Program Solicitation

Strategic Technology Office (STO)

Frosty

DARPA-PS-26-03

December 18, 2025

PROGRAM SOLICITATION OVERVIEW INFORMATION

- **Federal Agency Name** – Defense Advanced Research Projects Agency (DARPA), Strategic Technology Office (STO)
- **Funding Opportunity Title** – Frosty
- **Announcement Type** – Initial Announcement
- **Funding Opportunity Number** – DARPA-PS-26-03
- **Dates - All times are Eastern Time Zone (ET)**
  - Posting Date: December 18, 2025
  - Questions Due Date: January 7, 2026, by 5:00 PM (ET)
  - Abstracts Due Date and Time: January 30, 2026, by 4:00 PM (ET)
  - Oral Presentations Due Date and Time: By Government request, estimated 4-5 weeks after Abstract submission

- The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative approaches to address challenges in the following technical area: Frosty will develop technology to produce new sensing modes in the Arctic environment, enabling better detection and tracking of low-flying air vehicles and slow-moving maritime vessels. Development of innovative radar signal processing algorithms and analysis approaches are needed to enable the proposed concept.

- **Multiple awards are anticipated**.
- **Types of instruments that may be awarded** – Other Transaction Agreement (OTA) for Prototypes
- **Agency Contact**
  The Solicitation Coordinator for this effort can be reached at: DARPA-PS-26-03@darpa.mil. or via U.S. postal service to:
  DARPA/STO
  ATTN: DARPA-PS-26-03
  675 North Randolph Street
  Arlington, VA 22203-2114
- Note: Publication and presentation of information developed under this program to non-program organizations will require release review through the DARPA DISTAR process. A fundamental research exemption to prepublication review will not be provided.

- **Attachments:**
  - ATTACHMENT A: Proposers' Day Material (Will be posted later.)
  - ATTACHMENT B: Robey, F.C., Epstein, B, Carlson, K, Earp, S.L., *Defense Applications of Innovative Remote Sensing*, Proc 2025 IEEE Radar Conference, Krakow, Poland, October 2025
  - ATTACHMENT C: Robey, F.C., Earp, S.L., *Passive Ambient Noise Radar via Cross-correlation*, Extended abstract for Asilomar Conference, 2025.

PROGRAM SOLICITATION
Defense Advanced Research Projects Agency (DARPA)
Frosty

1. PROGRAM INFORMATION

1.1. Background

The Defense Advanced Research Projects Agency (DARPA) is soliciting innovative proposals for radar algorithm development toward reliable long-range sensing in the Arctic radio frequency (RF) environment. The remoteness and large area of the Arctic favors the use of high frequency (HF) over-the-horizon (OTH) sensing methods, but the challenging propagation channel due to ionospheric turbulence requires new approaches to sensor configuration and signal processing to obtain the desired sensing reliability, in any time of day or weather conditions. This solicitation also provides an opportunity to collaborate on testing and data collection in the Arctic regions.

Detecting and tracking aircraft and ships arriving via northern approaches to North America have been a concern since World War II when the perceived threats were long-range bombers. The post-war bomber threat was met by development of the Distant Early Warning (DEW) line of microwave radars to provide warning of high-flying large bombers. Decades later, the DEW line was upgraded and replaced by the North Warning System (NWS) line of microwave radars. These microwave radars were designed to detect and track aircraft, but face horizon limitations for low altitude air vehicles. Approaches have been proposed to improve low-altitude target tracking including space-based radars and long-range, skywave OTH radar (OTHR). Because of how the Earth's upper atmosphere interacts with solar wind, the Arctic is often a hostile radio propagation environment that degrades both of these two approaches. The Frosty program aims to develop an alternative to those approaches through the use of stand-off illumination and innovative signal processing to create a radar sensor that operates reliably in this propagation environment.

This Program Solicitation (PS) calls specifically for Abstracts to be submitted by the due date identified on Page 3. Abstracts will be reviewed by the Government, and if selected, the proposer will be asked to provide an oral presentation. Oral presentations will be reviewed by the Government, and if selected, may result in a Phase 1 award of an OTA.

This PS encourages submission of solutions from all responsible sources capable of satisfying the Government's needs, including large and small businesses, *nontraditional defense contractors.*

1.2. Program Description/Scope

Overall Frosty Program Scope

The Frosty program will develop sensing modes to improve our awareness of activities in the northern latitudes as the Arctic opens to shipping and other uses. Particularly, the United States and allies would benefit from new ways to detect, track and identify low-flying air vehicles or maritime vessels in Arctic regions. The Frosty program will develop new RF techniques to address this need.

The vast Arctic area presents extreme logistical challenges, thus lending itself to solutions that have minimal power needs and OTH sensing methods to cover the large geographic area. The vision for this program, as shown in Figure 1, is to utilize forward-deployed receive arrays and illumination sources that are emitted or reflected from the Arctic ionosphere for radar sensing. The ionosphere in the Arctic is disturbed due to the solar wind interacting with the Earth's upper atmosphere which results in the illumination signals propagating through a turbulent channel. The Frosty program

seeks to develop methods to utilize sources that are subject to severe, random modulations by a disturbed ionosphere for radar functions. The illumination after passing through the auroral oval will be noise-like. With the premise that noise-like illumination can be used for radar, this program will explore and develop radar techniques using ambient endogenous noise to create passive ambient-noise radar (PANR). The Frosty program aims to demonstrate that useful sensor capabilities can be obtained using these methodologies.

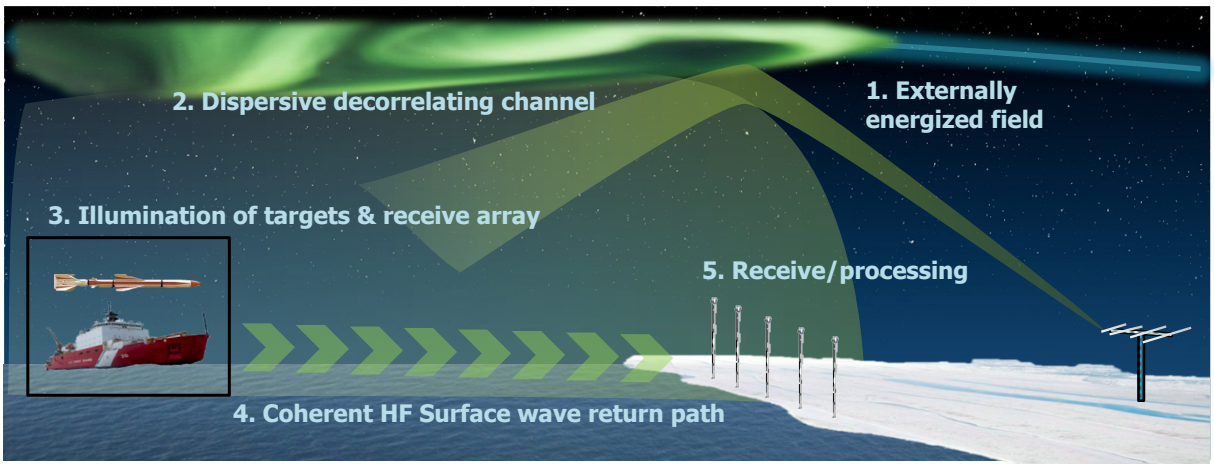

Figure 1. Frosty vision for Arctic sensing using forward-deployed receivers and advanced signal processing that leverages stand-off illumination provided through a dispersive channel as well as environmental ambient noise. (DARPA image)

A successful Frosty system will require developing novel spatial and temporal processing algorithms. Standard radar processing is not likely to provide enough system gain for a Frosty-type radar sensor system to have utility. The amplitude, phase and angle of arrival fluctuations introduced by the turbulent medium must be corrected by the system. DARPA seeks innovative Frosty Phase 1 proposals that address these challenges. The goal of the program is to develop the signal processing flow from baseband receiver samples to detect and track test targets. Performers will be expected to provide input on the receive array to support the data collection and processing that will enable reliable sensing through the varied environmental conditions occurring in the Arctic environment.

Approaches for utilizing non-coherent sources such as ambient noise through correlation processing have been investigated for use in ocean acoustics, geophysics and astronomy [see references list, which are provided as attachment to this PS]. These do not translate directly to the Frosty scenario since the dispersion inherent in the physical geometry of distributed noise-like illumination sources is not corrected. Without such correction, the published approaches do not apply. Correcting the dispersion to enable arbitrary Frosty sensor illumination source to array and target geometries will be a significant challenge that proposers will need to address.

In Frosty, the primary focus will be to develop advanced processing techniques to utilize the noise-like waveforms that result when illumination passes through the turbulent ionosphere to detect and track targets. Gain through advanced processing is needed to achieve the sensor performance metrics described in the following section. The expectation is that the processing gain using advanced processing techniques with waveforms propagated through a dispersive channel, will

provide gain that is somewhere between $\sqrt{BT}$ and BT, where the time (T) bandwidth (B) product here can be many orders of magnitude higher than typically used and for a non-dispersive channel is essentially BT. An area for investigation is the coherence of waveforms transmitted through the auroral oval. Although the turbulent medium will tend to randomize the transmit waveform and remove any coherence with the original transmission, the system limitations imposed by this phenomenon have not been intensively studied. It is possible that advanced analysis may uncover latent coherence between the transmit waveform and the received waveform that can be exploited directly for system gain approaching BT. This analysis and algorithm development is also expected to compensate for the illumination angle and target angle dependent dispersion that would otherwise limit system sensitivity.

1.3. Program Goals/Metrics

Frosty envisions using energy propagated through a possibly turbulent medium to detect and track targets. The key technical question in Frosty is whether the resulting noise-like signals can be utilized for this long-range detection and track. Accordingly, program metrics are designed to measure technical progress toward demonstrating that this program goal is being achieved. The program metrics relevant to this solicitation are shown in Table 1.

Metric	Phase 1
Minimum Detection Range	75 kilometers
Probability of Detection	> 90%
Probability of Track	Tracking is required
Track Accuracy	Accuracy is assessed
Timeliness	Off-line. Not more than 90 seconds of data required to form a track.

Table 11: Frosty program metrics

Metrics will be assessed using government-furnished information (GFI) from U.S. Government fielded test systems, targets of opportunity, and limited controlled target tests. The testing is expected to encompass a wide range of propagation environments. The GFI data will be from two or more high frequency receive arrays containing approximately 24 elements. The targets of opportunity will include commercial aircraft flying at high altitude, and ship or barge maritime test platforms. The controlled target tests will use small aircraft flying at relatively low altitude. Illumination will be by controlled high power stand-off sources in addition to ambient noise.

As described later in this PS, selected proposers will create an end-to-end processing chain to produce tracks from raw captured data. During the first portion of the program, evaluation of metrics will be self-assessed and reported to the government. By the end of the program, the performers will provide their processing chain to the government and there will be an independent assessment of the ability to achieve metrics by a neutral third party.

1.4. Program Organization

Frosty is a 33-month program organized into two phases: The Phase 1 period of performance is 18 months and Phase 2 is 15 months. Phase 1 will focus on algorithm and concept development, off-line implementation and test.

Organizations may have unique existing test assets and/or existing data sets that support the Frosty concept and that could accelerate development of the Frosty approach. Such organizations are encouraged to contact the Frosty procurement team via email.

Phase 2 will focus on development, integration and field testing of the Phase 1 developments into a system that will be deployed to the Arctic to validate the Frosty concept. Field testing will include controlled target exercises in the Arctic over a wide variety of propagation environments.

Phase 1 will be an unclassified development effort with some aspects considered controlled unclassified information (CUI). Performers will need to be able to protect information as CUI as described in Section 4.2.

This PS is only soliciting proposals for Phase 1. Phase 2 will be solicited separately.

1.5. Acquisition Strategy

The Government's aim is to lower the administrative burden to entry, reduce program risk, foster competition, and have performing teams begin work faster. To facilitate this objective, the Government will use the following acquisition process for Frosty:

1. Abstracts: Through this solicitation, the Government requests proposers to submit Abstracts as described in Section 3.2. The Government will review all submitted Abstracts in accordance with the evaluation criteria in Section 3.3. Selected proposers will be invited to provide an Oral Presentation (see Section 3.4) to the Government. Whether selected for the oral presentation or not, informal feedback on the abstract will generally be provided.

2. Oral Presentations: At Government's invitation, proposers will have the opportunity to present their proposal to the DARPA program team. The Government will evaluate all Oral Presentations in accordance with Section 3.5, and anticipates that selected performers will be given a Phase 1 OTA- for Prototype with an 18-month period of performance. The level of effort expected for this program, as determined by funding level, is in the range of $1,000,000 to $3,000,000 per Phase 1 award, although the proposed funding level must be justified by the anticipated level of effort.

3. Phase 1 (18 months): The anticipated products from Phase 1 include algorithm developments that are implemented, tested and delivered as a Frosty processing software suite, along with a conceptual design for a prototype and hardware processing capabilities needed to implement the Frosty software suite. The software suite will take the data from raw captured data through target tracks. The intent of the conceptual design is to define the edge computing needs, array layout, communications capabilities and other aspects that will inform Phase 2.

   Please refer to Table 2 of this solicitation for the Frosty Phase 1 meeting schedule and to Figure 2 for the program schedule. These software reviews will include a review of the algorithms, software architecture, evolution, implementation progress, outstanding gaps and risks, and technical verification of software components based on testing with data provided by the Government.

   Three months prior to the end of Phase 1, performers will deliver their initial completed Frosty software suite to the Government. Software must be delivered to the Government

with Data Rights as specified in Section 4.4 of this solicitation. This software will be exercised by an independent review team assembled by the Government. Software is to be delivered as source code with detailed, written instructions for creating executable software from this code. Third-party modules and tools required to build this stack will be specified in a deliverable document. Performers will demonstrate the creation of executable software from the provided source code and instructions at quarterly program review (QPR) 4 and will deliver their final version of completed Frosty software suite to the Government at Demo 3 at the end of Phase 1.

Phase 1 performers will create a Phase 2 prototype conceptual design to be presented at QPR 2 nine months after the Phase 1 program award. This conceptual design, and any changes or supporting information that is developed, will be reviewed at subsequent program meetings. The objective of these conceptual designs is to facilitate government presentations at a Phase 2 Proposers Day, which is anticipated to be held approximately 12 months after Phase 1 contract award.

4. Phase 2 (notionally 15 months): Phase 2 will be executed through a new program solicitation, informed by Phase 1. Phase 1 and Phase 2 are solicited separately because the focus of Phase 1 is algorithm development, integration, and test, while Phase 2 is more focused on system development, integration, and test. The Phase 2 solicitation will be an independent open competition.

The process and requirements for Abstract and Oral submissions are detailed in Section 2.1 of this PS.

1.6. Program Structure

To be successful, Frosty will need to work with agile teams in Phase 1 to perform initial algorithm development and demonstration of target detection and track in the Arctic environment. The Frosty program will emphasize engineering development utilizing Government-provided data for analysis and development. The Government team will use extant data and perform HF collections at Arctic sites and provide this data to the Frosty performers. The first set of data will be provided at the program kickoff meeting and subsequent data sets will be delivered as they become available. See Figure 2 for the planned program schedule.

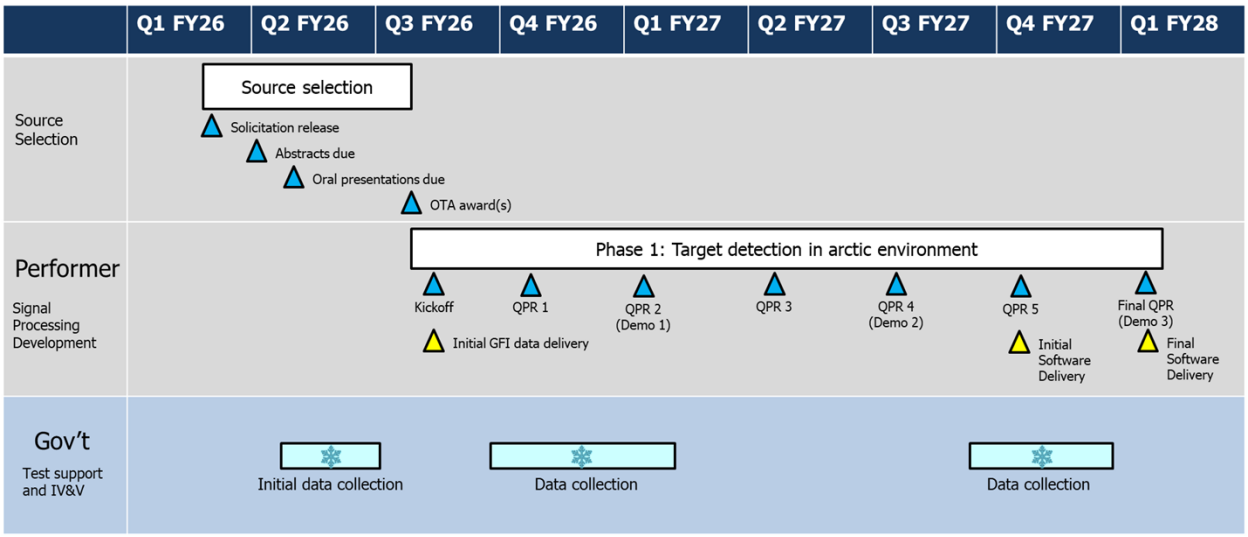

Figure 22: Frosty program Phase 1 schedule

Program reviews will be collaborative technical meetings open to all Performers, with limited closed (individual performer) sessions to review management and programmatic execution.

The table belowTable 3: Phase 1 milestones and events outlines notional Phase 1 milestones and events for cost and schedule planning purposes only. The Government reserves the right to alter event dates and locations to facilitate meeting program objectives. Proposers should carefully review the essential information required from each meeting when preparing a proposal.

Event	Base Month	Location	Objective
Phase 1 kickoff	0.5	Performer sites or other convenient location	Program initiation, detailed algorithm and software development roadmap and review of initial software architecture
Biweekly status reports	Every 2 weeks after kickoff	Virtual	Technical and programmatic updates, documented in viewgraphs using a template supplied by the Government.
Quarterly Program Review (QPR) 1	3	DARPA (Arlington, VA), or other location convenient to performers	Detailed update on algorithm/ software roadmap, development execution and plans and implementation path to Demo 1. Presentation of software module verification using contractor test and government-provided data.

QPR 2 Demo 1	6	Performer sites or other convenient location	Demonstration of Frosty algorithms and software suite detection and track capability in datasets from the field, review of development plans for QPR3.
QPR 3	9	DARPA (Arlington, VA) or other location convenient to performers	Detailed update on algorithm and software roadmap, discussion of development execution and plans and implementation path to Demo 2. Initial algorithm development should be concluded with deficiencies identified and plans to address deficiencies described. Presentation of algorithm and software module verification using contractor test and government-provided data. Presentation of algorithm/aperture design interaction and needs.
QPR 4: Demo 2	12	Performer sites or other convenient location DARPA (Arlington, VA)	Initial delivery of Frosty Phase 1 software stack to the Government. Presentation of Frosty Phase 1 software architecture with progress report on implementation and test results, to include test results using government-supplied data. Discussion of key software algorithms. Inputs for final test and data collection in the form of a conceptual experiment design incorporating the developments with a focus on array layout processing algorithms and computational needs.
QPR 5	15	DARPA (Arlington, VA) or other location convenient for performers	Detailed update on software roadmap, discussion of development execution and plans, and implementation path to Demo 3. Presentation of software module verification using contractor test and

			government-provided data. Presentation of updates to Frosty Phase 2 conceptual design. Demonstration of build of Frosty Phase 1 software stack from source code using written instructions. Demonstration of software performance enhancements and added features.
Final QPR: Demo 3	18	Performer sites or DARPA (Arlington, VA)	Final demonstrations of implemented software stack for detection using field data. Final demonstration of build of Frosty Phase 1 software stack from source code using written instructions. Final delivery of Frosty Phase 1 software stack to Government.

Table 3: Phase 1 milestones and events

A summary of the products deliverable to the government is provided below.

- Presentations from bi-weekly reviews (Government-provided template)
- Presentations from Quarterly Program Reviews (contractor format) to include
    - Development and execution plan to Frosty Demo 1 (QPR 1)
    - Demonstration 1, development plans for QPR 3 (QPR 2)
    - Detailed review of software to include test results and deficiencies, initial conceptual system design (QPR3)
    - Discussion of software architecture, key algorithms and test results (QPR4)
    - Development plans for Demo 3, software verification test results, updates to conceptual design, demonstration build of Frosty software (QPR5)
    - Final demonstration of Frosty software using field data, demonstration of build procedures from source code, (Final QPR)
- Demonstrations
    - Demonstration 1 (QPR 2) focus on development status, dedicated infrastructure, software modules
    - Demonstration 2 (QPR 4) key algorithms, integration and execution with field data
    - Final demonstration: fully integrated, end-to-end demonstration of Frosty software on field data

- Software-related deliverables
    - Frosty software stack, initial delivery QPR 4, final delivery at Final QPR
    - Build procedures and demonstrations (QPR 5, Final QPR)
- Frosty system conceptual design (initial delivery QPR 3, final delivery QPR 5)

The Government will hold technical exchanges between the Government data collection team and the Phase 1 performers as required. The Government will facilitate these exchanges to ensure that data is collected in a manner that supports the needs of the algorithms and that the algorithms are designed to operate on data that is feasible to collect.

2. PS AUTHORITY

This PS may result in the award of an OTA for Prototypes, which can include not only commercially-available technologies fueled by commercial or strategic investment, but also concept demonstrations, pilots, and agile development activities that can incrementally improve commercial technologies, existing Government-owned capabilities, and/or concepts for broad defense and/or public application(s). The Government reserves the right to award an OTA for Prototypes under 10 U.S.C. § 4022, or to make no award at all. In all cases, the Government agreements officer shall have sole discretion to negotiate all agreement terms and conditions with selected offerors. The OTA will not require cost sharing unless the offeror is a traditional defense contractor who is not working with a non-traditional defense contractor participating in the program to a significant extent.

2.1. PS Procedure

In response to this solicitation offerors are asked to submit a 5-page Abstract as described in Section 3.2. This process allows DARPA to ascertain (1) whether the proposers understand the key challenges of the Frosty program, (2) whether the proposed team is capable of executing a proposed concept, and (3) whether a proposed concept is appropriate to meeting the Program needs. Specific evaluation criteria used to make the assessment can be found in Section 3.3. If DARPA finds that these conditions are met, it may request the offeror participate in an Oral Presentation to DARPA, as described in Section 3.4, where the proposed technical solution will be evaluated. Specific evaluation criteria used to make the assessment can be found in Section 3.5. After the Oral Presentations, DARPA will make a determination as to which offerors, if any, may be awarded an OTA for Prototypes for Phase 1 of the program.

The Government will not pay offerors responding to this PS for the costs associated with Abstract submissions or Oral Presentations.

<u>Abstracts (result if successful: invitation to participate in Oral Presentations)</u>

Abstracts shall be submitted as specified in Section 3 of this PS. The Government will evaluate abstracts against the criteria stated in this PS.

It is important to note that offerors must submit an Abstract in response to this solicitation to be considered for participation in the Frosty program. Offerors will not be invited to provide an Oral Presentation, or be included in Phase 1 of the program, without participating in the Abstract phase of the solicitation.

<u>Oral Presentations (result if successful: Phase 1 award with an 18-month period of performance)</u>

Offerors responding to this PS may be invited to further explain their proposed approach and

solution via an Oral Presentation. Oral Presentations will take place approximately five weeks after notification from the Government that an Oral Presentation is requested. The Government may, at its discretion, provide feedback on the Abstracts. Additional instructions (to include content due date and presentation date/time) will be provided within the official invitation to participate in Oral Presentations.

Awards (for Phase 1)

DARPA will review Oral Presentations to determine which proposed solutions sufficiently meet the evaluation criteria stated in Section 3.5. Upon favorable review, and subject to the availability of funds, the Government may award an OTA for Prototypes under 10 U.S.C. § 4022 with fixed milestones for Phase 1 selectees.

3. GUIDELINES FOR ABSTRACTS, ORAL PRESENTATIONS, AND PROPOSALS

3.1. General Guidelines

a. Do not include elaborate brochures or marketing materials; only include information relevant to the submission requirements or evaluation criteria.

b. Use of a diagram(s) or figure(s) to depict the essence of the proposed solution is permitted.

c. All Abstracts, Oral Presentations, and Proposals shall be unclassified.

d. Offerors are responsible for clearly identifying proprietary information. Submissions containing proprietary information must have the cover page and each page containing such information clearly marked with a label such as “Proprietary” or “Company Proprietary.” NOTE: “Confidential” is a classification marking used to control the dissemination of U.S. Government National Security Information as dictated in Executive Order 13526 and should not be used to identify proprietary business information.

e. Questions prior to abstract submission can be sent to DARPA-PS-26-03@darpa.mil by the due date on page 3.

f. University Affiliated Research Centers (UARCs), Federally Funded Research and Development Centers (FFRDCs), and United States (U.S.) government entities are prohibited from proposing as performers. UARCs, FFRDCs, and U.S. government entities interested in this solicitation may contact the Agency Contact listed in the Program Solicitation Overview Information section to discuss potential participation as part of the government Team.

g. Abstracts and proposals sent in response to this PS must be submitted via DARPA's BAA Website (https://baa.darpa.mil). Note: If an account has already been created for the DARPA BAA Website, this account may be reused. If no account currently exists for the DARPA BAA Website, visit the website to complete the two-step registration process. Submitters will need to register for an Extranet account (via the form at the URL listed above) and wait for two separate e-mails containing a username and temporary password. After accessing the Extranet, submitters may then create an

account for the DARPA BAA website (via the "Register your Organization" link along the left side of the homepage), view submission instructions, and upload/finalize the proposal. Proposers using the DARPA BAA Website may encounter heavy traffic on the submission deadline date; proposers should start this process as early as possible.

All documentation submitted electronically through DARPA's BAA Website must be uploaded as zip files (.zip or .zipx extension). The final zip file should be no greater than 50 MB in size. Only one zip file will be accepted per submission, and submissions not uploaded as zip files will be rejected by DARPA. Technical support for DARPA's BAA Website may be reached at BAAT_Support@darpa.mil, and is typically available during regular business hours (9:00 AM – 5:00 PM Eastern Time).

h. Submissions sent through other mediums, channels, or after the prescribed PS deadline will not be considered, reviewed, nor evaluated.

i. Classified submissions to this solicitation will not be accepted.

j. Offerors providing Abstracts that are not invited to an Oral Presentation will be notified in writing as soon as practicable.

3.2. Abstract Content

a. Abstracts should not exceed five (5) single-sided 8.5" by 11" or A4 (8.27" by 11.69") written pages using 12-point Times New Roman font, not less than single-spaced, and with 1" (2.5cm) margins all around.

b. Abstracts must include the following:

1. ***Title page*:** Offeror Name, Title, Date, Point of Contact Name, E-Mail Address, Phone, Address, and Unique Identity ID (if already requested and assigned). (The Title Page does not count against page limits).

    - The offeror shall include a statement that no people on the offeror's team work for DARPA as Scientific Engineering Technical Assistance (SETA), Advisory and Assistance Services (A&AS) or similar support services, as DARPA has a policy prohibiting such people from working as a technical performer. Include this statement on the title page; it will NOT count as part of the five (5) written pages limit.

2. ***Technical Understanding*:** Provide a summary of the technical goals of Frosty. This summary shall be stated in the offeror's own words without any "copy and paste" of this solicitation. The goal is for the offeror to demonstrate clear understanding of Frosty's purpose and goals. The summary will be no more than two (2) pages, and is included in the five (5) written pages limit.

3. ***Technical Challenges*:** Identify specific technical challenges faced in Frosty. The offeror should include what they think the primary risks are to successful development of the Frosty program. Key aspects of the algorithm and processing concepts needed to address the technical challenges and risks should be outlined.

This section of the abstract will be no more than three (3) pages, and is included in the five (5) written pages limit.

4. ***Technical Ability*:** Detail the offeror's team and organization, and explain the ability to be successful at achieving the goals, if selected, for Frosty. The offeror may include past experience, organizational capabilities, team members' qualifications, or anything else that demonstrates competence in designing and executing the Frosty program. This section of the abstract will be no more than two (2) pages, and is included in the five (5) written pages limit.

   A one-page list of reference publications authored or co-authored by the proposer's team members that are relevant to the Frosty goals may be included. The list of references does not count against the five (5) written pages limit.

5. ***Excess pages*:** Abstracts exceeding five pages will have any pages beyond five removed and not provided to the reviewers. The subsection page limit recommendations will not be enforced independently of the overall five-page limit.

3.3. Abstracts – Process and Basis of Evaluation

Abstract evaluation criteria are listed in descending order of importance. Individual Abstracts will be evaluated against the evaluation criteria described below:

a. **Technical Comprehension**: The proposed technical understanding is accurate, and key technical challenges and risks are identified.

b. **Technical Ability:** The offerors demonstrate an ability, if selected, to achieve the goals of the Frosty program.

c. **Concept:** The proposed algorithm and processing concept addresses the key technical challenges of the Frosty program.

Abstracts will be evaluated by DARPA using the evaluation criteria listed above. DARPA will use the evaluation criteria to assess strengths, and weaknesses of the submitted abstracts and, ultimately, use that assessment to determine the selection of those proposers offered the opportunity to proceed to Oral Presentations. The Government will endeavor to complete the evaluation of Abstracts within 10 business days of the closing of the submittal period. As stated above, offerors are required to submit an Abstract for evaluation by DARPA to minimize effort and reduce the potential expense of preparing an unsuccessful proposal. DARPA will respond to the 5-page Abstract with a statement as to whether DARPA is interested in seeing a 90 minute (approximately 60 minutes presentation, 30 minutes question and answer period) Oral Presentation. If DARPA is not interested in an Oral Presentation, it will state this in an email to the offeror. Upon review of Abstracts, the Government may elect to invite all, some, or none of the offerors to Oral Presentations. *Only Abstract offerors invited by DARPA to participate in Oral Presentations are eligible to provide one.*

3.4. Oral Presentations Content

If DARPA expresses interest in an Oral Presentation, the offeror will be asked to give a presentation to provide further details on its proposed solution. Specific instructions (including content

submission guidelines) will be provided in the invitation to participate. If selected, offerors can expect to be asked to provide the following information (offeror can address them in any order they choose):

a. Team introduction/overview: Provide information regarding the prime contractor and subcontractor organizations, key personnel dedicated to the program, team organization and how the past performance and qualifications of the proposed team will contribute to the technical approach. Clearly identify key personnel and teammate roles, Identify and explain efforts of similar scope and complexity.

b. Technical Approach: Provide a technical approach to accomplish the objectives and scope laid out in this solicitation. This should include at least the following elements:

    1. Identification of key algorithm approaches, development items and description of performer approach to development of these items
    2. Provide a block diagram of the expected/preliminary processing architecture.
    3. Description of the offeror's software development practices
    4. Presentation of proposed summary schedule and budget. Note: In the invitation to submit an Oral Proposal, proposers will be provided template for the cost proposal. A cost proposal must be submitted with the Oral Proposal.
    5. Identification of key risks and proposed risk mitigation strategies
    6. Identification of required commercial or proprietary software modules or toolsets
    7. Summarize proprietary data restrictions, if any, and how those will be managed so as to not constrain the Government's ability to transition developments to the Phase 2 Performer's Day and subsequent performers.
    8. Describe the expected Government Furnished Information (GFI) that is required to execute the proposed approach.

c. Preliminary schedule, work breakdown schedule (WBS) and budget by element of the WBS.

d. Data Rights: Identify the proposed data rights to be given to the Government under this agreement for the components of the proposed solution. For intellectual property (IP) developed prior to the start of the agreement that will be utilized during program activities, clearly identify that IP and the anticipated level of data rights that will be given to the Government. See Section 4.4 for further guidance. In addition to the above required areas, the Government may request the offeror provide additional information or detail with respect to its Abstract.

Offerors should expect to have approximately 60 minutes for presentation and approximately 30 minutes to address any questions from the Government panel. Oral presentations are subject to the following constraints:

- No smaller than 10-point font
- Video demonstrations are allowed
- All presented material is to be submitted to the DARPA BAA Website by the due date on page 3.

3.5. Oral Presentations – Process and Basis of Evaluation

Oral presentation evaluation criteria are listed in descending order of importance. Individual presentations will be evaluated against the evaluation criteria described below:

a. **Technical Approach:** The approach demonstrates an innovative yet feasible approach to address the identified program technical risks and challenges and meet metrics.

b. **Relevant Qualifications:** Personnel and/or company experience and qualifications demonstrate the ability of the offeror to meet the technical goals of the program.

c. **Budget:** The proposed solution is reasonable and realistic

d. **Data Rights:** Extent to which data assertions allow the Government to realize the objectives of the Frosty program.

The Government intends to give performers the option to attend Oral Presentations in-person or virtually. Note, in either case the Government reserves the right to record presentations. The Government will evaluate information provided in the content submission (documentation), the Oral Presentation, and Q&A session as basis for evaluation. Oral Presentations will be evaluated by the Frosty Program Manager with support from a panel composed of Government subject matter experts (SMEs).

After completing evaluation of Oral Presentations, DARPA will: 1) make an 18-month OTA for Phase 1; or 2) inform the offeror that its proposed concept/technology/solution is not of continued interest to the Government and they are no longer considered for participation in the program. If DARPA does not intend to issue an award for the Phase 1 effort to an offeror, DARPA may provide brief informal feedback to the offeror regarding the rationale for the decision.

4. AWARDS

4.1. General Guidelines

Upon favorable review of the proposal and subject to the availability of funds, the Government may choose to award an OTA for Prototypes for Phase 1.

The Agreements Officer reserves the right to negotiate directly with the offeror on the terms and conditions prior to execution of the resulting OTA, including payment terms, and will execute the agreement on behalf of the Government. A copy of the draft OTA will be an attachment with the invitation for oral presentation. In order to speed up negotiations, offerors selected for oral presentations will be required to either attest to compliance of all OTA articles or note those they take exception to. Be advised, only a Government Agreements Officer has the authority to enter into, or modify, a binding agreement on behalf of the United States Government.

In order to receive an award:

a. Offerors must have a Unique Identity ID number and must register in the System for Award Management (SAM). Offerors are advised to commence SAM registration upon notification of entry to Phase 1 of the competition.

b. Offerors must also register in the prescribed Government invoicing system (Wide Area Work Flow: https://wawf.eb.mil/xhtml/unauth/registration/notice.xhtml). DARPA Contracts Management Office (CMO) personnel will provide assistance to those offerors from whom a proposal is requested.

c. Offerors must be determined to be responsible by the Agreements Officer and must not

be suspended or debarred from award by the Federal Government nor be prohibited by Presidential Executive Order and/or law from receiving an award.

d. Being asked to submit a proposal does not guarantee that an offeror will receive an award. The Government reserves the right not to make an award.

4.2. Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) on Non-DoD Information Systems

Further information on Controlled Unclassified Information identification, marking, protecting and control, to include processing on Non-DoD Information Systems, is incorporated herein and can be found at www.darpa.mil/work-with-us/additional-baa.

A program-specific CUI Guide has been established to help proposers determine CUI thresholds for information relevant to, and technologies developed under, the program. This guide will be provided to proposers when they are notified that they are invited to give an oral presentation.

4.3. Representations and Certifications

All offerors are required to submit DARPA-specific representations and certifications for Prototype OTA in order to be eligible to receive an OTA. See http://www.darpa.mil/work-with-us/reps-certs for further information on required representations and certifications for Prototype OTAs.

4.4. Competition Sensitive Information

DARPA policy is to treat all submissions as competition sensitive, and to disclose their contents only for the purpose of evaluation. Restrictive notices notwithstanding, during the evaluation process, submissions may be handled by support contractors for administrative purposes and/or to assist with technical evaluation. All DARPA support contractors performing this role are expressly prohibited from performing DARPA sponsored technical research and are bound by appropriate nondisclosure agreements. Input on technical aspects of the proposals may be solicited by DARPA from non-Government consultants/experts who are strictly bound by the appropriate non-disclosure requirements.

4.5. Intellectual Property / Data Rights

The Government will require Unlimited Rights to data that is developed under this program. The Government requires that any pre-existing IP developed at private expense that is deemed critical to implement the proposed Frosty solution be delivered to the Government with Government Purpose Rights for use without request or engagement to inform Phase 2. IP restrictions must be included in proposals.

4.6. Procurement Integrity Act (PIA)

All awards under this PS shall be treated as Federal Agency procurements for purposes of 41 U.S.C. Chapter 21. Accordingly, the PS competitive solicitation process and awards made thereof must adhere to the ethical standards required by the PIA.

4.7. Foreign Participation

Non-U.S. organizations and/or individuals are encouraged to participate to the extent that such participants comply with the necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances.

DARPA encourages non-U.S. organization submission to participate in the Frosty program. Non-

U.S. organizations have unique capabilities, expertise, and access that could be valuable in accelerating the Frosty program. These could include, but are not limited to:

1. Access to and/or use of unique non-U.S. test assets (e.g., HF radars illuminating regions of general interests, deployed receive arrays, distributed HF sounding or propagation analysis systems,)
2. Technical expertise pertaining to relevant processing algorithms, particularly passive cooperative radar, complete/incomplete or hidden data models and non-linear/iterative/sparse processing algorithms

Non-U.S. participation could include industry, academia, and/or government through the OTA Process. Non-U.S. organizations can participate in the Phase 1 either directly as a prime or as a subcontractor to a U.S. organization.

4.8. Pre-publication review

Publication and presentation of information developed under this program to non-program organizations will require release review through the DARPA DISTAR process. A fundamental research exemption to prepublication review will not be provided.

5. PS DEFINITIONS

"Data" refers to recorded information, regardless of form or method of recording, which includes but is not limited to, technical data, software, mask works and trade secrets. The term does not include financial, administrative, cost, pricing or management information and does not include inventions.

"Government Purpose" means any activity in which the United States Government is a party, including cooperative agreements with international or multi-national defense organizations, or sales or transfers by the United States Government to foreign governments or international organizations. Government purposes do not include the rights to use, modify, reproduce, release, perform, display, or disclose technical data for commercial purposes or authorize others to do so.

"Government Purpose Rights" means the rights to use, duplicate, or disclose Data, in whole or in part and in any manner, for Government Purposes only, and to have or permit others to do so for Government Purposes only.

"Non-traditional Defense Contractor" is defined in 10 U.S.C. § 3014 as an entity that is not currently performing and has not performed, for at least the one-year period preceding the solicitation of sources by the DoD for the procurement or transaction, any contract or subcontract for the DoD that is subject to full coverage under the cost accounting standards prescribed pursuant to 41 U.S.C. § 1502 and the regulations implementing such section. This includes all small business concerns under the criteria and size standards in 15 U.S.C. § 632 and 13 C.F.R. Part 121.

"Other Transaction Agreement" refers to the type of award that an organization may receive as a result of this PS. The OTA is authorized by 10 U.S.C. § 4022 for prototype projects directly relevant to enhancing the mission effectiveness of military personnel and the supporting platforms, systems, components, or materials proposed to be acquired or developed by the DoD, or for the improvement of platforms, systems, components, or materials in use by the armed forces.

"Prototype Project" is described in the DoD Other Transactions Guide (Version 1, Nov. 2018) issued by the Office of the Under Secretary of Defense for Acquisition and Sustainment:

https://www.dau.edu/guidebooks/Shared%20Documents/Other%20Transactions%20(OT)%20Guide.pdf.

"Small Business Concerns" is defined in the Small Business Act (15 U.S.C. § 632).

"Unlimited Rights" means the rights of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly in any manner and for any purpose, and to have or permit others to do so.

6. ACRONYMS

AA&S: Advisory and Assistance Services
CMO: Contracts Management Office
CTI: Controlled Technical Information
CUI: Controlled Unclassified Information
DARPA: Defense Advanced Research Projects Agency
DEW: Distant Early Warning
FFRDC: Federally Funded Research & Development Center
GFI: Government-Furnished Information
HF: High Frequency
IP: Intellectual Property
NWS: North Warning System
OTA: Other Transaction Agreement
OTH: Over-The-Horizon
OTHR: Over-The-Horizon Radar
PANR: Passive Ambient-Noise Radar
PIA: Procurement Integrity Act
PS: Program Solicitation
Q&A: Questions and Answers
QPR: Quarterly Program Review
RF: Radio Frequency
SAM: System for Award Management`
SETA: Scientific Engineering Technical Assistance
SME: Subject Matter Expert
STO: Strategic Technology Office
(U) UARCs: University-Affiliated Research Centers
WBS: Work Breakdown Structure

7. REFERENCES

1. Robey, F.C., Epstein, B, Carlson, K, Earp, S.L., *Defense Applications of Innovative Remote Sensing*, Proc 2025 IEEE Radar Conference, Krakow, Poland, October 2025
2. Robey, F.C., Earp, S.L., Passive Ambient Noise Radar via Cross-correlation, Extended abstract for Asilomar Conference, 2025