

## **Innovative Technologies for Small Satellites**

The Intelligence Advanced Research Projects Activity (IARPA) invests in high-risk, high pay off research programs to tackle some of the most difficult challenges of the agencies and disciplines in the Intelligence Community (IC). Small satellites, which for the purpose of this request for information (RFI) are defined as spacecraft with a mass less than 500 kilograms, have demonstrated numerous low-cost applications with relatively short delivery times from concept to launch (i.e., 2-3 years). Further reductions of the cost, risk, complexity, mass, and/or time to launch are required to mature the state of the art for small satellite capabilities, phenomenologies, or methodologies. IARPA seeks information on innovations in space-based research from a variety of entities to include independent consultants, small businesses, and scientist and engineers in the academic and technology fields to mature the state of the art for small satellites.

This RFI is issued solely for information gathering and planning purposes; this RFI does not constitute a formal solicitation for proposals. The following sections of this announcement contain details of the scope of technical efforts of interest, along with instructions for the submission of responses.

This RFI seeks capability statements relating to small satellites, subsystem technologies, and data collection and processing capabilities that are assessed to be at Technology Readiness Levels 1-6. Responses to this RFI should address one or more of the following objectives:

- Identify candidate technologies applicable to small satellites with game-changing and/or crosscutting potential and validate these technologies via spaceflight or lab environment that mimics space;
  - Technologies must demonstrate an innovative capability not previously demonstrated with small satellites or in space.
- Accelerate measurable improvement or create new small satellites capabilities related to autonomy, advanced communications, remote observation, space-based sensor phenomenologies, automated data processing or object recognition, or other applications associated with collecting, processing, and distributing information from small satellites-based platforms; or
- Identify key technology and capability investments that incubate and enhance the market for small satellites.

Technology domains of interests include (but are not limited to): innovative imaging including temporal and spectral solutions; synthetic aperture radar solutions; AI/ML/on-board processing for payload and communications applications; RF and optical payload technologies, data fusion, communications; complete spacecraft platforms; constellations, communications; command and data handling; automated collection orchestration, ground data systems and mission operations; thermal control; power; propulsion, guidance, navigation and control; and autonomous operations.

## **Preparation Instructions to Respondents**

IARPA requests that respondents submit ideas related to this topic for use by the Government in formulating a potential program. IARPA requests that submittals briefly and clearly describe the potential approach or concept, outline critical technical issues/obstacles, describe how the approach may address those issues/obstacles and comment on the expected performance and robustness of the proposed approach. If appropriate, respondents may also choose to provide a non-proprietary rough order of magnitude (ROM) estimate regarding what such approaches might require in terms of funding and other resources for one or more years. This announcement contains all of the information required to submit a response. No additional forms, kits, or other materials are needed.

IARPA appreciates responses from all capable and qualified sources from within and outside of the U.S. Because IARPA is interested in an integrated approach, responses from teams with complementary areas of expertise are encouraged. Classified responses will not be accepted.

Responses have the following formatting requirements:

1. A one page cover sheet that identifies the title, organization(s), respondent's technical and administrative points of contact - including names, addresses, phone and fax numbers, and email addresses of all co-authors, and clearly indicating its association with IARPA-RFI-19-05;
2. A substantive, focused, one-half page executive summary;
3. A description (limited to 10 or fewer pages in minimum 12 point Times New Roman font, appropriate for single-sided, single-spaced 8.5 by 11 inch paper, with 1-inch margins) of the technical challenges and suggested approach(es);
4. A list of citations (any significant claims or reports of success must be accompanied by citations);
5. Optionally, a single overview briefing chart graphically depicting the key ideas.

## **Submission Instructions to Respondents**

Responses to this RFI are due no later than 4:00 p.m., Eastern Time, on May 31, 2019. All submissions must be electronically submitted to [dni-iarpa-rfi-19-05@iarpa.gov](mailto:dni-iarpa-rfi-19-05@iarpa.gov) as a PDF document. Inquiries to this RFI must be submitted to [dni-iarpa-rfi-19-05@iarpa.gov](mailto:dni-iarpa-rfi-19-05@iarpa.gov). Do not send questions with proprietary content. No telephone inquiries will be accepted.

## **Disclaimers and Important Notes**

This is an RFI issued solely for information and planning purposes and does not constitute a solicitation. Respondents are advised that IARPA is under no obligation to acknowledge receipt of the information received, or provide feedback to respondents with respect to any information submitted under this RFI.

Responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Respondents are solely responsible for all expenses associated with responding to this RFI. IARPA will not provide reimbursement for costs incurred in responding to this RFI. It is the respondent's responsibility to ensure that the submitted material has been approved for public release by the information owner.

The Government does not intend to award a contract on the basis of this RFI or to otherwise pay for the information solicited, nor is the Government obligated to issue a solicitation based on responses received. Neither proprietary nor classified concepts nor information should be included in the submittal. Input on technical aspects of the responses may be solicited by IARPA from non-Government consultants/experts who are bound by appropriate non-disclosure requirements.

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