

Block Access to Deny Entry (BlockADE) Request for Information (RFI); DARPA-SN-14-39; **Responses are due July 2, 2014, by 4:00 PM (ET).**

POC: D. Tyler McQuade, DARPA/DSO; E-mail: DARPA-SN-14-39@darpa.mil;

URL: http://www.darpa.mil/Opportunities/Solicitations/DARPA_Solicitations.aspx.

Innovative ideas are sought that may support a potential new Defense Advanced Research Projects Agency (DARPA) program designed to develop a compact system that can expand into a large structure (e.g., web, wall, blockade, barrier) without human intervention, defining space from a distance and/or making an area inaccessible. These deployable systems are expected to have many potential applications ranging from blocking access to munitions caches to creating temporary buildings for those impacted by natural disasters.

DESCRIPTION

The Defense Sciences Office (DSO) is seeking innovations that support a potential new DARPA program designed to provide novel approaches to autonomously construct a barrier without human intervention. DARPA envisions a compact system filled with a material and/or device that when remotely triggered, can expand by orders of magnitude and form a structure to prevent ingress or egress by a person/people (i.e., block, slow and/or impede movement/access). DARPA is interested in concepts that could deny access to objects within a structure when deployed from a single point source (i.e., fill a room) and those that could serve as an external perimeter demarcation (e.g., fence or wall) when deployed from multiple point sources. The envisaged potential program involves: (1) delivery of expandable or self-assembling materials/devices in a compact form to the site of interest; (2) initiation and rapid expansion (orders of magnitude) of the materials/devices; and (3) deployment of the rapidly expanding materials/devices into the desired form factor. All steps in this process should occur *without human intervention*. DARPA is most interested in responses to this RFI that address areas 2 and 3 in a single submission, although responses that focus only on area 2 are also of interest. Responses for concept area 1, as well as those focused solely on concept area 3, are explicitly not relevant for the purposes of this RFI.

DARPA is most interested in materials/device concepts that provide expansion ratios of several orders of magnitude, while maintaining sufficient properties to block or slow access to a specified area (e.g., mechanical strength for solid barriers, stickiness or sharpness for web or briar-like barriers, capacity to self-weld or self-assemble, etc.). For the purposes of this RFI, respondents may consider dimensional constraints of the compact delivery device to be a cylinder of 0.3 m diameter and 2 m length that can hold 300 lbs, and should conceptualize the barrier as something which could deny/slow access to a person with hand tools (e.g., saw, hammer, axe, shovel, etc.). Significant advancements in existing technologies (e.g., foams, shape memory alloys, pop-up structures, polymers, rotary stamped materials, self-assembling technologies, adaptable/shape-changing concepts, etc.) and development of new components for future expandable concepts (e.g., alloys, monomers, autonomous systems and completely novel approaches) are of interest. Proposed solutions should consider aspects including, but not limited to, expansion ratio, self-assembling properties, properties targeted to slow or deny ingress/egress, building/curing/ hardening time, form factor (flexible form factors that could fill a room *and* delineate an area are of highest interest), actuation/initiation mechanism and potential for added functionality (e.g., ballistic resistance, opacity, self-assembly, reversibility, etc.).

Responses should include strong technical rationale for the chosen materials system(s) and/or device(s), including target barrier properties, and also clearly describe how the proposed material/device will form a barrier, including phase/construction of the delivered component, rate of implementation (e.g., time to harden, expand, cure, etc.), self-assembling characteristics and form factor of the final barrier. Comments on scalability of the proposed system (i.e., materials costs if currently available at scale, or projections for scalability of the proposed system) are of interest. Responses may include a technical plan (statement of work), although it is not required.

FORMAT

Respondents to this RFI should limit responses to 5 pages; longer submissions will be discarded.

Each submission should be typed in 12 point, single-spaced font on 8.5 by 11 inch paper, with 1-inch margins. All submissions must be electronic, adhere to the content formatting described above, and use one of the following file formats: Adobe PDF or Microsoft Word.

SUBMISSION

Respondents to this RFI are encouraged to be as succinct as possible, while also providing actionable insight.

All responses to this RFI should be submitted to DARPA-SN-14-39@darpa.mil. Please refer to the “BlockADE RFI” in all correspondence. All technical and administrative correspondence and questions regarding this announcement should also be submitted to the same email address. Emails sent directly to the Program Manager may result in delayed/no response.

DISCLAIMERS AND IMPORTANT NOTES

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 is voluntary and is not required to propose to a subsequent Broad Agency Announcement (BAA) (if any) or other research solicitation (if any) on this topic. DARPA will NOT provide reimbursement for costs incurred in responding to this RFI. **NO CLASSIFIED INFORMATION SHOULD BE INCLUDED IN THE RFI RESPONSE.** 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 disclose submission contents only for the purpose of review and evaluation. Respondents are advised that DARPA 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.