BROAD AGENCY ANNOUNCEMENT
USAFA-BAA-2009-1
Research Interests of the United States Air Force Academy (USAFA)

TWO-STEP CALL ANNOUNCEMENT (CALL) 0004

FEDERAL AGENCY NAME: United States Air Force Academy, Academy Center for Unmanned Aircraft Systems Research

BROAD AGENCY ANNOUNCEMENT TITLE: Research Interests of the United States Air Force Academy

BROAD AGENCY ANNOUNCEMENT NUMBER: USAFA-BAA- 2009-1

BROAD AGENCY ANNOUNCEMENT TYPE: This is an initial announcement

CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER: 12.800

CALL ANNOUCEMENT TITLE: Predictive Time-Associated Geo-location of Mobile Targets using Unmanned Aircraft Systems

CALL ANNOUNCEMENT (CALL) NUMBER: 0004

TECHNICAL POINT OF CONTACT: The technical point of contact for this call as outlined in the baseline BAA, Section l - Funding Opportunity Description (a)(4), is:

Daniel J. Pack, Ph.D.
USAF Academy Department of Electrical and Computer Engineering
Director, Academy Center for Unmanned Aircraft Systems Research
PH (719) 333-6967, FAX (719) 333-3756
E-mail: daniel.pack@usafa.edu

CONTRACTING POINTS OF CONTACT: The contracting points of contact for this call are:

Grants/Agreements Specialist**:**
Brittany Henry, 10 CONS/LGCC, United States Air Force Academy, CO
Phone: 719-333-8930
Email: Brittany.Henry@usafa.af.mil

Grants/Agreements Officer:
Jeff Fugate, 10 CONS/LGCC, United States Air Force Academy, CO
Phone: 719-333-3907
Email: Jeffrey.Fugate@usafa.af.mil

BACKGROUND: The Academy Center for Unmanned Aircraft Systems Research (ACUAS) at the United States Air Force Academy (USAFA) is seeking white papers involving time-associated predictive sensor-based target estimation research using Unmanned Aircraft Systems (UAS). Specifically, the center is looking for a research team who will develop comprehensive solution methods that can (1) incorporate aperiodic sensor data obtained from multiple heterogeneous sensors to geo-locate mobile targets and (2) predict the position and orientation of targets in future time based on accumulated sensor data and physical and environmental constraints. In order to better leverage our resources, the Academy has partnered with both academic and government institutions in developing a variety of multiple cooperative UAS technologies over the years. One of the challenging areas of research being conducted at the center this BAA is addressing is a robust sensor fusion technique that can tolerate communication delays caused by distances that separate sensors and computational resources. During the communication delay, the predictive time-associated geo-location system (PTAGS) should continue to output current estimate of the target until the next sensor output update becomes available. The system also should consider the accumulated information of targets and environment constraints to adjust the predicted target locations. There is a large amount of research into multiple unmanned systems. A great deal of the knowledge developed in the field resides in a number of technical papers and journal articles developed in the community. These include: IEEE Transactions on Robotics and Automation, IEEE Conference Proceedings on Robotics and Automation, IEEE Conference Proceedings on Automatic Control, IEEE Transactions on Automatic Control, IEEE Transactions on System, Man, and Cybernetics, American Control Conference Proceedings, IEEE Conference Proceedings on Decision and Control, and IEEE Conference Proceedings on Networks, Sensing, and Control. The PTAGS research will be conducted in collaboration with researchers at USAFA and other USAFA research partners. As such, the team must conduct the bulk of its research at USAFA. While research team members will be leading various aspects of the project, considerable cadet involvement is expected throughout each phase of the project. As the United States Air Force Academy prepares young men and women for service to our nation, it is essential they have as many educational opportunities as possible to facilitate their leadership development.

REQUIREMENT DESCRIPTION: The United States Air Force Academy is soliciting white papers/proposals for research under Section l - Funding Opportunity Description (a)(11) of the Broad Agency Announcement USAFA-BAA-2009-1 posted on 30 September 2009 specifically for “Predictive Time-Associated Geo-Location of Mobile Targets in the Academy Center for Unmanned Aircraft Systems Research” in accordance with the attached Research Considerations document.

THIS WILL BE A TWO-STEP CALL ANNOUNCEMENT:

FIRST STEP: WHITE PAPERS

WHITE PAPER FORMAT: White papers submitted in response to this call should conform to the requirements found in USAFA-BAA-2009-1, section IV 3.a and also include a brief resume of the principle investigator and a rough order of magnitude of cost.

WHITE PAPER DUE DATE AND TIME: The due date for white papers submitted in response to this call is no later than 1630 MST on 10 February 2012. ***White papers received after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3).***

WHITE PAPERS ARE TO BE E-MAILED TO:
10 CONS/LGCC
Attn: Brittany Henry in response to USAFA-BAA-2009-1 Call 0004
8110 Industrial Drive, Ste # 200
United States Air Force Academy, CO 80840
Fax: 719-333-4747
Email: 10CONS.LGCC@usafa.af.mil
WHITE PAPERS SHOULD ADDRESS ANY OR ALL OF THE PROGRAM OBJECTIVES FOUND IN ATTACHMENT ONE OF THIS CALL.

WHITE PAPERS EVALUATED AND SELECTED: White papers will be evaluated and full proposals may be requested in accordance with USAFA-BAA-2009-1. Offerors whose white papers are determined to be of interest to the Government will be asked to submit full cost and technical proposals in response to this call. Offerors whose white papers are not of interest to the Government will be notified via letter that the effort proposed is not of interest to the Government.

SECOND STEP: PROPOSALS, IF REQUESTED

INTENT TO PROPOSE: Potential offerors are requested to advise the Grants/Agreements point of contact (by e-mail) if they intend to submit a proposal after receiving a formal request for proposal from the Grants Officer. Such notification is merely a courtesy and is not a commitment by the offeror to submit a proposal.

PROPOSAL INSTRUCTIONS: Offerors are requested to follow the instructions within the baseline BAA, USAFA-BAA-2009-1 for instructions on how to submit a proposal. All proposals must be submitted through Grants.Gov, https://www.grants.gov and include all the required forms specified within the baseline BAA.

REGISTRATION REQUIREMENTS: Prospective Recipients shall be registered in the CCR database prior to award, during performance, and through final payment of any award resulting from this announcement. Offerors may obtain information on registration and annual confirmation requirements via the Internet at www.ccr.gov or by calling 1-866-606-8220.

ANTICIPATED FUNDING: Funding is anticipated for this call. This posting is not to be construed to mean the assurance of an award, as availability of funds, technical need, Government discretion and successful negotiations are prerequisites to award.

ANTICIPATED TYPE OF CONTRACTS/INSTRUMENTS: The Government anticipates awarding a Cooperative Agreement as a result of this call but reserves the right to award the instrument best suited to the nature of research proposed including a Grant or Procurement

Contract. Potential offerors are reminded that in accordance with DoDGARs 22.205, a fee or profit may not be paid to the recipient of a Cooperative Agreement or Grant.

PERIOD OF PERFORMANCE: The anticipated period of performance for the award resulting from this call is approximately 18 months, depending on the proposed effort.

PROPOSAL DUE DATE AND TIME: The due date for proposals will be 30 days after formal request for proposal has been sent to the submitter of the selected white paper(s). Proposals for any other technology area identified in the baseline BAA will not be accepted under this call. **Proposals received after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3).**

ANTICIPATED NUMBER OF AWARDS: The Government anticipates awarding one Cooperative Agreement as a result of this call. However, the Government reserves the right to make multiple awards, single awards, or no awards pursuant to this call.

AWARD DATE: Anticipated March 2012

CALL AMENDMENTS: Offerors should monitor **GRANTS.GOV** http://www.grants.gov for any additional notices to this call that may permit extensions to the white paper submission date or otherwise modify this announcement.

APPLICABILITY OF BASELINE BAA: All requirements of USAFA-BAA-2009-1 apply unless specifically amended and addressed in this call. For complete information regarding USAFA-BAA-2009-1, refer to the initial opened-ended BAA as amended. It contains information applicable to all calls issued under the BAA and provides information on the overall program, proposal preparation and submission requirements, proposal review and evaluation criteria, award administration, agency contacts, etc. Direct questions to the points of contact identified above.

ATTACHMENT: Research Considerations