

Questions and Answers Regarding ONR BAA # ONR 07-009

The following document provides additional information regarding ONR Research Opportunity BAA # ONR 07-009 for Electronic Warfare Technology. Due to the short time available before white paper submissions are due on 12 February 2007, we are unable to schedule an Industry Day or individual meetings to discuss specific concepts or ideas that may be under consideration for submission. However, the following list of questions and answers is based on questions we received and is offered to help potential submitters to decide what would be appropriate responses to the solicitation:

1. "Are there any areas of Electronic Warfare (EW) not covered by the BAA?"

The on-line Wikipedia encyclopedia (http://en.wikipedia.org/wiki/Electronic_warfare), defines EW as the use of the electromagnetic spectrum to deny its effective use by an adversary. The two areas of EW we are specifically addressing in the BAA are (1) *Electronic Attack (EA)*, the active or passive use of the electromagnetic spectrum to deny its use by an adversary, and (2) *Electronic Support (ES)*, the passive use of the electromagnetic spectrum to gain intelligence about other parties on the battlefield in order to find, identify, locate and intercept potential threats or targets.

However, there are several areas that are also considered part of EW or are closely related to EW that are not of interest under the BAA. These include:

- Electronic Protection (EP) - defined as all activities related to making enemy EA activities less successful by means of protecting friendly personnel, facilities, equipment or objectives. This area is also sometimes called Electronic Counter-Countermeasures (ECCM). Since EP/ECCM functions are usually designed into our own radars and surveillance systems as a fundamental part of their architectures we have chosen to exclude these technologies under this BAA.
- Signal Intelligence (SIGINT) - defined as intelligence-gathering by interception of signals, whether by radio interception or other means. There is a close relationship between systems designed for ES and SIGINT, the key difference being that ES systems provide real-time detection, identification, and location to allow for immediate response, while SIGINT systems tend to collect signals for future exploitation. While this difference can be subtle, the ability of ES systems to automatically cue a response, either a countermeasure or an additional degree of signal processing (for instance, for target geo-location), usually differentiates them from SIGINT collection systems. This BAA is not interested in concepts that are clearly SIGINT.
- Directed Energy (DE) - a subset of EA that is defined as a type of energy weapon that directs energy in a particular direction by a means other than a projectile. Typical types of DE include High Energy Laser (HEL) and High Power Microwave (HPM). Conventional EA can also use lasers or microwaves to jam or disrupt enemy systems. The key difference between conventional EA and DE is in the effect - if the application results in material damage to the target or

subsystems of the target then it falls under DE. Because DE is managed by another department of ONR, we are not interested in concepts that are clearly DE.

- Signature Reduction - a subset of passive EA that is defined as material applications used with aircraft, ships and missiles in order to make them less visible (ideally invisible) to radar, infrared and other detection methods. These technologies tend to be highly classified and are tightly coupled with the fundamental design of military platforms and, due to their very specific nature, are not of interest under this BAA.
- Communications - systems that are clearly intended to solely communicate information between personnel or platforms are not covered under this BAA (however, ES system concepts designed to detect and exploit communications signals for EW applications such as location, identification, and tracking are permitted). Similarly, Communications Intelligence (COMINT) systems that are clearly intended for intelligence collection without real-time, automatic response are not covered under this BAA.
- Surveillance/Reconnaissance - active radar systems and active or passive imaging sensors designed for surveillance and reconnaissance applications are not covered under this BAA. As in the case of ES versus SIGINT, the ability of a passive sensor to automatically cue a response or otherwise provide real-time, actionable information is usually a good indication of whether it can be considered an EW concept or is more appropriate as a surveillance/ reconnaissance concept.

The above exclusions are unique to BAA ONR 07-009 and should not be viewed as representative of all of ONR. There may well be other groups or individuals at ONR that would be interested in these areas. You are encouraged to seek out interested parties through the ONR web site (onr.navy.mil) and consider submitting a proposal under the ONR Long Range BAA (ONR 07-001) or other BAA postings that may be specific to these other areas.

2. "How important is innovation in a proposed effort?"

Because we are looking for EW exploratory development concepts, the degree of innovation will be a prime evaluation criterion. Concepts that emphasize commercial off-the-shelf (COTS) components will be less attractive than concepts that incorporate newly emerging technologies to address EW applications. Of course, it is always possible to use COTS in truly innovative ways that are unanticipated in their conventional applications, so the use of COTS is not grounds for automatic exclusion. But in general terms, the more mature the technology approach, the less attractive it will be viewed under this BAA. The ONR Discovery and Invention (D&I) program is specifically focused on maturing new and emerging science and technology for Navy and Marine Corps applications, so this will be a prime consideration in evaluating the responses to this BAA.

3. "Where can I find documented Navy/Marine Corps EW requirements?"

The military application of the proposed effort must be clear and compelling. It is often difficult for proposers from outside the Department of Defense to have knowledge of

specific Navy/Marine Corps requirements, so direct reference to a Joint Capability Document (JCD) or other formal documentation is not required to respond to this BAA. However, the statement of Navy/ Marine Corps capability deficiencies being addressed should be clearly understandable and supportable without excessive elaboration.

4. "What level of detail is required in describing the technical approach?"

The technical explanation of the proposed concept should be clear, logical, and provided in sufficient detail for the evaluator to understand that the objective is achievable. Concepts that require a "leap of faith" to clear a technical hurdle with little explanation of the method involved will be viewed with skepticism. This is not to say that only low-risk efforts will be considered. Exploratory development implies a fair degree of technical risk. However, the white paper should anticipate this risk and clearly indicate to the reviewer how recent technical breakthroughs or innovative concepts will manage the risk to give a reasonable expectation of success.

5. "Will electro-optical / infrared technology efforts be considered under this BAA?"

Concepts for the use of electro-optical / infrared (EO/IR) technology for EW applications are unfortunately constrained by limitations on the funding currently identified for this BAA. Section 6 of the BAA clearly specifies several EW areas incorporating EO/IR technologies that are of interest to the ONR 312 Electronic Warfare group. However, the funds currently identified to support the proposed efforts are presently limited to technologies operating in the radio-frequency (RF) spectrum. We still encourage innovative EW concepts for EO/IR technology efforts and will attempt to identify alternate sources of funding for especially compelling concepts, but there is no guarantee that such funding will be found.