

A. Overview Information

- I. Federal Agency Name: Defense Advanced Research Projects Agency, Information Processing Technology Office (DARPA/IPTO)
- II. Title: Cognitive Mobile Robotics (CMR)
- III. Announcement Type: Request for Information (RFI)
- IV. Solicitation Number: RFI 08-18
- V. CFDA Number: 12.910
- VI. Key Dates
 - a. Position Papers Due: 12:00 PM (ET), 03 March 2008

B. Full text of announcement

I. Description

Future military operations in urban areas likely will require unmanned systems to travel through environments with many moving objects, for example, through a crowded marketplace with hundreds of pedestrians, motorbikes, cars, and animals all moving in close quarters. These operations may take place under conditions of degraded or denied GPS, preventing the systems from simply following waypoints.

Current automated methods for perception and planning do not appear well-suited for such travel by unmanned vehicles, working moderately well in either cluttered or dynamic scenes, but not in both simultaneously. Current perception and planning methods in some cases depend on GPS, and so break down under conditions of poor GPS coverage.

In accordance with FAR 35.007(j), the Information Processing Technology Office (IPTO), Defense Advanced Research Projects Agency (DARPA) requests information on research ideas and approaches that could address this technology gap. DARPA seeks this information to inform anticipated research programs on Cognitive Mobile Robots (CMR). DARPA anticipates that a Broad Agency Announcement and/or other solicitation may be posted in the months ahead.

To inform potential program concepts, DARPA/IPTO solicits position papers in the areas of perception and planning, addressing the following questions:

- What is the state of the art in dynamic, cluttered scenes for the following:
 - Off-road and cross-country (high-clutter) driving?
 - On-road and highway (high-speed) driving?
 - Driving under the conditions of the DARPA Urban Challenge?
- To what extent can current approaches handle both dynamic and cluttered scenes simultaneously with limited GPS? If limited, how do they break down?
- What new approaches can simultaneously handle dynamic and cluttered scenes with limited GPS?

- What performance metrics best characterize perception or planning systems operating in cluttered urban terrain?

Interested parties should submit their position papers on perception or planning or both by responding to this RFI as described in Section IV - Application and Submission Information below.

All information contained in the RFI is preliminary, as well as subject to modification, and is in no way binding on the Government. As a result of ideas submitted in response to this RFI, DARPA will acknowledge receipt of the submission, but will not provide feedback. Any material not clearly marked as proprietary will be considered to be public information. All submissions may be handled by non-government personnel bound by nondisclosure agreements. This RFI incorporates by reference FAR 52.215-3, "Request for Information or Solicitation for Planning Purposes (OCT 1997)," with the same force and effect as if it were given in full text [reference paragraph (c) of this provision, the "purpose" of this RFI is detailed in this announcement].

II. Award Information

This notice, which constitutes the complete RFI package, is not a Request for Proposals (RFP), and is not to be construed as a commitment by the Government to issue a solicitation or ultimately award a contract. Responses will not be considered as proposals nor will any award be made as a result of this synopsis. The Government is not interested in specific company capability information and will not entertain such submissions. Any costs incurred as a result of responding to this announcement shall be borne by the respondent and cannot be charged to the Government for reimbursement.

III. Eligibility Information

1. Eligible Applicants

All responsible sources capable of satisfying the Government's needs may submit a position paper that shall be considered by DARPA. Responding to this RFI is not a requirement for participation in any future solicitations.

2. Cost Sharing or Matching – N/A

IV. Application and Submission Information

1. Address to Request Application Package

This announcement contains all information required to submit a position paper. No additional forms, kits, or other materials are needed.

2. Content and Form of Application Submission

DARPA/IPTO requires completion of an online [RFI Cover Sheet](#) for each response, by accessing the URL below:

www.csc-ballston.com/rfi/rfiindex.asp?RFId=08-18

After finalizing the Cover Sheet Submission, the offeror must submit the Confirmation Sheet that will automatically appear on the web page. Each offeror is responsible for printing the Confirmation Sheet and submitting it attached to the original and each designated number of copies. The Confirmation Sheet should be the first page of your response. Failure to comply with these submission procedures may result in the position paper not being reviewed.

Respondents must submit one original and one paper copy of the full response and one electronic copy of the full RFI response (in Microsoft Word or Adobe PDF on a single CD ROM). The disk must be clearly labeled with RFI 08-18, offeror organization, and points of contact. The full RFI response (original and designated number of hard and electronic copies) must be submitted to: DARPA/IPTO, Attn: RFI 08-18, 3701 N. Fairfax Drive, Arlington, VA 22203-1714.

Position papers are limited to five (5) pages in length (not including the confirmation sheet referenced above), and respondents are encouraged to be as succinct as possible while at the same time providing actionable insight. Each response should address the questions posed above and should comprise the following sections: Section I. Cover Page: This should be the confirmation sheet referred to above under Cover Sheet Submission. Section II. Details of submitted position on research in Perception or Planning for Cognitive Mobile Robotics, preferably organized in a question/answer format addressing the above questions and any others the submitter deems important. Section III. Additional Information: In addition to the required submission, respondents are encouraged to attach a brief list of key citations, including URLs if available.

3. Submission Dates and Times

Submissions will be considered if they are received at DARPA by 12:00 PM (ET), 03 March 2008. DARPA will acknowledge receipt of submissions via email and assign control numbers that should be used in all further correspondence regarding the position papers.

4. Intergovernmental Review – N/A

5. Funding Restrictions - N/A

6. Other Submission Requirements – N/A

V. Application Review Information

1. Criteria – N/A

2. Review Process – N/A

VI. Award Information Administration – N/A

1. Award Notices – N/A
2. Administrative and National Policy Requirements – N/A
3. Reporting – N/A

VII. Agency Contacts

All administrative correspondence and questions concerning this announcement should be directed to one of the following administrative addresses:

Technical POC: Dr. Robert Mandelbaum

Fax: 703-741-7804, Addressed to: DARPA/IPTO, Attn: RFI 08-18

Electronic Mail: RFI08-18@darpa.mil

Electronic File Retrieval: <http://www.darpa.mil/ipto/Solicit/solicit.asp>

Mail to: DARPA/IPTO

ATTN: RFI 08-18

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