Request for Information (RFI)
DARPA-SN-18-10

Defense Advanced Research Projects Agency (DARPA)
Tactical Technology Office (TTO)

Responses due Friday, December 15, 2017, by 1:00 PM ET.

This Request for Information from the Defense Advanced Research Projects Agency's Tactical Technology Office seeks ideas, methodologies, and approaches solely for information and planning purposes. Responses to this RFI will be used to determine attendees for a workshop in Arlington, Va. In addition, the information may potentially support the development of new DARPA programs that could enable breakthrough capabilities for conducting exploration, maneuver, and search operations in challenging subterranean environments.

BACKGROUND:
The subterranean domain – whether human-made tunnels, urban underground infrastructure, or natural cave networks – remains a challenging and complex environment. As these underground settings are increasingly relevant in global security and safety operations, innovative and enhanced technologies have the potential to disruptively and positively impact how the subterranean domain is leveraged without prohibitive cost and risk to human lives.

Disaster-related search and rescue missions similarly require subjecting human personnel to substantial dangers underground. Potential representative scenarios involve rescue efforts in collapsed mines, natural catastrophe responses in underground municipal or urban settings, and cave rescue operations for injured or lost spelunkers.

As such, DARPA is interested in understanding the state-of-the-art in innovative technologies that may enable future solutions to rapidly map and navigate unknown complex subterranean environments to locate objects of interest, e.g., trapped survivors, without putting humans in harm's way.

DESCRIPTION:
DARPA is interested in both integrated solutions as well as novel component technologies capable of in-situ mapping and navigating rugged and dynamic terrains; sensors and computation for perception in austere conditions, such as low-light or obscured settings; distributed information sharing in degraded communications environments, particularly in unknown structural or geological surroundings; and advanced autonomous capabilities and platform design innovations enabling extended operations with minimal human intervention.

Responses should highlight unique and revolutionary capabilities as they pertain to subterranean environments, such as in technology focus areas of autonomy, perception, networking, and mobility.

Of high interest to DARPA are disruptive concepts, approaches, architectures, and technologies that overwhelmingly outperform current approaches for manually and laboriously mapping and

searching subterranean environments in terms of map resolution, navigation speed, search fidelity, systems cost, etc. Additionally, responses detailing existing models (e.g., appropriate for high-fidelity simulation) of underground terrains, relevant sensors, and/or platforms are also of interest.

DARPA is interested in technical responses at all technology maturity levels, with particular interest in innovative concepts and research as well as revolutionary enabling technologies that may contribute to future breakthrough capabilities through accelerated development and/or synergistic integration with other subsystem elements.

Responses are requested from all capable sources including, but not limited to, private or public companies, individuals, universities, university-affiliated research centers, not-for-profit research institutions, foreign entities, and U.S. Government-sponsored laboratories.

SUBMISSION FORMAT:
Responders should submit a single integrated response that addresses the focus areas described above. DARPA will only review responses submitted in a Microsoft PowerPoint (.ppt) file. Each response is limited to no more than one (1) slide in standard screen presentation and a 400-word description in the Notes section of the slide. Any submitted material in excess of this limit will not be reviewed. All responses must be written in English.

Submissions should include the following information in the Notes section of the slide to facilitate sorting:

1. Technology focus area(s) (autonomy, perception, networking, mobility)
2. Summary
3. Contact information

The contact information should include the responder's technical and/or administrative points of contact (names and e-mail addresses) to enable potential clarification discussions.

SUBMISSION INSTRUCTIONS AND CONTACT INFORMATION:
All responses to this RFI must be e-mailed to DARPA-SN-18-10@darpa.mil. Responses will be accepted any time from the publication of this RFI until 1:00 PM Eastern on December 15, 2017. Early responses are encouraged. E-mail sent directly to individual DARPA program managers will not receive a response. Organizations may submit multiple responses.

DARPA will review the RFI responses to assess technology and system relevance, potential performance capability, and technology novelty and maturity. Based on this review, DARPA may invite selected submitters to attend a workshop to be scheduled for mid January 2018. The purpose of this workshop is to facilitate knowledge sharing amongst the various organizations working in this domain. DARPA intends to balance the invitees to ensure adequate representation across the technology areas of interest. Invited organizations will be required to provide a non-proprietary poster presentation and their RFI response slide to facilitate interactions among participants to encourage collaboration and teaming, should DARPA release a Broad Agency Announcement (BAA) in this area.

DISCLAIMERS AND IMPORTANT NOTES:
This announcement contains all information required to submit a response. No additional forms, kits, or other materials are needed.

This is an RFI issued solely for information and new program planning purposes; it does not constitute a formal solicitation for proposals. In accordance with FAR 15.201(e), responses to this notice are not offers and cannot be accepted by the Government to form a binding contract. Submission of a response is strictly voluntary and is not required to propose to a subsequent Broad Agency Announcement (if any) or other research solicitation (if any) on this topic. No solicitation exists; therefore, do not request a copy of the solicitation. If a solicitation is released, it will be synopsized on the Federal Business Opportunities website. It is the responsibility of any potential offerors/bidders to monitor this site for release of any solicitation or synopsis.

DARPA will NOT provide reimbursement for costs incurred in responding to this RFI or participating in any subsequent workshop.

To the maximum extent possible, please submit non-proprietary information. If proprietary information is submitted, it must be appropriately and specifically marked. It is the submitter's responsibility to clearly define to the Government what is considered proprietary data. Any proprietary information should be clearly labeled as "Proprietary." DARPA will not publicly disclose proprietary information obtained as a result of the RFI. To the full extent that it is protected pursuant to the Freedom of Information Act and other laws and regulations, information properly identified by a respondent as "Proprietary" will be appropriately controlled. Submissions may be reviewed by Government personnel and support contractors bound by appropriate non-disclosure agreements. Responses to this RFI will not be returned.

Intellectual or other privileged or proprietary information contained in responses to this RFI will not be distributed outside of the Department of Defense (DoD) or U.S. Government employees from other Government agencies who are working with DARPA on this RFI. In the event that a new DARPA program is developed in response to this RFI and a solicitation is issued, no intellectual or other proprietary information received in response to this RFI will be divulged to the research community.

Respondents are advised that—with the exception of a potential invitation to the planned January 2018 workshop—DARPA is under no obligation to acknowledge receipt of the information received or provide feedback with respect to any information submitted under this RFI. Responses to this RFI do not bind DARPA to any further actions.

Point of Contact:
DARPA/Tactical Technology Office
DARPA-SN-18-10@darpa.mil