



**Build in Canada Innovation Program (BCIP)
Request for Information (RFI)**

Date: February 9, 2018

Solicitation No.: EN578-DB1707/A

GETS Reference Number: PW-18-00815694

Closing date: Please refer to the tender notice on www.BuyandSell.gc.ca

Industry Engagement Q&A submission details are included in this Request for Information document herein.

Issuing Office:

Public Services and Procurement Canada
Space, Innovation and Informatics Projects Directorate
10 rue Wellington
Gatineau, Québec K1A 0S5
Email: SSGP.SCPD@pwgsc.gc.ca

Request for Information (RFI)

Challenge: Search and Track Large and High-speed UAVs

Sponsor: Department of National Defence (DND)

1. Introduction

Public Services and Procurement Canada (PSPC), Office of Small and Medium Enterprises and Stakeholder Engagement (OSME-SE), under the Build in Canada Innovation Program (BCIP), has a requirement to procure:

- a) Research and Development (R&D) innovative pre-commercialized goods and services (referred to as Innovations) that are in late stage of development; and
- b) Support services such as installation, training and testing support services for the pre-commercial Innovations procured under the BCIP.

The BCIP is a R&D procurement program aimed at procuring, testing and evaluating R&D pre-commercialized goods and services in the late stage development (Technology Readiness Level 7 to 9).

The BCIP has launched a Challenge Call for Proposals (CFP) under the Military component of the BCIP to help testing departments solve challenges in innovative ways. Under the Challenge CFP, sponsor departments partner with the BCIP to create challenges, evaluate proposals, and act as testing departments. Under this CFP, BCIP will publish challenges for the scientific, technical and innovation communities to submit innovative science and technology proposals to respond to, ultimately providing innovators with the opportunity to provide solutions.

2. Request for Information (RFI)

The respondent(s) to the RFI are defined as a company or joint venture with the ability to fulfil the requirements of the Challenge as identified under Annex A – Challenge Details. The information The information provided by Respondent(s) may be used to refine the details of the requirement.

The Respondent(s) are invited to submit a reply to the RFI that addresses each of the topics identified in Annex B – Industry Engagement Questions. To facilitate the review of the responses, Respondent(s) are asked to address and present the requested information in the order in which the topics are presented.

Canada reserves the right to amend, delete or add, in whole or in part, any terms or provisions of this RFI document. Any revision will be provided in writing.

No payment will be made for costs incurred in the preparation and submission of a response to the RFI.

2.1 Recommendations, Suggestions or Comments

Respondent(s) are invited to provide general feedback and/or any recommendations, inputs or comments (including technical and/or costing information) that could assist Canada in the refinement of any of the documents included in the RFI. However, Canada will have the right to accept or reject any or all recommendations.

3. Additional Content to the RFI

The following documents form part of the RFI document:

BCIP Challenge Call for Proposals which is currently active on BuyandSell.gc.ca

- [BCIP Challenge Call for Proposals Solicitation](#)
 - o [Attachment 1 – Evaluation Grid](#)
 - o [Attachment 2 – Draft Resulting Contract Clauses](#)
 - o [Attachment 3 – Certifications and Additional Information](#)

Annex A – Challenge Details

Annex B – Industry Engagement Questions

This document includes Questions that PSPC would like the Industry to respond in order to improve the Challenge.

4. Requested Information

PSPC is seeking engagement with Industry to assess the technical feasibility of its proposed requirement and the procurement strategy for the Challenge. PSPC is seeking advice from Industry on the proposed requirement and specific questions identified under Annex B – Industry Engagement Questions.

Respondent(s) are invited to consult Annex B – Industry Engagement Questions, in order to provide their response(s) to the requested information. Respondent(s) are requested to provide a maximum of 400 words per answer in their responses.

5. No Obligation

The RFI is not a bid solicitation and does not constitute a commitment, implied or otherwise, that the Government of Canada will take procurement action in this matter. The issuance of the RFI does not create an obligation for Canada to issue a subsequent Challenge, and does not bind Canada legally or otherwise, to enter into any agreement or to accept any suggestions from Respondent(s). Canada reserves the right to accept or reject any or all comments received.

Further, the Government of Canada will not be responsible for any cost incurred by Respondent(s) in furnishing responses.

A review team composed of representatives of PSPC and the Challenge Sponsor Department will review the responses on behalf of Canada. Not all members of the review team will necessarily review all responses.

There will be no short listing of firms for purposes of undertaking any future work, as a result of this RFI. Similarly, participation in the RFI is not a condition or prerequisite for participation in any Challenges.

6. Confidentiality

Respondent(s) are advised that any information submitted to Canada in response to this RFI may be used by Canada in the finalization of a competitive Challenge. However, the Government is not bound to accept any Expression of Interest or to consider it further in any associated documents such as a Challenge.

All industry consultations will be documented and this information is subject to the Access to Information Act. Respondent(s) should identify any submitted information that is to be considered as either company confidential or proprietary. Canada will not reveal any designated confidential or proprietary information to public and/or third parties.

7. Delivery Address and Response Format

Responses to this RFI must be sent via email to SSGP.SCPD@tpsgc-pwgsc.gc.ca

The electronic file formats of the response must be in either the Adobe Portable Document Format (PDF) TM or in a file format that is readable by the 2013 Microsoft Office Suite.

Provision of an electronic copy is required in order to facilitate the distribution of the RFI responses to PSPC.

8. Closing Date

Responses to this RFI should be submitted, on or before the date and time specified on the tender notice.

9. Response Review

Following receipt of responses to this RFI, PSPC and the Challenge Sponsor Department will review responses received for purposes of refining its way forward on this requirement.

Canada reserves the right to request additional information for clarification during the review of the responses to this RFI, and/or to consider a subsequent modification of the response put forward by a Respondent.

10. Enquiries

All enquiries and other communications related to this RFI must be directed exclusively to the PSPC Contracting Authority identified in Section 12, below. Respondent(s) that intend on responding to this RFI are asked to advise the Contracting Authority of their intention to respond, in order that they may be notified of any changes to the notice on Buy and Sell website, which may occur during the posting period.

11. Language

Responses are to be provided in one of the two Official Languages of Canada (English or French).

12. Contracting Authority

All enquiries and other communications related to this RFI must be directed to the Contracting Authority as follows:

Huda Dahir
Supply Team Leader
Public Services and Procurement Canada
Email: SSGP.SCPD@tpsgc-pwgsc.gc.ca

List of Annexes:

- Annex A – Challenge Details
- Annex B – Industry Engagement Questions

ANNEX A – CHALLENGE DETAILS**Challenge: Search and Track Large and High-speed UAVs****Challenge Sponsor: Department of National Defence (DND)****Background/Summary**

Unmanned systems are widely used in the military. There are about 70 countries running military Unmanned Aerial Vehicle (UAV) programs. Following their successful deployment in military and intelligence sectors, drones have seen rapid adoption in the civilian applications. The wide spread application of UAV increases not only military, but also public safety and security concerns. For example, they could be used for intelligence gathering, delivering explosive devices, or targeting critical infrastructures under the military or safety and security portfolio. Therefore, it is a necessary to develop effective counter UAV techniques to defend against the threat posed by the potential malicious use of UAVs.

The growing use of drones by civilians and UAVs by military opponents presents a number of safety and security threats, such as crash in crowded areas, collide with aeroplanes, or be used to launch malicious attacks against critical civilian and military infrastructures.

Defence R&D Canada (DRDC) has been working on a counter-UAV study in collaboration with defence partners under The Technical Cooperation Program (TTCP). The current researches are focused on investigating optimum Electronic Attack (EA) methods to jam UAV payload and guidance systems, as well as using lasers to take down hostile drones. Search, track, identify and defeat or destroy are required steps to counter drones. It is a challenge to detect and track flying drones because they are small and hard to be detected. Since DRDC does not work in the area of drone detection, it is impossible to verify the jamming strategies or destroying capabilities.

The purpose of this challenge is to identify the “Innovation”, which is a system to search and track Unmanned Aerial Vehicles (UAVs), also known as drones. The system will be used to detect and track both slow speed and small size drones, as well as the large-size and high-speed drones. The Innovation is a single solution which consists of radar sensor, video tracker, interface box, and corresponding signal/image processing and information fusion algorithms.

Challenge Details

The aim of this challenge is to test the performance of the Innovation.

Note: The following elements of the challenge will be assessed in accordance with the Proposal Submission Form and the Evaluation Grid.

The Innovation should possess as many of the following characteristics as possible:

Table 1. System Parameters	
Radar Parameters	
Transmit frequency	24.125GHz (K band)

Peak power	½ watt, whereas up to 2 watt can be safe for human exposure
Antenna beamwidth	2 degree
Antenna gain	36dBi
Pulse width	Direct Sequence Spread Spectrum (10 bit)
PRF	Direct Sequence Spread Spectrum (10 bit)
Search/Tracking Dimensions	
Detection range	Max 1.6km (0.5 W)
Azimuth angle	± 2 degree
Elevation angle	± 2 degree
Doppler frequency	Corresponding to the resolution cell as follows
Derived Parameters	
Range resolution	Programmable, 0.75m to 12m. Bandwidth is: 400MHz for 0.75m resolution, 100MHz for 3m resolution and 25MHz for 12m resolution (search)
Unambiguous range	134 range cells. Maximum range is 134 X 12m/cell
Target	
Target RCS	Miniature drone is as low as 0.025 m ²
Single-target tracking	Yes
Maximum range	1.2km (0.5w)
Detection time	0.5 Sec.
Video Camera	
Target allocation	Controlled by the radar
Zoom in function	Controlled by the radar

The Innovation must possess all the following characteristics:

- The innovation must be able to detect large-sized and high-speed military UAVs in addition to the small-sized and low-speed commercial drones.
- The innovation must work in K-band in order to avoid the interference with the wireless communication
- The innovation must be designed to allow for increasing the peak power to extend the minimum detection range to 10km.
- The innovation must have a minimum detection range greater than 1.5 km at the radar peak power of 0.5 w with the minimum target Radar Cross Section (RCS) 0.05 m²

ANNEX B – INDUSTRY ENGAGEMENT QUESTIONS

Respondents are requested to provide the following information:

Company name	
Representative	
Telephone	
Email	

Please respond to the following:

Question 1:

Are there any commercially available solutions, Canadian or otherwise, that can currently meet the mandatory characteristics (i.e. those listed under “must”) of this Challenge?

Response 1:**Question 2:**

Are there any pre-commercial innovations at Technology Readiness Level¹ (TRL) 7 to 9 that can meet the mandatory characteristics of this Challenge?

Response 2:**Question 3:**

Do you currently have an innovation at TRL 7 to 9 that can meet at minimum the mandatory characteristics of this Challenge?

Response 3:**Question 4:**

Please provide a list of the non-mandatory characteristics (i.e. those listed under “should”) of this Challenge that you are able to meet.

Response 4:**Question 5:**

Are there any characteristics listed in this Challenge that you feel the industry will not be able to meet?

Response 5:

¹ <http://www.tpsgc-pwgsc.gc.ca/app-acq/picc-bcip/technologique-technology-eng.html>

Question 6:

Are there any additional features or benefits that can be described as advancements on the state of the art² which should be considered as additions to this Challenge?

Response 6:

Question 7:

Are there any other solutions for the problem this Challenge is attempting to solve?

Response 7:

Question 8:

Please refer to article 3 of this RFI document and provide any comments on the BCIP Challenge Call for Proposals or its attachments such as the Evaluation Grid or any other parts of this process.

Response 8:

² 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 the BCIP, 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 BCIP 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.

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Question 5:

Are there any characteristics listed in this Challenge that you feel the industry will not be able to meet?

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