ago when cryogen free technology was introduced (i.e. there is no longer need for liquid helium or nitrogen to reach these temperatures). In spite of these developments, the systems are still very large and complex, basically requiring a whole dedicated laboratory to house them and Ph.D. trained staff to operate. This limits their accessibility for quantum researchers and the development of future industries that could take advantage of them. It is also important to note that cooling quantum devices involves a lot more than just producing cold temperatures e.g. the electron-phonon interaction the principal cooling route for electrons in semiconductor quantum devices goes as T^5 (T is the temperature) so as one goes colder, it becomes increasingly more challenging to cool them, even if they are mounted on a plate that is itself cold (i.e. cooling power is not the main concern). Such cryogenic considerations are left to the end user to solve, again requiring very specialized expertise and limiting their adoption. While undoubtedly there are applications for which these large and complex dilution refrigerators are necessary, for many if not most applications this is not the case.

The challenge involves surmounting the engineering obstacles to build a demonstrator, easy to use, "table top" version of a dilution refrigerator which would be four to five times smaller (including all components) than currently available. This dilution refrigerator should also be built with a special focus on being suitable for hybridizing quantum platforms. An example of a hybrid quantum system that such a cryostat could be used for, amongst many others, is a quantum repeater for quantum communications, where flying *optical* qubits interact with *solid state* qubits. The flying qubits are used for transferring the quantum information, whilst the



solid state qubits perform the necessary quantum teleportation protocol operations. The hybridization would take place on the dilution refrigerator. The table top system must be easy to operate without specialized knowledge, allow easy access to the low temperature region with enough room for the user to add complex quantum components (e.g. a miniaturized ultra-low temperature optical table) and provide a rapid turn-around time (24 hours) for exchanging quantum device. We believe such a system would extend the availability and use of dilution refrigerators thus helping to generate new quantum technologies.

The relevance of proposed innovations will be assessed according to how they address and resolve the Problem Statement above, when specified as such in this Notice, and where specified in the Evaluation Grid.

Essential Outcomes

The following are required essential outcomes, which proposed solutions to the Problem Statement must meet according to SC4 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

The proposed innovation must:

- a) Be a practical application of quantum sensing in providing a solution to the Problem Statement.
- b) Represent an improvement on current dilution refrigerator technologies in terms of ease of use.
- c) Have a cost and footprint which make its wide-spread use in different experimental settings (academia, government, and industry) realistic.
- d) Be safe and legal to incorporate into scientific laboratories.

The dilution refrigerator must also be able to demonstrate the following minimum criteria in a laboratory setting:

- e) Require no use of cryogenics such as liquid helium.
- f) Reach temperatures of 30 mK or less and sufficient available cooling power (250 microW at 100mK) to incorporate new components for future experiments.
- g) Allow the precise delivery (with micrometer precision) of photons to the devices both via line-of-sight and via optical fiber without compromising temperature.
- h) Incorporate enough electronic wiring covering a broad band spectrum (up to GHz frequencies) to operate and readout qubits without compromising temperature.
- i) Allow control of magnetic qubits by the application of a magnetic field of minimum 5T.
- j) Have a small enough footprint (3 to 4 times smaller than existing systems) to integrate with optical table experiments.
- k) Vibration isolation needs to be evaluated and match or surpass existing systems.
- l) Allow sample exchange time of 24 hours or less.



Additional Outcomes

The following additional outcomes of proposed solutions to the Problem Statement will be scored according to PR7 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

In order to be considered having met the additional outcomes and to what degree, the proposed innovation should:

- a) Support a variety of qubit technology types, including photonic, spin, and charge qubits.
- b) Be robust and support long lasting experiments without interruptions.

The successful dilution refrigerator design should allow the operation of novel hybrid quantum technologies. This translates to:

- c) Ability to reach cryogenic temperatures suitable for solid state qubit implementations.
- d) Ability to couple optical 'flying' qubits with solid state qubits.
- e) Ability to electronically control and readout qubit devices.
- f) Ability to control and operate spin qubits.

Additionally, in terms of laboratory use and installation, the proposed design should allow:

- g) Fast sample exchange.
- h) Easier operation than current dilution refrigerator technologies. Non-experts with no training in cryogenics should be able to use it.
- i) Easier integration with existing laboratory equipment such as optical tables by reducing the size of the equipment.

3. Demand: Ultrasensitive spectroscopy system for quantum photonics (Quantum Sensing)

Issuing Department: NRC

Description/Problem Statement

Quantum-level imaging and spectroscopy of short-wave infrared (SWIR) photons (1-1.7 μ m) is a key challenge for technology development, including photon source construction, quantum sensing, and quantum communication. Noise from dark current and the read-out process are persistent problems in state-of-the-art SWIR array detectors, because they reduce the signal-to-noise ratio. We wish to establish and validate cutting-edge technical innovations that enable imaging and spectral analysis of the faint SWIR optical signals that arise in quantum photonic technologies, including photon source development. We are looking for pioneers to drive new innovations that improve the signal-to-noise ratio in short-wave infrared sensing technology, enabling the development of new quantum photonic technologies.



Innovators are invited to develop an imaging spectroscopy system that is suited to use with quantum technologies, especially photon source development and characterization.

The relevance of proposed innovations will be assessed according to how they address and resolve the Problem Statement above, when specified as such in this Notice, and where specified in the Evaluation Grid.

Essential Outcomes

The following are required essential outcomes, which proposed solutions to the Problem Statement must meet according to SC4 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

The proposed innovation system must:

1. Be able to operate either as a two-dimensional array imaging device (imaging mode), or as an imaging spectrometer for characterizing photon sources (spectroscopy mode).
2. Be able to detect photons with quantum efficiency >0.65 over the spectral range $1\mu\text{m}$ to $1.55\mu\text{m}$.
3. Represent an improvement in the signal to noise performance over the state of the art.
4. Have a total noise of less than 25 electrons per pixel for an integration time of 2 seconds when the imaging target and surrounding is at 20C.
5. Have a total noise of less than 20 electrons per pixel for an integration time of 0.5 seconds when the imaging target and surrounding is at 20C.
6. In imaging mode: achieve a signal-to-noise ratio greater than 10 for fewer than 450 incident photons per pixel during an integration time of 2 seconds.
7. In imaging mode: achieve a signal-to-noise ratio greater than 10 for fewer than 350 incident photons per pixel during an integration time of 0.5 seconds.
8. In spectroscopy mode: have a transmission efficiency of at least 50% from the optical input port of the device to the focal plane array.
9. In spectroscopy mode: permit direct free-space imaging on to the entrance slit.
10. In spectroscopy mode: must be equipped with a fibre adapter for FC-connections and SMA-connections, including control of the fibre end-facet transverse position relative to the entrance slit.
11. In spectroscopy mode: must permit manual or automatic control of the entrance slit width.
12. In spectroscopy mode: achieve a resolution of less than 5nm for single-shot acquisition from 1000nm to 1600nm.
13. In spectroscopy mode: tune automatically between any high and low resolution settings.
14. In spectroscopy mode: obtain the requisite and desired range and resolution standards in single-shot acquisition.
15. Include a light source for wavelength calibration in spectroscopy mode.
16. Include a light source for intensity calibration in spectroscopy mode.



17. Include control software and hardware for data acquisition and display.
 - a. The software must include live plotting of spectrum data with calibrated wavelength display.
 - b. The software must include a routine for wavelength calibration in spectroscopy mode.
 - c. The software must include live exporting of data to third party software, such as MATLAB and Python.
 - d. The software must be available for installation on at least eight (8) separate computers.
 - e. Specifications for computer hardware necessary to control the imaging spectrometer and any other laser or light sources
18. In spectroscopy mode: the system must include a tuneable continuous wave diode laser system for seeding photon pair sources. The tuneable diode laser(s) must:
 - a. be tuneable from 660-673nm with >15mW average output power, linewidth <400kHz, and frequency stability <150MHz/K;
 - b. be tuneable from 805-840nm with >50mW average output power, linewidth <400kHz, and frequency stability <150MHz/K;
 - c. be tuneable from 890-910nm with >50mW average output power, linewidth <400kHz, and frequency stability <150MHz/K;
 - d. include fiber adapters for fiber coupling of each beam;
 - e. include an optical isolator for each operating wavelength range;
19. Have a linear response to optical power of >98% over the dynamic range of the detector array and over the full dynamic range of each pixel.
20. Achieve a pixel operability of >99% over the full array of pixels.

Additional Outcomes

The following additional outcomes of proposed solutions to the Problem Statement will be scored according to PR7 of the Evaluation Grid in Appendix 1 of the Call for Proposals solicitation documents.

In order to be considered having met the additional outcomes and to what degree, the proposed innovation should:

1. Include an example of how to implement live exporting of data to third party software, such as MATLAB and Python.
2. Be designed to minimize the impact of thermal background noise, including any necessary shielding.
3. Permit imaging in one spatial dimension when operating in spectroscopy mode.
4. If any external coolant is required for peak performance, still be able to operate without manual addition of an external coolant.
5. In spectroscopy mode: the system should achieve a resolution <0.5nm for a spectral range greater than 200nm centered on 1100nm.



6. In spectroscopy mode: the system should achieve a resolution $<0.5\text{nm}$ for a spectral range greater than 200nm centered on 1300nm .
7. In spectroscopy mode: the system should achieve a resolution $<0.5\text{nm}$ for a spectral range greater than 200nm centered on 1500nm .
8. In spectroscopy mode: the system should permit continuous tuning of the detector center wavelength across the operating range.
9. Include software that permits software binning and plotting of selected detector regions.