

**ONR Gigevt qpkeu'Y ct hct g'Vgej pqmji { 'BAA 11-006  
Co gpf go gpv'2224 Industry Day Questions & Answers  
6 January 2011**

**Written Questions**

- Q1. What is the underlying driver behind the 1-110 GHz wideband cueing receiver?  
 A1. The motivation is to detect signals over a very broad RF frequency range without any spectral gaps at sufficient sensitivity to cue a response of some kind (e.g. a countermeasure, a higher resolution sensor, a direction finding sub-system, etc.).
- Q2. Is it a desire to get rid of channelized receivers in general or a desire for better performance at millimeter frequencies?  
 A2. The former, but only to a degree. Channelized receivers have their place, but when covering such a broad spectral range the number of channels required for a conventional channelized receiver would be so great that implementation on a constrained platform (manned or unmanned aircraft, for instance) would be extremely difficult. The BAA is seeking innovative ways around this constraint by seeking alternatives to traditional channelized architectures, but with sensitivity and resolution comparable to state-of-the-art channelized designs. Performance at millimeter frequencies is important, but no more important than performance at other frequencies in the 1-110 GHz band.
- Q3. How critical is it for the cueing receiver to cover the 1-110 GHz band? Would proposals that address substantial portions of the band be acceptable?  
 A3. Preference will be given to designs that cover the entire 1-110 GHz band, but innovative concepts that address substantial portions of the band will be considered. However, there will need to be some discussion on why the full coverage is not achievable and if future expansion of the concept to cover the entire band is possible.
- Q4. The BAA states, "Some portion of this budget may fund research requests in this area received from Government entities outside of the BAA (pg. 8). What does this mean?  
 A4. The ONR 312 EW D&I budget that will fund efforts selected from those proposed in response to this BAA is not exclusive to the BAA. A separate solicitation to Government entities (labs like the Naval Research Laboratory, warfare centers like the Naval Air Warfare Center, etc.) has also been distributed with the same technical description and white paper submission requirements and deadline. White paper responses from both the BAA and the Government solicitation will be evaluated at the same time by the same evaluation panel and selections will be made solely on the basis of the evaluation criteria listed in the BAA, irrespective of the source of the proposal. It is therefore expected, though not certain, that some portion of the overall budget will fund efforts that were proposed in response to the separate solicitation to Government entities.

- Q5. The BAA discusses use of the BAA to “Enhance work performed under the ONR or DOD projects.” Could you provide some examples and/or additional explanation?
- A5. The exact wording in the BAA is as follows: “ONR has funded related technology development under numerous programs. If Offerors are enhancing work performed under other ONR or DoD projects, they must clearly identify the point of departure and what existing work will be brought forward and what new work will be performed under this BAA.” This means that if your proposed concept somehow leverages or otherwise uses technology or concepts that were formerly (or are currently) funded by ONR or DoD, then it is incumbent on you to explain how the proposed concept differs from or departs from the previous (or current) effort. Concepts that are viewed as redundant or duplicative of other funded efforts may receive lowered evaluations for innovation and relevance, while concepts that build upon or enhance prior or current ONR/DoD efforts to achieve new capabilities may benefit their evaluation for Naval or joint service relevance.
- Q6. Is there a separate budget for each of the research areas?
- A6. No. If no proposals are judged by the evaluation panel to be of “particular value” in one or more of the research areas then no awards will be made in that area or areas and the overall budget will be used to fund efforts in the other remaining areas.
- Q7. Are submissions competing only within their research areas or against all submissions?
- A7. Submissions will first be prioritized within their respective research area and then prioritized against all submissions. Once the cumulative sum of the budgets of the highest prioritized submissions among all areas exceeds roughly twice the available budget, we will cut off the list and ask those above the cut line to proceed to the next step in the evaluation process: oral presentations. Offerors with submissions below the cut line will be notified of their non-selection and thanked for their participation.
- Q8. The turn around time from 1 Feb to 18 Feb is short. How is this evaluation to be performed? How many applicants are anticipated to be invited to make full proposals? How many applicants are anticipated to get through the initial screening?
- A8. Evaluations will be conducted by ONR Program Officers and other invited Subject Matter Experts (SME’s) that are Government employees or contract employees who supply direct support to ONR and have a suitable Non-Disclosure Agreement (NDA) on file with ONR. If an excessive number of white papers are received (e.g. in excess of 100) then SME sub-panels may be employed to evaluate each separate research area. Each SME will identify their prioritization among all the evaluated submissions during a caucus session among all the SME’s to achieve a single overall prioritized list of submissions. Once the cumulative sum of the budgets of the highest prioritized submissions among all areas exceeds roughly twice the available budget, we will cut off the list and ask those above the cut line to proceed to the next step in the evaluation process: oral presentations. A similar caucus session among SME’s who attend the oral presentations will achieve a final prioritization of the submissions and a final cut line will be drawn when the cumulative sum of the budgets of the highest prioritized submissions equals the anticipated FY12 EW D&I

available budget. Those above the final cut line will then be asked to submit a full proposal. The number of applicants that will be asked to give oral presentations and to submit full proposals will depend on the cumulative budget of the submissions at each stage and the anticipated FY12 EW D&I available budget.

Q9. Is there a mechanism for submitting classified white papers/proposals via SIPRNET?

A9. No. The BAA states that classified white papers **MUST** be submitted to the ONR Document Control Unit using mail services appropriate to the level of classification. See Section IV sub-section 2 (page 11) of the BAA for additional information.

Q10. The BAA states that the page limit is 4 pages (excluding cover page, resumes, bibliographies and table of contents). Will the white papers be evaluated based on resumes, bibliographies, and table of contents as well?

A10. White papers will not be evaluated based on their table of contents. (In fact, a table of contents is not a specific requirement for a white paper in the BAA.) However, among the evaluation criteria listed in Section V sub-section 1 (page 22) of the BAA, technical factor 4 is “The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving the proposal objectives.” Resumes and bibliographies are relevant to this evaluation factor.

Q11. Will all technologies (including high power microwave) receive equal consideration?

A11. Yes. As long as the submission is relevant to the research areas in the BAA, all technologies will receive equal consideration.

Q12. If there is a data exchange agreement in place between the U.S.A. (USN) and a foreign government, can a foreign owned company participate under the DEA?

A12. No. In order to avoid possible infringement of international arms regulations (ITAR), no submissions will be accepted from a foreign company. The only exception will be U.S. subsidiaries of foreign-owned companies whose U.S. operation is “firewalled” from the foreign entity sufficiently to do business with the DoD.

Q13. Can a foreign owned company be a subcontractor to a U.S. company for purposes of this BAA?

A13. No.

### **Oral Questions & Answers**

Q1. Was the transmitter pulsed or CW for the power levels you are looking for?

A1. CW.

Q2. You stated that most submissions should be TRL level 3 or 4 but then you said for the high power transmitters submissions should be for TRL 5 to 6. Can you clarify?

A2. The final deliverable needs to demonstrate the ability to project that power against a target. That could be done in a lab or a chamber. You could possibly interpret that to be TRL 6 but that is not our intent.

Q3. Regarding the millimeter wave transmitter, are you focusing on the power amplifier or aperture or both?

A3. The emphasis is on the power amplifier. The intent is not to have much time spent developing an aperture. There needs to be some consideration of the chain after the power amplifier but our focus is on the power amplifier.

Q4. Have you compiled a list of benchmark references that would help us quantify what technologies and concepts would be of particular relevance?

A4. Unfortunately, due to the nature of Electronic Warfare, development of specific technologies is usually in response to specific threat capabilities. It would be very difficult to list more specific requirements while at the same time remaining at the unclassified level. While you may want more specifics about the threats, the BAA as written ensures the widest dissemination possible, which is what I desire.

Q5. Given the wide bandwidths you are focusing on, do you expect an increased number of papers involving RF photonics and will you have subject matter experts (SME's) in the photonics area evaluating the papers?

A5. RF photonics is certainly an approach that can be taken and I anticipate having SME's with a photonics background on the reviewing panel.

Q6. For isolation techniques, there is a threshold of 20 dB with a goal of being 30 dB. Are those in electrical dB?

A6. Yes.

Q7. For the millimeter wave high power transmitters, can you provide any information about size constraints or limitations since you specifically mention decoys?

A7. We are not specifying a certain size or necessarily looking at getting the stated power levels from a transmitter that would fit in a decoy but you have to convince me that what you provide as a deliverable could possibly be packaged for a smaller decoy or unmanned vehicle in a later development effort.

Q8. Can you provide more information about participation of foreign owned companies?

A8. If your company has a firewall between your U.S. operations and your foreign operations, then that would be acceptable. If you are a foreign government or working for a foreign industry and you are just the U.S. representative, then I cannot work with you. The ITAR regulations make it too difficult to work under that situation.

Q9. In research area 2a, are you looking for an innovative component and how it fits in proposed transmitter architecture or are you looking for a transmitter architecture analysis and all the components that are needed?

- A9. As an example, I am willing to accept a proposal for a tunable filter that has as part of the white paper a discussion of how it is relevant to EW systems or that it is revolutionary or innovative enough that it would facilitate or enable an EW capability that we do not have right now.
- Q10. You have three primary research areas and a fourth area of Innovative EW Concepts. Have you ever funded something in the fourth area and if so, can you tell us the topic?
- A10. Yes. Last year there was one effort funded in that area and the topic was “Submarine Buoyant Cable Metadiaelectric Antennas for EW” from the Naval Undersea Warfare Center at Newport, Rhode Island.
- Q11. If we are not sure if our white paper maps cleanly to research area two or research area four how can we be sure that the correct SME will be reviewing it?
- A11. I am hoping that the fourth area will have a small enough number of papers that I will be able to have all the SME’s review each paper from research area four, but I recommend that if there is any substantial overlap between areas, that you earmark your paper specifically for those particular areas. Remember, that to be successful from research area four you have to convince me that what you are proposing is so innovative and revolutionary that it surpasses where I have placed my primary focus, which is outlined, in areas one, two and three.
- Q12. What level of detail are you looking for with respect to the financial information in the white paper?
- A12. I am not asking you for a full work breakdown structure or hourly rates but I need enough information that I will be able to determine that the number of people involved and the level of effort seems to be reasonable for the funding requested.
- Q13. Would the wideband ES sensing or processing include any trackers or sorters on the backend or purely the RF front end and any signal processing with detection of the signals?
- A13. We are interested in not only detecting, acquiring and identifying, but also tracking, so tracking is important and if you can demonstrate that the method you are proposing is sufficiently beyond the state-of-the-art, that it is going to have a big impact, then yes, it would be considered.
- Q14. You have mentioned protection several times in your briefing and made an award last year, yet protection is not one of your three research areas. Does that mean there is a reduction in priority for protection?
- A14. Electronic protection (EP) is important but there is just so much that EW can do with regard to protecting systems against electronic attack (EA). The major emphasis in this BAA with regard to EP is the whole isolation question; transmit to receive isolation technologies in research area two. The focus is trying to protect our ES from our own EA or from interference from other systems. If you do not think that your EP idea falls in this area, then I encourage you to submit it under the fourth research area.

Q15. Is superconductivity in the trade space?

A15. Yes. Superconductivity is a technology that is relevant to this BAA. I work with Dr. Van Vecten in our electronics group who does a lot of work in superconductivity. The challenge with superconductivity is tactical relevance. If you are considering an effort in this area, I would pay particular attention to the Operational Naval Concept and Operational Utility Assessment Plan areas I mentioned earlier. I not only need to be convinced of its technical merit but that you can successfully apply it to a tactical problem.

Q16. Is there a way that those who submit papers can be assured that their ideas will be protected against improper disclosure or any other kind of unauthorized use?

A16. ONR strives above all things to protect intellectual property where it is appropriate and not allow the protected ideas of companies to filter out to other companies or organizations. The SME's on the evaluation panel are mostly government employees. If they are contactor support personnel, they have non-disclosure agreements on file. I am very sensitive to this issue and will try my best to prevent your concern from happening.

Q17. With respect to the ES sensing and processing area, can you make any comments about any assumptions regarding the nature of the spectrum that you are sensing?

A17. We are talking about very broadband spectral coverage so I am trying to make sure that the technologies we investigate are not limiting in any way or exclude any part of the spectrum that someone could exploit against us. For example, we are aware of technologies where noise like signals can be used for certain radar functions. We are interested in sensing and processing technology that recognizes such signals as what they are, instead of classifying them as noise or an insignificant signal artifact.

Q18. With respect to the wideband ES, is there any information we can get on the instantaneous bandwidth and the importance of going up to 300 GHz?

A18. The reason for expanding both higher and lower from 110 is just a concern I have that if there is any region of the spectrum where we are not looking, then things could be going on there without our knowledge. We need to be thinking about technologies that cover the whole electromagnetic spectrum. In terms of instantaneous bandwidth, I cannot say too much about that because I do not want to limit the possibilities of where technology is going. We know there are spread spectrum and frequency hopping systems out there and we know where most of them tend to operate today. But future technologies could push hoppers and agile systems outside these normal boundaries so we need to develop systems that can respond to these challenges.

Q19. There is a four page limit to the paper. Are the Operational Naval Concept and Operational Utility Assessment Plans part of the four page limit?

A19. Yes, they are. The only things excluded from the four page limit are the cover page, table of contents, resumes, and bibliography. Don't use your four pages to advertise your company or facilities. Use it to convince me that you know what

you're talking about, that you're a relevant voice in electronic warfare, you have an innovative idea and here is how you would execute it.

Q20. You have three main research areas and then the innovative concepts. The three main research areas have many sub areas and components. Do you have a breakout of how many efforts will be awarded per research area or could all awards be from one area?

A20. It all depends upon the quality of the papers we get. It would be unfortunate if all awards came from one area but yes, it could happen. What I would like to do is have two awards in each sub area of all four research areas but it all depends on the quality of ideas we get. Last year we had five research areas and we had one award each in research areas one and two, two awards each in research areas three and four and a single award in research area five. These awards were somewhat driven by the budget but also driven by the quality of what was submitted and what the emphasis was in last year's BAA.

Q21. Do you have a specific power-handling goal in mind for the isolator in research area two, sub area 3, transmit to receive isolation?

A21. No, the BAA states 20 or 30 dB above the electronic gain. That's really what we're looking for. I see the main motivation for that area being the idea of putting our EW systems on a small vehicle and because of simple geometry we have to put a very sensitive ES receiver near a transmitter. Solving the problem of simultaneously transmitting and receiving without interference in that scenario is my principal interest.

Q22. How many total awards did you make last year?

A22. Seven. We had approximately 220 white papers from which we selected 12 for oral presentations. Of these 12 presentations, seven were asked to submit full proposals and all seven were awarded. There were no cases where we asked for a full proposal then didn't fund them.

Q23. If you are submitting a paper against research area 2b but it also applies to research area 3a, should it be so stated in the paper?

A23. Yes. You should identify the primary sub area but also identify if there are other areas where you think it's appropriate. Or, if you have two innovative ideas you can write two separate papers. You should understand that you don't have to put several ideas together in a single white paper. We are looking for proposed efforts that make sense in terms of a fully realized project from beginning to deliverable.

Q24. If the proposed concept is really technical, is it advisable to put a one or two page appendix after the bibliography just in case there are questions?

A24. I don't think so. I haven't run across many concepts where the technical idea can't be conveyed in four pages. Just make sure you use the space effectively and focus on what you're trying to get across. Equations take up a lot of space. You may be better off explaining your concept using words rather than equations.

Q25. Can we team with universities and small business and should we say that in the white paper?

A25. Yes. There is a section in the “Frequently Asked Questions and Answers” handout that talks about teaming. You should lay out what your plan is for doing this and explain why it’s important. You should also explain how you will execute that arrangement and identify which entity is responsible for what part of the effort.

Q26. Can you comment on how many awards you anticipate making?

A26. I cannot tell you what my budget will be because there are too many variables that impact what the final figure will be. However, based on our “plans to fund individual awards of \$500,000.00 to \$1,500,000.00 per year” as stated in the BAA, I anticipate being able to fund at a minimum 10 new start efforts and I’m hopeful that I could fund as many as 20.

Q27. Would a white paper for a stand alone idea be looked on favorably or get additional consideration if it was beneficial to one of the new starts from last year or improved upon it?

A27. It may or it may not. The SME’s that review the papers are somewhat aware of previously funded efforts in order to minimize duplication and maximize their usefulness in identifying new technical approaches. But their awareness of existing projects is not detailed enough that they would normally pick up on such a relationship as you describe. I would also hope that the efforts that we funded last year are innovative and important enough that even if we got other ideas that leveraged those things they would be equally important this year. However, I would advise against proposing a concept that relies upon the success or even the existence of another research effort. Submissions should be fundamentally complete and relevant on their own merits and not dependent on the success or failure of other parallel efforts, although added benefit to such efforts could be viewed favorably if a strong technical case can be made for this.

\* **2011 Office of Naval Research Industry Day Attendee List**

√ IN	Last	First	Company/ Organization	Coming From
1	Arjona	Talin	ONR/CACI	Arlington, VA
2	Ahmed	Mohiuddin	HRL Laboratories, LLC	Malibu, CA
3	Andersen	Stan	SAIC	Arlington, VA
4	Andrews	Jim	Oceanit	Arlington, VA
5	Armstrong	Carter	L3	San Carlos, CA
6	Auckland	David	JEM Engineering, LLC	Laurel, MD
7	Basara	Dennis	Lockheed Martin Mission Systems and Sensors	Hainesport, NJ
8	Baseghi	Behshad	ATK Corporation, Defense Electronic Systems Div.	Woodland Hills, CA
9	Berger	Steven	ENSCO, Inc	Falls Church, VA
10	Borodulin	Pavel	Northrop Grumman Electronic Systems	Baltimore, MD
11	Braden	Robert	Eikos, Inc.	Franklin, MA
12	Bradick	Andrew	Rheinmetall	McLean, VA
13	Caswell	Eric	L-3	Menlo Park, CA
14	Chow	David	HRL Laboratories, LLC	Los Angeles, CA
15	Christian	Lynn	ONR	Arlington, VA
16	Conner	Dan	Packet Dynamics, LLC	Reston, VA
17	Craig	Peter	ONR	Arlington, VA
18	Dishman	John	SAIC	Dayton, OH
19	Edge	J. Gary	Vadum Inc.	Raleigh, NC
20	Elmore	Robert	L3	San Carlos, CA
21	Esman	Ron	Mitre	McLean, VA
22	Farren	Edward	Dynamic Analytics and Test, Inc	Arlington, VA
23	Feineman	Arnold	Cobham Sensors Systems	Landsdale, PA
24	Filipovic	Dejan	University of Colorado at Boulder	Boulder, CO
25	Fleischut	Steve	Applied Research Lab Penn State Univ.	Warminster, PA
26	Giras	Tim	Argon ST, Inc.	Fairfax, VA
27	Green	Thomas	Argon ST, Inc.	Fairfax, VA

28	Hagner	Jutta	Technology Promotion International	College Park, MD
29	Hautau	Charles	Rockwell Collins Washington Office	Arlington, VA
30	Hill	Ian	DRS Signal Solutions	Gaithersburg, MD
31	Hoker	William	APIC Corporation	Arlington, VA
32	Howell	Robert	Northrop Grumman Electronic Systems	Baltimore, MD
33	Hundley	Jim	Mercer Engineering Research Center	Warner Robins, GA
34	Hunter	Wayne	DRS Signal Solutions, Inc	Gaithersburg, MD
35	Jesswein	Tom	ONR/CACI	Arlington, VA
36	Kazemi	Hooman	HRL laboratories LLC	Malibu, CA
37	Kendra	John	SAIC	Chantilly, VA
38	Kolanek	James	ATK Corporation, Defense Electronic Systems Div.	Woodland Hills, CA
39	Krech	Ken	Dynamic Analytics and Test, Inc	Arlington, VA
40	Kusuda	Robert	ONR/CACI	Arlington, VA
41	Laskowski	Paul	Johns Hopkins Applied Physics Lab	Laurel, MD
42	Lawson	Brian	Raytheon Space and Airborne Systems	El Segundo, CA
43	Lee	Frederick	Raytheon Space and Airborne Systems	Arlington, VA
44	Levitt	Hal	NRL	Washington, DC
45	Liechty	Robert	Cobham Sensors Systems	Landsdale, PA
46	Maleki	Lute	OEwaves, Inc.	Pasadena, CA
47	Markarian	Tom	Raytheon Advanced Concepts & Technology	Arlington, VA
48	Marra	Antonio	Dynamic Analytics and Test, Inc	Arlington, VA
49	McKinney	Jason	Naval Research Laboratory	Washington, DC
50	Miragliotta	Joseph	Johns Hopkins Applied Physics Lab	Laurel, MD
51	Murphy	Myles	ITT Integrated Electronic Warfare Systems	Clifton, NJ
52	Nichols	Todd	Vadum Inc.	Raleigh, NC
53	Patterson	Rob	Johns Hopkins Applied Physics Lab	Laurel, MD
54	Petr	Rodney	Textron Defense Systems	Wilmington, MA
55	Piche	Joseph	Eikos, Inc.	Franklin, MA
56	Ridder	Jeffrey	Evidence Based Research, Inc.	Vienna, VA
57	Rodwell	Mark	University of California at Santa Barbara	Santa Barbara, CA
58	Ross	Harry	Northrop Grumman Electronic Systems	Baltimore, MD
59	Ross	Daniel	Northrop Grumman Electronic Systems	Baltimore, MD

60	Sasmazer	Haluk	Rockwell Collins	Cedar Rapids, IA
61	Sayano	Koichi	APIC Corporation	Arlington, VA
62	Schallheim	Mark	NAVAIR	Patuxent River, MD
63	Shaikh	Salim	Technology Promotion International	College Park, MD
64	Spaulding	Bob	Colorado Engineering, Inc	Colorado Springs, CO
65	Sriram	Sri	Srico, Inc	Columbus, OH
66	Stein	Shane	ONR/CACI	Arlington, VA
67	Stenger	Peter	Northrop Grumman Electronic Systems	Baltimore, MD
68	Stroili	Frank	BAE Systems, Inc.	Nashua, NH
69	Sun	Nian	Northeastern University	Boston, MA
70	Sweetland	Scott	BAE Systems, Inc.	Nashua, NH
71	Tavlykaev	Robert	Independent Consultant	
72	Tritch	Timothy	APIC Corporation	Arlington, VA
73	Urick	Vincent	Naval Research Laboratory	Washington, DC
74	Vanhille	Ken	Nuvotronics, LLC	Radford, VA
75	Vosburgh	Frederick	Physical Devices LLC	Durham, NC
76	Wallace	Thomas	Vesperix Corporation	Arlington, VA
77	Wilkerson	Jonathan	Physical Devices LLC	Durham, NC
78	Wills	James	Argon ST, Inc.	Fairfax, VA
79	Womble	Alan	Applied Energetics	VA
80	Woods	Jeff	Northrop Grumman Electronic Systems	Baltimore, MD
81	Woodward	Ted	Telcordia Technologies, Inc.	Redbank, NJ
82	Yu	Mark	Northrop Grumman Electronic Systems	Baltimore, MD