Office of Naval Research
BAA 07-028
Amendment 2

Additional Guidance for UC2I Autonomy Technology Component Proposals

Proposals should be structured to have a $300-500K base proposal to define and document the autonomy architecture and demonstrate integration into a MOOS autonomy system running in a Linux environment. The base effort should also define the interfaces with external Navy systems such as MEDAL and GCCS-M. Proposals should also contain a $1M option to further develop and demonstrate the autonomy in simulation on cooperative mine search/mapping scenarios. The proposal should also include a $1.5M option to demonstrate the autonomy on UUV/USV cluster provided by the government.

The government owns the following vehicles that could be used in the at sea demonstration if requested by the contractor for a demonstration at Naval Surface Warfare Center Panama City:

(1) 11m USV

(3) BPAUVs

(3) REMUS 100

The proposals should address the following:

1. Proposals should address plans for MOOS integration and testing.

As described in the white paper posted with this BAA, the term *autonomy system* is used to mean the collection of (MOOS) components that collectively run on the vehicle payload computer. This includes modules for sensor processing, autonomy, data logging, sensor drivers and so on. The term *autonomy module* is used to mean the specific MOOS module responsible for producing a stream of heading, speed and depth commands.

2. To help assess the proposed autonomy systems, we strongly suggest that the following questions be answered briefly in a separate subsection labeled "Autonomy System Summary" at the beginning of the Statement of Work section in the proposal. Please limit this summary to three pages. The upper limit on the length of the Statement of Work section may be adjusted accordingly. See the original BAA guidance on "Content and Format of Full Proposals".

The state of the proposed autonomy module:

A. Is it currently capable of running in simulation?
B. Does it run in simulation with marine environment scenarios?
C. Has it been run on a UUV? If so, which one(s), and when?
D. Has it been run on a USV? If so, which one(s), and when?
E. If run on physical platforms, did you have integration partners?

The history and context of the proposed autonomy module and/or system modules:

A. What is the origin of this autonomy software?
B. What program or project was it originally built for? How long ago?

C. Is some form of it currently in use by another program?

Documentation (unclassified) on the proposed autonomy system and autonomy module:

A. Please list *relevant* Technical Reports (including collaborators).
B. Please list *relevant* peer-reviewed publications.
C. Please list *relevant* non peer-reviewed publications separately.
D. From A-C, which ordered two are the most relevant? How can they be obtained?
E. Please be sure to properly discern B from C.

The architecture / Implementation description:

A. Rough architecture description (e.g., behavior-based, model-based control, etc.).
B. If behavior-based, how are behaviors coordinated or arbitrated?
C. If behavior-based, what behaviors are currently implemented, tested, fielded?
D. If not behavior-based, describe briefly how new functionality is added.
E. What language(s) is it implemented in?
F. How would a command and control structure interface with the autonomy, for example, alter a set of waypoints, alter a search area or change a time constraint?

3. Data rights (software)

The BAA proposal contents guidance asks for a one-page section (5) describing assertions of data rights. In particular, for autonomy proposals, where the end product is a MOOS software autonomy module, please be explicit about the assertion of rights (if any) regarding this product. Preferably, where possible, please reference a concise term such as the GNU Public License, Open BSD, Government Purpose Rights. Or simply state that there are no restrictions or full proprietary.

4. Point(s) of Contact

Questions of a technical nature shall be directed to the Technical Point of Contacts, as specified below:

(1) Dr. Dan Deitz
Office of Naval Research
One Liberty Center
875 North Randolph Street, Suite 1425
Arlington, VA 22203-1995
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(2) Dr. Michael Benjamin
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5. The Government reserves the right to alter the mix of system versus component level awards.

6. As a point of clarification, hand delivery of proposals is acceptable. Should you decide to hand deliver a proposal, please proceed to the security desk and contact Adam Goldstein at (703) 696-6857 to submit the proposal.