

ONR Electronic Warfare S&T Industry Day



Revolutionary Research . . . Relevant Results

6 January 2011

Dr. Peter Craig

Electronic Warfare Program Manager

C4ISR Department

Office of Naval Research

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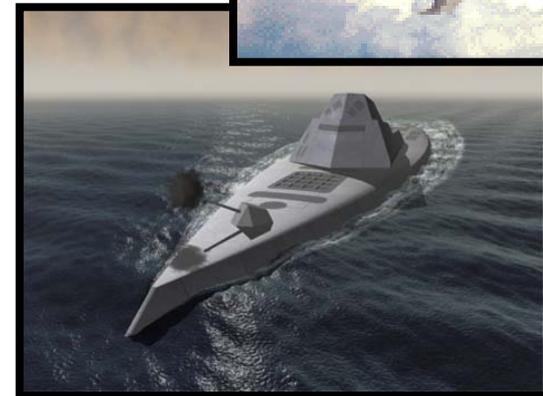
Office of Naval Research Science & Technology



ONR Mission: To plan, foster, and encourage scientific research in recognition of its paramount importance as related to the maintenance of future naval power, and the preservation of national security; and to manage the Navy's basic, applied, and advanced research to foster transition from science and technology to higher levels of research, development, test, and evaluation.

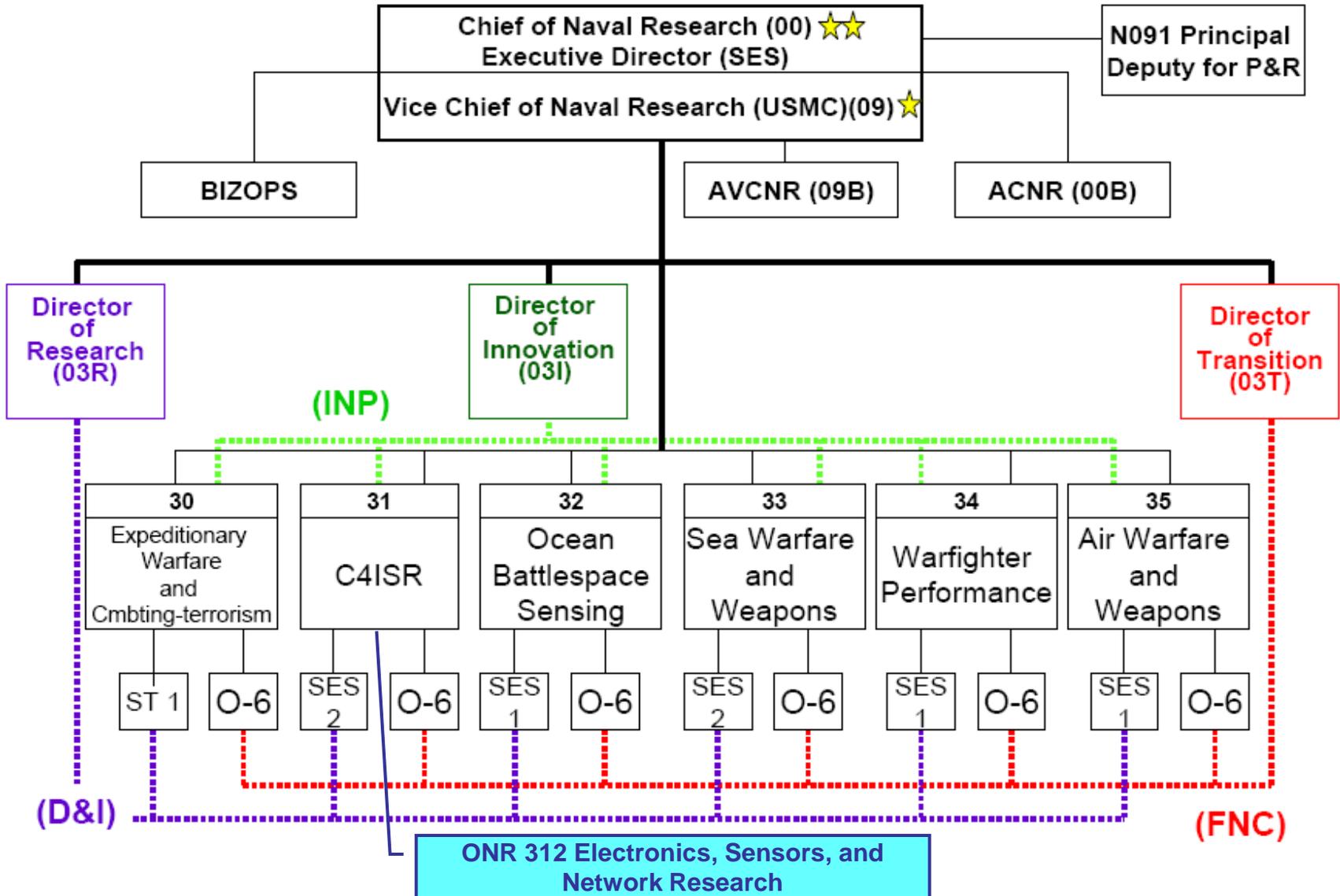
Naval S&T Vision: Sponsor scientific research and technology to:

- ***Pursue revolutionary capabilities for Naval forces of the future,***
- ***Mature and transition S&T advances to improve naval capabilities,***
- ***Respond to current critical needs,***
- ***Maintain broad technology investments to anticipate and counter potential technology surprise.***





Office of Naval Research Organization (S&T)

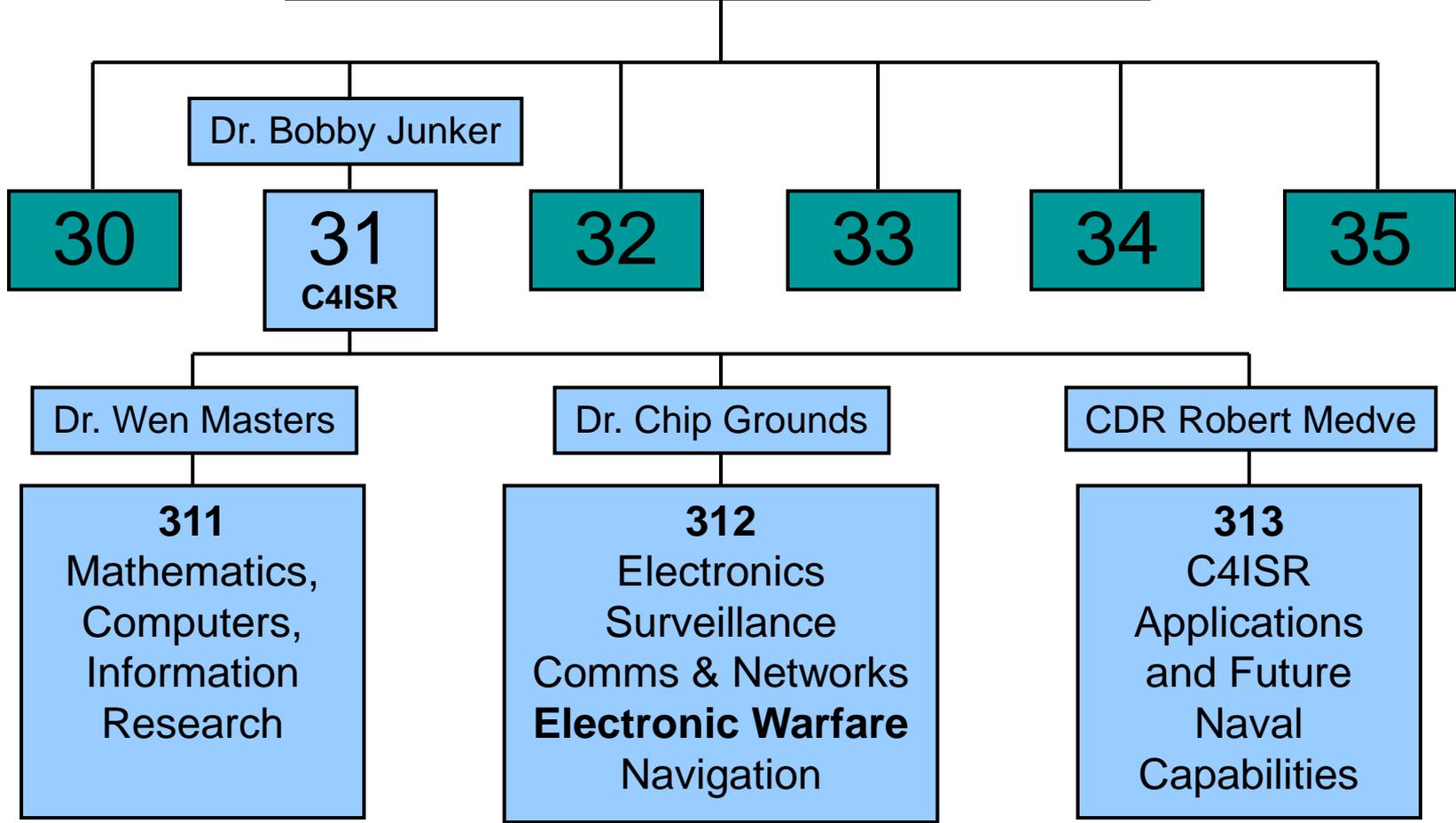




ONR Organization - S&T



Chief of Naval Research





ONR 312 Electronic Warfare



Electronic Warfare Technology Program

Dr. Peter Craig
EW Program Manager

Mr. Dave Tremper
EW Program Officer

Mr. Mike Garcia
EW Program Officer

Mr. Bob Kusuda
CACI

Mr. Tom Jesswein
CACI

6.2 Discovery & Invention

Distributed EW Receivers & Transmitters
Countermeasures for Emerging Threats
Electro-optic and Infrared Countermeasures

Adaptive EW Signal Processing
Antennas and Components
Multi-band Lasers

EW Modeling & Simulation
Network Centric EW
Multi-mode Countermeasures Techniques

Future Naval Capabilities (Sea Strike, Sea Shield & Expeditionary Maneuver Warfare)

Surface/Subsurface

Enhanced SEWIP
Enhanced NULKA
Next Generation CM Techniques
for Ship Missile Defense
Submarine Survivability –
Electronic Warfare

Air

Next Generation Airborne EW
CM for Advanced Imaging IR Seekers
CM for Millimeter Wave Seekers
Identification and Defeat of EA Systems

Marine Corps

Multifunction Capabilities for MWS
Future Joint Counter
Radio-Controlled IED EW

SBIR/STTR EW Technologies



Doing Business with ONR



Business Opportunities

- Broad Agency Announcements (BAA)
- Small Business Innovative Research / Small Business Technology Transfer (SBIR/STTR)
- Multidisciplinary Research Program of the University Research Initiative (MURI)
- Defense University Research Instrumentation Program (DURIP)
- DoD Experimental Program to Stimulate Competitive Research (DEPSCOR)

Detailed information can be found on the ONR website

<http://www.onr.navy.mil/en/Contracts-Grants.aspx>



What is Electronic Warfare? Joint Service Definition



Development of technologies that maximize the operational use of the electromagnetic (EM) spectrum by U.S. forces, ...while denying same from the enemy, ...by using EM means to detect and attack enemy sensor, weapon and command infrastructure systems

- Immediate battlespace recognition of hostile scenario/intent and optimized, automated response decisions**
- Electronic denial, degradation, disruption or destruction of enemy C4ISR, IADS, acquisition and associated targeting/weapon systems**
- Timely EM control over the entire battlespace: temporal, spectral, spatial**



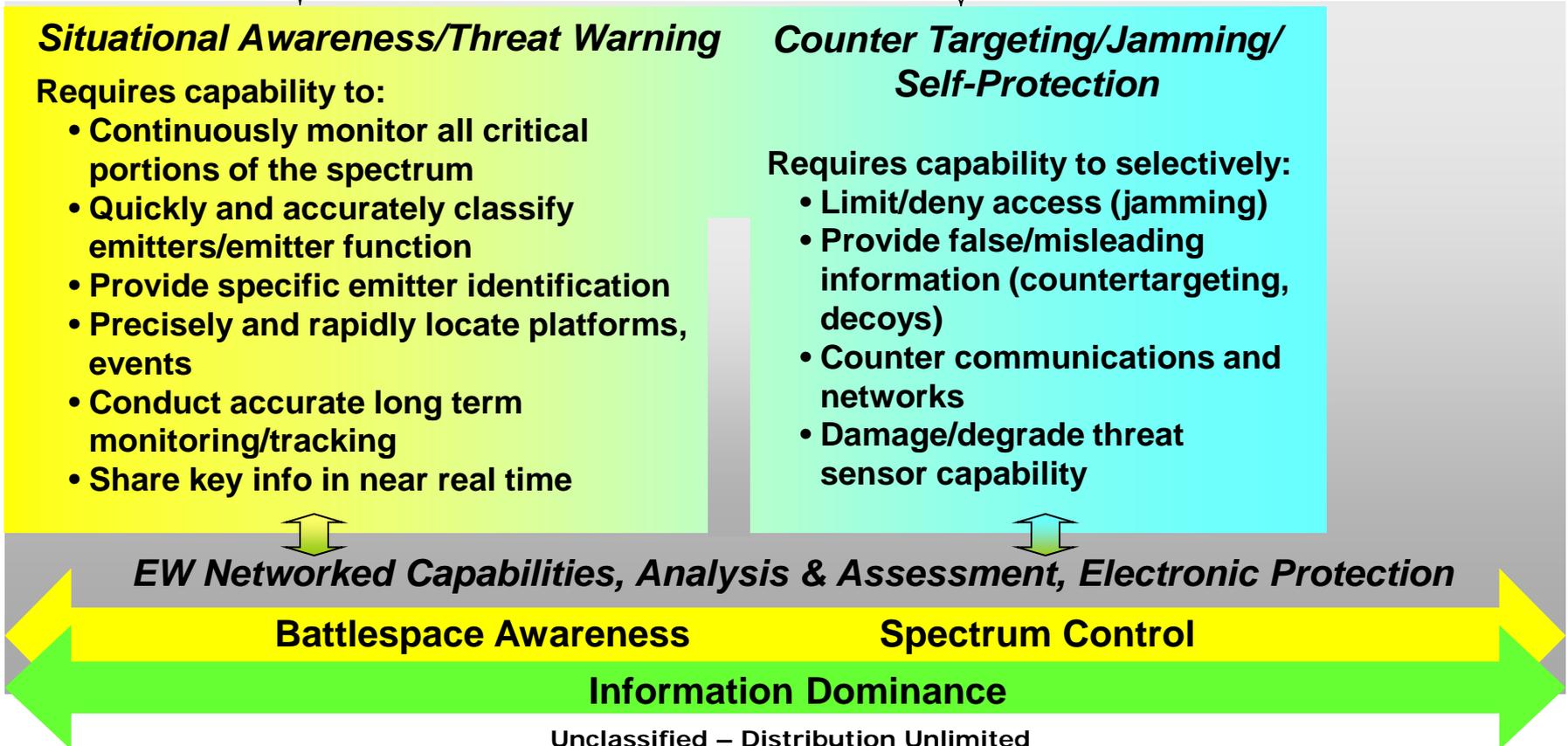
Electronic Warfare in Perspective



The RED Kill Chain...



... and the Electronic Warfare Response Chain...





Electronic Warfare Terminology

DoD / JCS Definitions



Electronic Warfare (EW): “Any military action involving the use of EM radiation ... to control the EM spectrum or to attack the enemy.”

- **Electronic Warfare Support (ES):** Actions to search for, intercept, ID & locate intentional / unintentional EM sources for the purpose of immediate threat recognition
 - Provides information/data for immediate decisions regarding operations & tactical actions (avoidance, targeting, cueing)
- **Electronic Attack (EA):** Use of EM ... to attack with the intent of degrading, neutralizing or destroying enemy combat capability
 - Includes jamming, EM deception, decoys/expendables
- **Electronic Protection (EP):** Actions taken to protect ... from any effects of friendly or enemy employment of EW that degrade, neutralize, or destroy friendly combat capability



ONR Electronic Warfare S&T Area Objectives



Own the Spectrum

Provide Battlespace Awareness - Know who is out there, where they are, and what they are doing...

Requires capability to:

- Continuously monitor all critical portions of the spectrum (RF/EO/IR)
- Quickly and accurately classify emitters/emitter function
- Provide Specific Emitter Identification (SEI)
- Precisely and rapidly locate platforms, people, things, events
- Conduct accurate long term monitoring/tracking
- Network sensors and share key info in near-real time

ES

Provide Effective Spectrum Control - Determine who sees what...

Requires capability to selectively:

- Limit/deny access (jamming) (RF/EO/IR)
- Provide false/misleading information (countertargeting, decoys)
- Damage/degrade threat sensor capability (RF/EO/IR)

EA

Provide Unrestricted Spectrum Access to Blue Forces – Protect our own ISR capabilities...

Requires capability to:

- Negate the impact of hostile jamming on U.S. and allied sensors (RF/EO/IR)
- Preserve the integrity of critical networks and data links
- Precisely navigate and target weapons in a GPS-denied environment

EP



ONR EW S&T Investment Goals

Alignment to Naval and Joint S&T Needs



EW Technology & Techniques for Current and Future Warfighter Needs:

- Extend the EW Spectrum into New Domains (Wavelength/Frequency/Modulation)
- Exploit Non-Traditional and Unintentional Signals
- Detect and Counter Passive Detection Systems
- Explore Network-Enabled Electronic Warfare Cooperative Methods and Solutions
- Develop Tools and Techniques to Provide Real-Time Assessment of EW Effectiveness
- Reduce Size/Weight/Power/Cost of EW Hardware and Systems
- Counter Hostile Use of Advanced EW Technology against US Forces

	SWE	NAE	USE	USMC	Joint
Extend the EW Spectrum into New Domains (Wavelength/Frequency/Modulation)	✓	✓	✓	✓	✓
Exploit Non-Traditional and Unintentional Signals	✓	✓	✓	✓	✓
Detect and Counter Passive Detection Systems	✓	✓		✓	✓
Explore Network-Enabled Electronic Warfare Cooperative Methods and Solutions	✓	✓	✓	✓	✓
Develop Tools and Techniques to Provide Real-Time Assessment of EW Effectiveness		✓			✓
Reduce Size/Weight/Power/Cost of EW Hardware and Systems	✓	✓	✓		
Counter Hostile Use of Advanced EW Technology against US Forces		✓		✓	✓



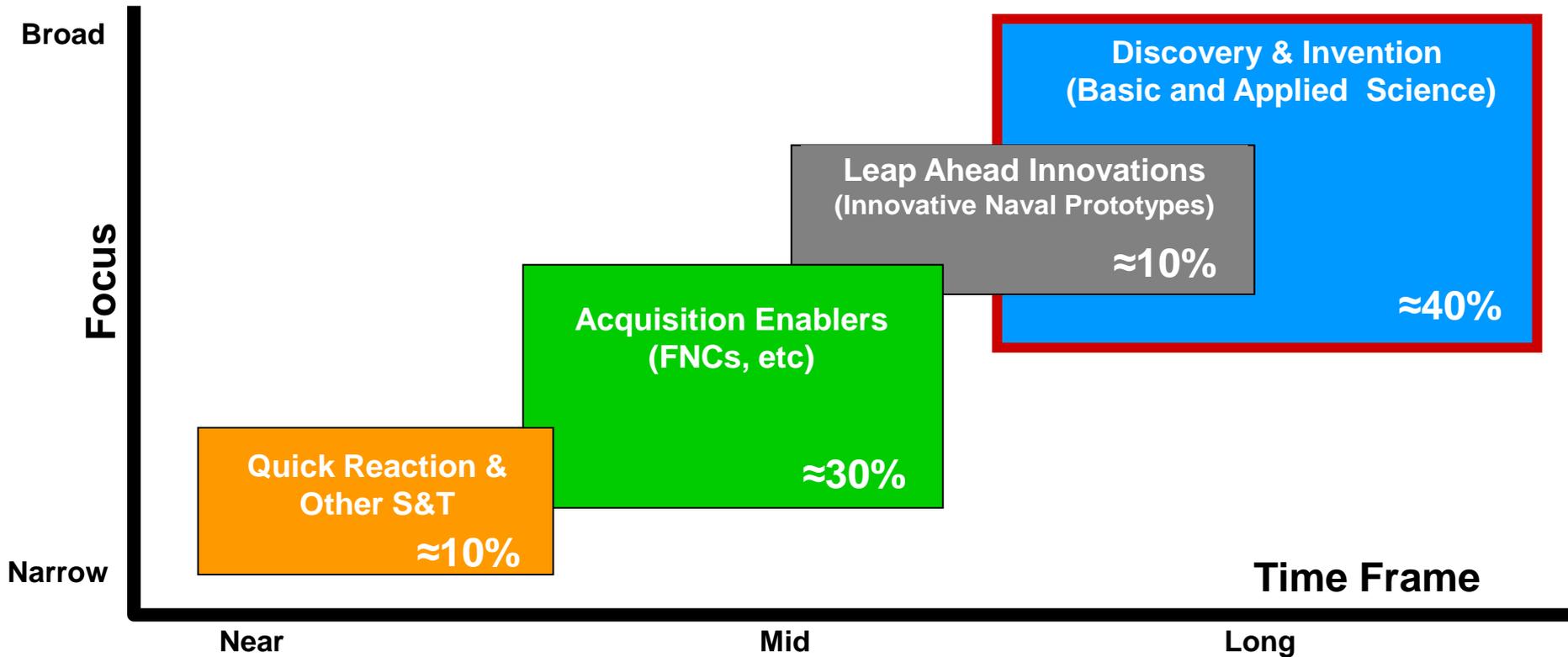
Future EW Vision



Elements of Future EW Systems	Objective Capability (What?)	Enabling Technology (How?)
Distributed	Maximize EW spatial coverage with a minimum of resources without permitting single point failures	Small, lightweight, power efficient ES / EA payloads for manned and unmanned vehicles (UAV, USV, UUV, UGV)
Coordinated	Maximize effectiveness of EW across on/off-board assets, manned / unmanned platforms, kinetic / non-kinetic resources	Multi-asset, coordinated kinetic / non-kinetic M&S; multi-platform ID / targeting / tracking / EA techniques and algorithms
Multispectral	Maximize EW spectral coverage (EO-IR-mmW-RF) and minimize spectral gaps that can be exploited by hostile forces	EO/IR/RF receiver / transmitter sub-systems and components with extended spectral coverage and ultra-wide bandwidth
Adaptive	Maximize flexibility in dynamically responding to time critical, frequency agile emitters	Embedded ES / EA architectures with high-speed reactive ES processing and dynamic EA techniques generation
Robust EP	Maximize operational availability of ISRT sensor assets and preserve situational awareness in the presence of hostile EA	Dynamic / reactive / adaptive signal processing, hardened EO/IR/RF apertures and components
Increased Combat Effectiveness		



ONR S&T Portfolio Balance



Quick Reaction

- Tech Solutions
- Experimentation
- MC S&T (MCWL, JNLW, etc.)

Acquisition Enablers

- Future Naval Capabilities
- Warfighter Protection
- Capable Manpower
- LO/CLO

Leap-Ahead Innovations

- Innovative Naval Prototypes
- NSPs
- Swampworks

Discovery & Invention

- Basic & Early Applied Research
- National Naval Responsibilities
- Education Outreach HBCU/MI



ONR Portfolio Characteristics



	Direct Fleet Support / Quick Reaction	Future Naval Capability (FNC)	Innovative Naval Prototype	Discovery and Invention (D&I)
% of Portfolio	~10	>30	~10	>40
Focus	Solving emergent fleet / force needs	Transitioning mature S&T to acquisition program of record	Demonstrating Leap-ahead technology	Expanding frontiers of knowledge in areas of naval interest
Motivation	Fleet-identified need	OPNAV-identified capability gap	Significant military advantage	General Naval needs and opportunities
Example	IED Jammer	Enhanced NULKA Payload	Integrated Topside (INTOP)	Real-time EW Effectiveness Monitor
Type of Innovation	Disruptive or sustaining.	Sustaining - makes an existing capability better	Disruptive - makes an existing capability obsolete	Disruptive or sustaining.
Time frame	1-2 years	3-5 years	4-8 years	continuing
Typical TRL entry point	TRL-4 to TRL-5	TRL-3	TRL-2 to TRL-3	TRL-0 to TRL-2
Typical TRL end point	TRL-7	TRL-6	TRL-6	TRL-3 to TRL-4
Technical Difficulty	Medium	Medium	High	High
Operational Integration Complexity	Medium	Usually straightforward	High	N/A
Approval Level to start a program	ONR Corporate	Technology Oversight Group (3-Star)	DON Corporate Board (4-Star)	ONR Department



Technology Readiness Levels



- 1. Basic principles observed and reported.** Example: Paper studies of a technology's basic properties.
- 2. Technology concept and/or application formulated.** Example: Limited to analytical paper studies.
- 3. Analytical and experimental critical function and/or characteristic proof of concept.** **D&I**
Example: Components that are not yet integrated or representative.
- 4. Component and/or breadboard validation in laboratory environment.** Example: Integration of "ad hoc" hardware in a laboratory.
- 5. Component and/or breadboard validation in relevant environment.** Example: "High fidelity" laboratory integration of components.
- 6. System/sub-system model or prototype demonstration in a relevant environment.** Example: Testing a prototype in a high fidelity laboratory environment or in a simulated operational environment.
- 7. System prototype demonstration in an operational environment.** Example: Testing the prototype in a test bed aircraft.
- 8. Actual system completed and qualified through test and demonstration.** Example: Developmental test and evaluation of the system in its intended weapon system to determine if it meets design specifications.
- 9. Actual system proven through successful mission operations.** Example: Using the system under operational mission conditions.



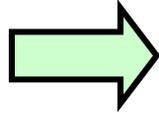
ONR EW S&T Development Process Annual D&I Refresh



Oct - Nov

ONR EW S&T Future Vision

- Capability gaps (OPNAV guidance, NARG's)
- Roadmaps (S&T, Acquisition)
- Emerging threats (intell reporting)
- Technology trends (to avoid surprise)



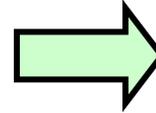
Dec - Jan

D&I BAA

- Industry
- Academia

D&I Solicitation

- NRL
- Warfare Centers
- FFRDC / UARC



February

Review White Paper Submissions

- Evaluate technical merits/innovation, Naval relevance, prior experience, cost realism
- Down-select roughly 2x \$\$ available

March

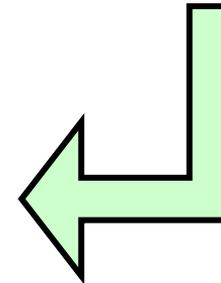
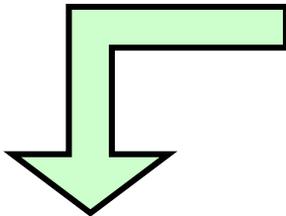
EW S&T Review (Gathering) – Invitation Only

Agenda:

- Threat briefing (ONI)
- EW Requirements view (OPNAV, HQMC)
- EW Acquisition view (NAVSEA, NAVAIR, MCCDC)
- Briefings of current D&I, SBIR, FNC efforts
- Briefings of proposed D&I new starts for following FY

Actions:

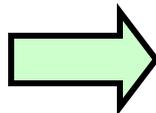
- Invited reviewers advise on D&I new start selection
- Begin dialog regarding new FNC needs
- De-conflict with other service reps (Army, Air Force)



Mar - May

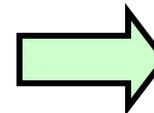
Select new D&I projects

- Request full proposals



Jun - Aug

- Initiate contract actions
- Prepare FM documentation



Oct - Jan

- Award Contracts
- Send Funding Documents



ONR Discovery & Invention

Last year: ONR BAA 10-007



Distributed ES Concepts

Investigate concept of a spatially distributed set of ES systems to provide broader area coverage and improve naval battlespace awareness:

- Unconventional coordinated ES techniques that cooperatively increase situational awareness across a distributed battlespace
- Network-enabled coherent ES methods
- Data-link requirements and methodologies for distributed ES systems
- Efficient information management of distributed ES systems

Components of Unmanned ES Systems

Investigate components and architectures that will support a spatially dispersed array of ES systems, many of which will be on unmanned vehicles or in unattended locations:

- Low cost ES receivers
- Wideband, compact, high gain ES apertures
- Improving transmitter/receiver isolation
- Reduced SWAP ES components/sub-systems
- Methods of seamless ES data exchange
- Electronic Warfare Battle Management (EWBM) and control of distributed EW assets

ES Adaptive Signal Processing

Investigate methods to improve ES systems in detecting and processing signals in a complex (dense background, broadband) EM environment:

- Deinterleaving arbitrary waveforms;
- Weak signals detection and ID in the presence of strong interfering signals
- Signal parameter extraction for unique ID
- Passive, single point emitter location/ranging
- ES digital beam-forming

Detect/Defeat Passive Sensing Systems

Investigate capabilities to detect and counter passive detection technologies, including RF Passive Coherent Location (PCL), Anti-Radiation Homing (ARH), Infrared Search & Track (IRST):

- Methods to remotely detect and ID passive detection systems
- Obscuration waveforms and techniques
- Deception techniques including false target generation and control

Innovative EW Concepts

Investigate truly innovative EW concepts



ONR Discovery & Invention

Last year: ONR BAA 10-007



Distributed ES Concepts

- Cooperative Monolithic Distributed Sensors for EW (Univ. of Southern California)

Components of Unmanned ES Systems

- Integrated mmW DF Subsystems & Dual-Polarized Antennas (Univ. of Colorado at Boulder)

ES Adaptive Signal Processing

- PerSEIve: SEI & Geo-Location in Complex EM Environments (Michigan Aerospace)
- PDESIST: pseudo-Doppler-Enabled Synthesis Imaging (SAIC)

Detect/Defeat Passive Sensing Systems

- Passive Coherent Location Denial (Naval Research Laboratory)
- Rapid Threat Detection & ID using Multi-band, High-Res LADAR (Bridger Photonics)

Innovative EW Concepts

- Submarine Buoyant Cable Metadielectric Antennas for EW (NUWC – Newport)



ONR Discovery & Invention

This year: ONR BAA 11-006



ONR BAA Announcement # ONR 11-006



- **Posted:** *15 December 2010*
- **Agency Name:** *Office of Naval Research*
- **Research Opportunity Title:** *Electronic Warfare Technology*
- **Program Name:** *Electronic Warfare Discovery & Invention (D&I)*
- **Response Dates:**
 - **White Papers:** *1 February 2011*
 - **Full Proposals:** *3 May 2011*



ONR Discovery & Invention

This year: ONR BAA 11-006



ONR 312 Electronic Warfare (EW) seeks white papers for efforts that shall develop and demonstrate technologies for the next generation components and systems in Electronic Warfare. The primary emphasis of this BAA is on technologies towards

- **Wideband ES - Sensing/Processing**
- **Wideband EA - Components/Techniques**
- **Millimeter Wave (mmW) High Power Transmitters**
- **Innovative EW Concepts**



ONR Discovery & Invention

ONR BAA 11-006 Research Area 1



1. Wideband ES – Sensing/Processing

The objective is to **develop and demonstrate the capability of ES systems to provide wideband (1-110 gigahertz (GHz)) spectral coverage. Potential areas of investigation include:**

- a. Wideband cueing receiver concepts with continuous sensing across the entire spectral range, without spectral gaps or scanning that limits the probability of intercepting unknown or intermittent signals. Channelized receiver architectures are NOT desired, although partitioning of the spectrum into a minimum number of overlapping frequency bands that can be read-out and processed in parallel is permissible. Receiver sensitivity and frequency measurement resolution should equal or exceed current state-of-the-art for channelized receivers. Of special interest are innovative receiver technologies for real-time detection and isolation of weak radio frequency (RF) signals in the presence of strong interference.
- b. Wideband critical receiver components that operate across the spectral range. Components desired are antennas, low noise amplifiers and tunable filters although other critical receiver components will be considered if innovative concepts that extend state-of-the-art performance are proposed.
- c. Wideband adaptive RF signal processing methods and techniques, including dynamic and real-time arbitrary signal detection and characterization, adaptive and cognitive processing methods that encompass the entire sensing chain, advanced target ID functionality, and real-time detection and ID of weak signals in the presence of strong interference (both inadvertent and intentional).



ONR Discovery & Invention

ONR BAA 11-006 Research Area 2



2. Wideband EA - Components/Techniques

The objective is to **develop and demonstrate the capability of EA systems to provide wideband (1-110 GHz) spectral coverage.**

Potential areas of investigation include:

- a. Wideband high power critical EA system components that operate across the entire spectral range. Among the components desired are EA transmit apertures capable of achieving 4-10 kilowatts (kW) or greater effective radiated power (ERP), power limiters, phase shifters, True Time Delay (TTD), driver amplifiers, isolators, circulators, multiplexers, and wideband component interconnects and circuits. It is desired that components operate across the entire range, although it is permissible to partition the spectrum into a minimum number of overlapping frequency. Also of interest are architectures for wideband EA transmitters that enable a software-programmable EA response. This architecture should permit real-time reconfiguration of EA waveform, modulation, duty cycle, polarization, and beam-forming.



ONR Discovery & Invention

ONR BAA 11-006 Research Area 2



2. Wideband EA - Components/Techniques (continued)

- b. Wideband EA techniques (waveforms) and techniques generators that operate across the entire spectral range. Techniques generators that utilize an advanced Digital RF Memory (DRFM)-based architecture are of particular interest. The DRFM must support a large instantaneous bandwidth, large dynamic range and simultaneously process multiple simultaneous threats. Concepts that make use of a single DRFM chain are of particular interest, although concepts using multiple DRFMs would also be of interest. EA techniques of primary interest are those that preserve complex waveform characteristics, emphasize power linearity and signal fidelity, and that are controlled dynamically and adaptively to mimic the information content of modern RF signals. Of particular interest are techniques that can generate multi-aspect false targets with realistic signatures.
- c. Transmit-to-receive isolation technologies and techniques, relevant to the spectral range, that support close location of EA and ES systems on space constrained platforms. The desired level of isolation can be obtained using any combination of active and/or passive means. Both component level and system level developments in this area are of interest. Technologies and techniques should be software controllable where appropriate for maximum flexibility. Also of interest is development of multi-function waveforms that facilitate enhanced ES/EA isolation.



ONR Discovery & Invention

ONR BAA 11-006 Research Area 3



3. Millimeter Wave (mmW) High Power Transmitters

The objective is to improve the capability of naval (Navy and Marine Corps) EA systems to deny or deceive sensors or weapons guidance systems operating in the millimeter wave (mmW) bands of the EMS.

While ONR has on-going interest in wideband EA transmitter systems which operate across the breadth of the mmW spectrum, this section of the current solicitation is limited to the 18-45 GHz frequency range. Transmitter systems capable of achieving 4-10 kW or greater ERP for small decoy applications or capable of being combined to achieve 100 kW or greater ERP for large platform applications across the entire 18-45 GHz frequency range are desired. Technology solutions are permitted using vacuum components, solid-state components, or combinations of both. Proposed system concepts should include a detailed end-to-end system analysis. Delivered system should demonstrate the ability to project the requested ERP across the full 18-45 GHz spectral band against a far-field target and to transmit linear and phase controlled jamming waveforms capable of preserving complex signal content and coding.



ONR Discovery & Invention

ONR BAA 11-006 Research Area 4



4. Innovative EW Concepts

The objective is to **explore truly innovative concepts in the EW areas of ES, EA, or EP** which could fundamentally change the way naval (Navy and Marine Corps) forces conduct EW operations.

This sub-section should only be cited by proposals that do not fall within any of the other sub-sections of this Research Opportunity Description.



ONR Discovery & Invention

ONR BAA 11-006 Award Info



- **ONR plans to fund individual awards of \$500,000.00 to \$1,500,000.00 per year, using Discovery and Invention (D&I) (Budget Category 6.2) funds. However, lower and higher cost proposals will be considered.**
- **The period of performance for projects may be from one to three years. Projects will have an estimated start date of 03 January 2012, subject to date of final award and availability of new fiscal year funds.**
- **Some portion of this budget may fund research requests in this program area received from Government entities outside of this BAA.**



ONR Discovery & Invention

ONR BAA 11-006 Eligibility



- **All responsible sources from academia and industry may submit proposals under this BAA.**
- **There will be no set asides for Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs).**
- **Some topics cover export controlled technologies. Research in these areas is limited to “U.S. persons” as defined in the International Traffic in Arms Regulations (ITAR) - 22 CFR § 1201.1 et seq.**



ONR Discovery & Invention

ONR BAA 11-006 Eligibility



- Navy laboratories and warfare centers, as well as other Department of Defense and civilian agency laboratories, and Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are **not eligible to receive awards under this BAA** and should not directly submit either white papers or full proposals in response to this BAA.
- **NOTE: Responses from these organizations are being solicited separately, though with the same guidance regarding research areas of interest, white paper format and deadlines.**



ONR Discovery & Invention

ONR BAA 11-006 Eligibility



- **Bottom line**: All civilian, industry, government, and military organizations are encouraged to submit white paper responses to the four ONR EW research areas as solicited.
- Once a proposed effort has been chosen for funding, ONR will determine the best method to proceed.
- If a contract or grant is required, then the guidance, clauses, and limitations of this BAA are applicable.
- If other means are more appropriate (direct funds transfer to DoD laboratory or warfare center, use of existing contract vehicle, etc.) then separate guidance and limitations may apply.



ONR Discovery & Invention

ONR BAA 11-006 White Papers



- The due date for white papers is no later than 3:00 PM (EST) on Tuesday, 1 February 2011. White papers received after the published due date and time are not eligible to participate in the remaining Full Proposal submission process and are not eligible for Fiscal Year (FY) 2011 funding. Each white paper should state that it is submitted in response to this BAA and cite the particular sub-section of the Research Opportunity Description that the white paper is primarily addressing.
- The only acceptable method for submission of white papers sent in response to the BAA is via electronic mail (email) to 312_EC@onr.navy.mil.



ONR Discovery & Invention

ONR BAA 11-006 White Papers



White Paper Format

- Paper Size – 8.5 x 11 inch paper
- Margins – 1” inch
- Spacing – single spaced
- Font – Times New Roman, 12 point
- Number of Pages – No more than four (4) pages (excluding cover page, resumes, bibliographies, and table of contents). White Papers exceeding the page limit may not be evaluated.
- Format – one (1) electronic copy in Adobe PDF delivered by email.



ONR Discovery & Invention

ONR BAA 11-006 White Papers



White Paper Content

- **Cover Page**

Including BAA number, proposed title, administrative and technical points of contact (telephone and facsimile number; e-mail address)

- **Technical Concept**

Must address the following without exceeding the four (4) page limit:

1. Project Manager and/or Principal Investigator
2. Relevance to BAA Research Opportunity Description and specific sub-section being addressed ►
3. Technical Objective
4. Technical Approach
5. Deliverables
6. Recent technical breakthroughs that will reduce risk
7. Funding plan (requested funding per fiscal year, as well as total)

- **Operational Naval Concept**

Project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements

- **Operational Utility Assessment Plan**

Plan for demonstrating and evaluating the operational effectiveness of the research product in field experiments or tests in a sim environment ►



ONR Discovery & Invention

ONR BAA 11-006 Schedule



The following schedule has been established to facilitate the submission of white papers and their follow-on review and possible selection for FY 2012 funding.

01 Feb 2011	White paper responses to EW research areas due to ONR
18 Feb 2011	ONR notify selected parties to prepare briefing for EW Review
07 Mar 2011	Quad Chart due to ONR
10 Mar 2011	Briefings due to ONR
16 Mar 2011	Oral presentations at the ONR EW S&T Review
25 Mar 2011	ONR notify selected parties to prepare/submit full proposal
03 May 2011	Full technical/cost proposal due to ONR
01 Jun 2011	ONR notify selected parties of intent to fund efforts
03 Jan 2012	ONR issues awards



ONR Discovery & Invention

ONR BAA 11-006 Evaluation Criteria



Evaluations will be conducted using the following evaluation criteria

- **The four technical factors are of equal value**
 - Sub-elements under each factor will be considered but not separately scored
- **The four technical factors (1 – 4 below) are significantly more important than cost**
 - Importance of cost will increase with the degree of equality of the proposals or when the cost is so significantly high as to diminish the value of the proposal's technical superiority

1. Overall scientific and technical merits of the submission

- a. Degree of innovation**
- b. Soundness of technical concept**
- c. Awareness of the state of the art and understanding of the scope of the problem and the technical effort needed to address it**
- d. Successful achievement of goals will significantly reduce technical risk to a subsequent development effort;**

2. Naval relevance, transition potential and anticipated contributions of the proposed technology to Electronic Warfare operations.

- a. Technology addresses a Naval critical need**
- b. Naval program or initiative depends on the technology**
- c. Potential transition effort identified**
- d. Part of a joint service technology effort;**



ONR Discovery & Invention

ONR BAA 11-006 Evaluation Criteria



Evaluation criteria (continued)

3. Program structure and execution plan

- a. Level of technical risk appropriate for applied research
- b. Clear statements of objectives, applicability to BAA, anticipated end state, and deliverables
- c. Concise schedule with clearly identified milestones to objectively measure progress
- d. Timing is right (e.g. addresses current or future capability need, leverages recent S&T breakthrough or emerging COTS technology, constructive relationship with other on-going work , etc.);

4. The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving the proposal objectives

- a. Offeror's experience in relevant efforts with similar resources
- b. Ability to manage the proposed effort
- c. Offeror's overall capabilities, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives;

5. The realism of the proposed cost and availability of funds



ONR Discovery & Invention

ONR BAA 11-006 Deliverables



The following is a sample of reporting deliverables that could be required under a research effort. The following deliverables, primarily in contractor format, are anticipated as necessary. However, specific deliverables should be proposed by each Offeror and finalized with the contracting agent:

- **Detailed Technical Data**
- **Technical and Financial Progress Reports**
- **Presentation Material(s)**
- **Other Documentation or Reports, as required**
- **Final Report**

Research performed under contracts may also include the delivery of software, prototypes, and other hardware deliverables.



ONR Discovery & Invention

ONR BAA 11-006 Facilities / GFE



- **Offerors are expected to provide all facilities (equipment and/or real property) necessary for the performance of the proposed effort. Any direct charge of facilities, not including deliverable items, must be specifically identified in the Offeror's proposal and approved by the Government prior to purchase.**
- **Any request to use Government owned facilities or Government Furnished Equipment (GFE) must be included in the Offeror's proposal and approved in advance by the cognizant Government official. After contract award, requests to use Government integration, test, and experiment facilities will be considered on a case by case basis based on availability and justification of need.**



ONR Discovery & Invention

ONR BAA 11-006 Classification



- All white papers and proposals are expected to be unclassified. However, confidential/classified white papers and proposals are permitted.
- In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable awardees to work at the unclassified level to the maximum extent possible.
- If awardees use unclassified data in their deliveries and demonstrations regarding a potentially classified project, they should use methods and conventions consistent with those used in classified environments. Such conventions will permit the various subsystems and the final system to be more adaptable in accommodating classified data in the transition system.



ONR Discovery & Invention

ONR BAA 11-006 Summary



Things ONR will look for in white paper submissions

- An understanding of Electronic Warfare principles and needs
- Innovative applications of cutting edge science and technology to address Electronic Warfare priorities
- Efforts that focus on Wideband Electronic Support (ES) concentrating on sensing/processing, wideband Electronic Attack (EA) emphasizing components and techniques, millimeter wave (mmW) high power transmitters, and innovative EW concepts
- Clear statements of the effort's objectives, applicability to Electronic Warfare, anticipated end state, and deliverables.
- Clear and concise schedule including intermediate milestones to objectively measure progress toward goals
- Funding request broken out by performing organization and Government fiscal year.



ONR Discovery & Invention

ONR BAA 11-006 Summary



Things that will cause ONR to reject white papers

- Proposed effort is not Electronic Warfare related
 - Communications or navigation systems (counter comms/nav is okay)
 - Intel, reconn, surveillance (ISR) systems (counter ISR is okay)
- Proposed effort is not Discovery & Invention (6.2)
 - Off-the-shelf solutions without any clear innovation
 - Demonstrations and field testing of existing systems or components to show military application
- Reliance on GFE/GFI without prior arrangement/agreement
- Poor program planning
 - No explanation or understanding of underlying S&T
 - Scattershot approaches with little methodology
 - Lack of intermediate milestones to gauge progress
 - No substantiation for requested budget



ONR Discovery & Invention

ONR BAA 11-006 Final Comments



- **ONR 312 EW will not entertain requests for individual meetings with industry representatives to discuss potential white paper submissions**
 - **No pre-selection of ideas or concepts**
 - **If in doubt, write the white paper and submit it**
- **This is your opportunity to ask questions**
 - **Written questions are permitted, but all questions and answers will be posted to the ONR BAA website**
- **White paper questions of a business nature can be submitted by e-mail through Tuesday, 18 January 2011**
 - **All questions and answers will be posted to the ONR BAA website**



ONR Discovery & Invention Frequently Asked Questions (1)



GENERAL QUESTIONS

Question 1: Will the briefing slides shown at the Industry Day be posted on the ONR website?

Answer: Yes.

Question 2: Will an attendance list be provided for Industry Day?

Answer: Yes, a list will be posted on the BAA website, minus those people who request their names be excluded.

Question 3: Who will be the evaluators of the white papers and proposals for this BAA? Will it be just yourself and Mr. Tremper?

Answer: The plan is to employ a panel of subject matter experts, consisting of government employees and support contractors who have signed non-disclosure agreements, to review all of the white paper submissions in response to the BAA.

Question 4: Does the parallel solicitation that has been distributed to government labs and warfare centers have the same deadline for white papers as the BAA?

Answer: Yes, everything is the same: the Research Areas, the deadline for white papers, the deadline for full proposals, and the other significant dates and times.

Question 5: Would you have any interest in receiving white papers that are outside the area of Electronic Warfare but still of great interest to the U.S. Navy?

Answer: No, the focus of this BAA is on Electronic Warfare so other responses would be inappropriate. For other topics of interest to the U.S. Navy, BAA ONR 11-001 may be more appropriate. However, you are encouraged to seek out the appropriate Program Officer within ONR that handles the technology area of interest and discuss the matter with him or her before submitting any white paper or proposal in response to BAA ONR 11-001. Consult the ONR website to determine the best point of contact.



ONR Discovery & Invention Frequently Asked Questions (2)



WHITE PAPERS

Question 1: In the white paper, do we need to select one of the suggested research areas in Section 6 that our technology area fits in or can it refer to multiple areas?

Answer: Please decide which is the primary research area from Section 6 of the BAA that you wish to address, but you are free to cite other research areas that also apply. We may assign groups of SME's to review the papers by research area so it is important to specify the area that you feel is best aligned to your technology. Research area 4 (other innovative EW concepts) should only be used for white papers that don't fit elsewhere.

Question 2: If we intend to write a white paper, are we limited to one white paper of four pages in length for any/all of the subsections listed under section 6 (Research Opportunity Description), or can we write a four page white paper for each subsection (1 through 4) we intend to address? If it is the latter, can we write about specific elements of a subsection, i.e. subsection 1, elements 1b, 1c, and 1d, or must we write about the entire subsection?

Answer: Any offeror can submit as many white papers as they want to, but each individual proposed effort (with a defined technical objective, approach, and set of deliverables) should be limited to a single 4-page white paper. Each white paper should be able to identify a primary research area (1, 2, 3, or 4) and/or sub-area (e.g. 1a, 2c, 3b) that it is addressing from Section 6 of the BAA (Research Opportunity Description), but can identify multiple additional secondary areas/sub-areas as well.

Question 3: Can a single company submit multiple white papers in which each one develops a separate piece of a system?

Answer: I would discourage this, since it would require all of the efforts to be funded to get a complete product. In general each white paper should stand on its own merits and not be tied to any other white papers.



ONR Discovery & Invention Frequently Asked Questions (3)



WHITE PAPERS (Continued)

Question 4: Our company requires proprietary information sent via email to be encrypted. Will this be a problem?

Answer: No, it should not be a problem but we will contact you if we are not able to open your encrypted document.

Question 5: Regarding encryption of the email for submission of the white paper, do you have a preferred encryption method?

Answer: No, but we recommend you investigate encryption features built into Adobe Acrobat Professional.

Question 6: We have a concept that may be classified but we do not have a classification guide to get a final determination. How would such a white paper be marked and submitted?

Answer: I'm not a security officer so I can't give you specific guidance on marking the paper but I recommend that you contact your company security personnel and mark the paper according to their directions. You should also submit the paper using the instructions in the BAA that refer to classified white paper submission (Section IV Application and Submission Information, Sub-Section 2 Content and Format of White Papers/Full Proposals).

Question 7: In the resume section of the white paper submission are we allowed to include information or experience about the company that we feel supports our efforts in these technical areas?

Answer: Yes, but I recommend such discussions be kept to a minimum. We do not want 75 page packets submitted that consist of a 4 page white paper and 71 pages of backup material. We will focus on the 4 page technical content and we request that the supplementary material be kept short and to the point.



ONR Discovery & Invention Frequently Asked Questions (4)



WHITE PAPERS (Continued)

Question 8: Will you provide reasons why a specific paper was not selected for funding?

Answer: I have attempted to provide reasons in the past but due to the large number of papers received it is impossible to provide critiques of all of them. Sometimes it is just a matter of the review panel deciding by consensus that certain white papers are better than the others. Sometimes two papers are equally good but the available funding will only support selecting one. In these instances it is almost impossible to define why one paper was accepted and the other was not.

Question 9: What happens to white papers that are not selected for further consideration? Is the information destroyed?

Answer: Yes

ORAL PRESENTATIONS

Question 1: How long are the oral presentations that are given in March at the EW Program Review?

Answer: The presentations are 20 minutes long with a 10 minute question and answer period. Offerors that are selected to give an oral presentation will be provided with a briefing template that ensures the technical, programmatic and required background info is covered.

Question 2: You stated that during the oral presentations in March representatives of industry or academia would not be in the audience. Would the audience include proposers from the government?

Answer: Possibly, but under the rules for ethical conduct by government employees they are obligated to protect proprietary information and not use it to their own benefit.



ONR Discovery & Invention Frequently Asked Questions (5)



FULL PROPOSALS

Question 1: Will ONR request more full proposals to be submitted than there are resources to fund?

Answer: No, ONR will request full proposals from only those entities whose efforts they intend to fund starting in fiscal year 2012. However, if the final approved DoD budget for fiscal year 2012 includes less funding for ONR EW D&I efforts than is currently anticipated, it may be necessary to limit the awards to match the funding available.

Question 2: Is there a limit on the number of awards a single company can receive?

Answer: No. It is conceivable that a single company could win all the awards in a single year, though, of course, that's not likely.

Question 3: Is it possible to add additional subcontractors over the life of the three year effort?

Answer: We would have to see how the contract is set up but I would think it is possible. I know that over a three year period different things may occur but I would encourage you to have identified the people and companies you will be using up front and identify what part each plays in the overall effort. Changes that are necessitated due to unforeseen circumstances in the future would be resolved through modification of the initial contract.



ONR Discovery & Invention Frequently Asked Questions (6)



IRAD & DATA RIGHTS

Question 1: Is there an option to combine your funding with a company's IRAD?

Answer: Possibly. The question would be, "Is the government receiving any benefit in doing this?" It's not the practice of ONR to fund a company to build up their own capability without benefiting the government. There would most likely be intellectual property and data rights issues which would limit the government's ability to use the technology in other efforts they may fund later. ONR prefers to fund efforts that develop innovative ideas and innovative technologies for the benefit of the DoD community over those that solely benefit one company. If your proposed effort does involve IRAD technology or funding or other intellectual property that is protected in other ways (for instance, under a prior SBIR) you can still submit a white paper but the issue of intellectual property and data rights should be specifically pointed out in the white paper. If omitted in the white paper, it must certainly be addressed in the full proposal in the section titled Assertion of Data Rights and/or Rights in Computer Software as stated in the BAA Section IV Application and Submission Information, Sub-Section 2 Content and Format of White Papers/Full Proposals.

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ONR Discovery & Invention Frequently Asked Questions (7)



GOVERNMENT/INDUSTRY TEAMING

Question 1: Will you fund a company effort if they are also working with the Army or Air Force Research Labs?

Answer: Yes, I would be willing to consider it. Just because you are not currently working with a Navy lab should not prevent you from submitting a white paper. However, I would discuss the effort with my colleagues from the other services to determine if there is any background to the effort in their service. Each paper would be handled on a case-by-case basis.

Question 2: I'm curious as to the possibilities of combining a proposed effort with other government funded efforts that may happen.

Answer: Combining a proposed effort with other government funded efforts is possible, but the relationship and roles would need to be clearly explained and a list of specific deliverables unique to the ONR-funded effort would be needed.

Question 3: What is the best way to address this BAA and the separate government “Call for White Papers” for efforts involving combined government/industry efforts? Should the government lab submit a white paper to lead the effort, and in their list show all the participating industry/academic partners? Or should the government lab submit a white paper focusing on leading the transition of the initiative and suggest to the industry/academic partners to pair up and submit a separate white paper geared towards details of technical implementation?

Answer: We prefer to see a single proposed effort instead of a group of proposals with aligned efforts. If the government lab is in the position to lead a combined effort then it should be submitted in accordance with the Call for White Papers and not the BAA. The white paper should clearly indicate how the work will be divided among the participants, the roles of each, and recommend a contracting strategy for industry/academic participation (ONR contract (industry) or grant (academia)? Lab contract? Other contract vehicle?). Note that in such a combined effort the government lab participation should have a clear technical value-added and not just act as project manager or as a contracting facilitator.



ONR Discovery & Invention Frequently Asked Questions (8)



GOVERNMENT/INDUSTRY TEAMING (Continued)

Question 4: You've said we can submit papers that partner with a Navy lab. How specific do we have to be in the white paper with respect to how much industry does as compared to how much the Navy does?

Answer: You need to clearly delineate what role the Navy lab will play in the effort. You also have to ensure that the Navy is already on board to provide their level of participation. The Navy Principal Investigator should be identified and his resume included. Any partnership with the Navy must have already been established. ONR will not be the go between to set up this partnership. Also, if your effort requires the use or participation of Navy assets or test ranges these have to be arranged by you. ONR will not be a facilitator for your effort.

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Answer: No, there are no guidelines. Navy labs may be more cognizant of Navy needs and Navy applications in some cases, so that can be an advantage, but we have funded several efforts over the past few years that were from academia or industry without any participation from Navy labs or warfare centers. Partnering with a Navy lab will not get you any additional consideration during the evaluation process.

Question 6: Will representatives from any Naval Warfare Centers (NWCs) be in attendance at the Industry Day?

Answer: No NWC participation is planned for Industry Day. As explained in the BAA, it is up to the offeror to make any arrangements for participation with an NWC in advance and that relationship needs to be spelled out in the white paper. ONR will not act as a facilitator for NWC involvement with non-government performers.

Question 7: Would a white paper that proposed partnering industry with the Coast Guard Research and Development Center be allowed?

Answer: I haven't worked with the Coast Guard before but I think that is something we could work out. I wouldn't let that stop you from submitting a white paper.



ONR Discovery & Invention Frequently Asked Questions (9)



FUNDING

Question 1: Is there a single pot of money to fund industry efforts and a separate pot for government efforts?

Answer: No, a single funding source will be used for all the selected efforts whether they are from industry, academia, FFRDC, UARC, government labs, or warfare centers. There are no earmarks for any offeror or group of offerors; the only consideration for funding decisions is the content of the proposal and the available budget.

Question 2: Is this funding you have sent aside for 2012 new starts affected by multiyear efforts from previous years and efforts from future years that may be funded?

Answer: No, this funding has been identified and set aside for each of the next three years to fund efforts in the Research Areas identified in the BAA.

Question 3: How many efforts will be funded in each year?

Answer: That depends upon how much the selected efforts cost. As stated in the BAA we anticipate most efforts to cost around \$500K - \$1,500K per year for 3 years. It is always possible that higher priced efforts may be selected. However, if you proposed an effort costing \$6 million per year you would need to convince the panel of reviewers that your effort deserves a budget that is 4x above the norm and, quite frankly, that would be very difficult to do. Generally speaking, efforts that request more than \$1.5 million per year need to show a very compelling reason both technically and programmatically to convince the panel of reviewers that they are worthy of being selected.



ONR Discovery & Invention

Frequently Asked Questions (10)



FUNDING (Continued)

Question 4: Over how many years will efforts be funded?

Answer: Generally, the efforts are three year efforts. One year and two year efforts are fine but if you have a four year effort you need to take a look at the schedule and see if there is any way to compress it down into three years.

Question 5: Is there additional funding available in the out-years?

Answer: Possibly, but those funds are currently planned to support new start efforts in those years and any funds used to continue current efforts will cut into the amount available for new starts.

Question 6: Regarding program funding, is there a profile that is considered more desirable than others?

Answer: Not necessarily, but the profile should make sense with respect to the effort being proposed. One would normally not expect the funding to be front-loaded but rather spread out over the life of the program, possibly with a slightly higher profile in the final year as testing and other more costly events occur. But whatever profile is proposed it must be justified by the program plan.



ONR Discovery & Invention

ONR BAA 11-006 Points of Contact



Technical

Dr. Peter Craig
Electronic Warfare Program Manager
Office of Naval Research (ONR 312)
875 North Randolph Street, Suite 1112
Arlington, VA 22203-1995
E-mail: peter.craig@navy.mil

Business

Ms. Lynn Christian
Contract Specialist
Office of Naval Research (BD 0251)
875 North Randolph Street, Suite W1275
Arlington, VA 22203-1995
E-mail: lynn.christian@navy.mil

Questions?



ONR

Revolutionary Research . . . Relevant Results



ONR Discovery & Invention

This year: ONR BAA 11-006



Wideband ES - Sensing/Processing

Develop and demonstrate the capability of ES systems to provide wideband (1-110 GHz) spectral coverage:

- Wideband cueing receiver concepts with continuous sensing across the entire spectral range
- Wideband critical receiver components (antennas, low noise amplifiers, tunable filters)
- Wideband adaptive RF signal processing methods and techniques (dynamic, real-time, adaptive, cognitive)

Wideband EA – Components/Techniques

Develop and demonstrate the capability of EA systems to provide wideband (1-110 GHz) spectral coverage:

- Wideband high power critical EA system components (apertures, power limiters, phase shifters, TTD, driver amplifiers, isolators, circulators, multiplexers, circuits)
- Wideband EA techniques/waveforms and techniques generators (DRFM-based, preserve complex waveforms, multi-aspect false target generation)
- Transmit-to-receive isolation technologies and techniques (close integration of EA and ES systems)

mmW High Power Transmitters

Improve the capability to deny or deceive sensors or weapons guidance systems operating in the millimeter wave (mmW) bands of the EMS:

- 18-45 GHz frequency range, 4-10 kW ERP for small decoys, capable of being combined to achieve 100 kW or greater ERP for large platforms
- Using vacuum components, solid-state components, or combinations of both
- Include a detailed end-to-end system analysis

Innovative EW Concepts

Explore truly innovative concepts in the EW areas of ES, EA, or EP which could fundamentally change the way naval forces conduct EW Operations.

ONR Discover & Invention BAA 11-006

Frequently Asked Questions

General Questions:

Q1: Will the briefing slides shown at the Industry Day be posted on the ONR website?

A1: Yes

Q2: Will an attendance list be provided for Industry Day?

A2: Yes, a list will be posted on the BAA website, minus those people who request their names be excluded.

Q3: Who will be the evaluators of the white papers and proposals for this BAA? Will it be just yourself and Mr. Tremper?

A3: The plan is to employ a panel of subject matter experts, consisting of government employees and support contractors who have signed non-disclosure agreements, to review all of the white paper submissions in response to the BAA.

Q4: Does the parallel solicitation that has been distributed to government labs and warfare centers have the same deadline for white papers as the BAA?

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Q5: Would you have any interest in receiving white papers that are outside the area of Electronic Warfare but still of great interest to the U.S. Navy?

A5: No, the focus of this BAA is on Electronic Warfare so other responses would be inappropriate. For other topics of interest to the U.S. Navy, BAA ONR 11-001 may be more appropriate. However, you are encouraged to seek out the appropriate Program Officer within ONR that handles the technology area of interest and discuss the matter with him or her before submitting any white paper or proposal in response to BAA ONR 11-001. Consult the ONR website to determine the best point of contact.

White Papers:

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Q2: If we intend to write a white paper, are we limited to one white paper of four pages in length for any/all of the subsections listed under section 6 (Research Opportunity Description), or can we write a four page white paper for each subsection (1 through 4) we intend to

- address? If it is the latter, can we write about specific elements of a subsection, i.e. subsection 1, elements 1b, 1c, and 1d, or must we write about the entire subsection?
- A2: Any offeror can submit as many white papers as they want to, but each individual proposed effort (with a defined technical objective, approach, and set of deliverables) should be limited to a single 4-page white paper. Each white paper should be able to identify a primary research area (1, 2, 3, or 4) and/or sub-area (e.g. 1a, 2c, 3b) that it is addressing from Section 6 of the BAA (Research Opportunity Description), but can identify multiple additional secondary areas/sub-areas as well.
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- Q4: Our company requires proprietary information sent via email to be encrypted. Will this be a problem?
- A4: No, it should not be a problem but we will contact you if we are not able to open your encrypted document.
- Q5: Regarding encryption of the email for submission of the white paper, do you have a preferred encryption method?
- A5: No, but we recommend you investigate encryption features built into Adobe Acrobat Professional.
- Q6: We have a concept that may be classified but we do not have a classification guide to get a final determination. How would such a white paper be marked and submitted?
- A6: I'm not a security officer so I can't give you specific guidance on marking the paper but I recommend that you contact your company security personnel and mark the paper according to their directions. You should also submit the paper using the instructions in the BAA that refer to classified white paper submission (Section IV Application and Submission Information, Sub-Section 2 Content and Format of White Papers/Full Proposals).
- Q7: In the resume section of the white paper submission are we allowed to include information or experience about the company that we feel supports our efforts in these technical areas?
- A7: Yes, but I recommend such discussions be kept to a minimum. We do not want 75 page packets submitted that consist of a 4 page white paper and 71 pages of backup material. We will focus on the 4 page technical content and we request that the supplementary material be kept short and to the point.
- Q8: Will you provide reasons why a specific paper was not selected for funding?
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Q9: What happens to white papers that are not selected for further consideration? Is the information destroyed?

A9: Yes

Oral Presentations:

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A1: The presentations are 20 minutes long with a 10 minute question and answer period. Offerors that are selected to give an oral presentation will be provided with a briefing template that ensures the technical, programmatic and required background info is covered.

Q2: You stated that during the oral presentations in March representatives of industry or academia would not be in the audience. Would the audience include proposers from the government?

A2: Possibly, but under the rules for ethical conduct by government employees they are obligated to protect proprietary information and not use it to their own benefit.

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Q2: Is there a limit on the number of awards a single company can receive?

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Q3: Is it possible to add additional subcontractors over the life of the three year effort?

A3: We would have to see how the contract is set up but I would think it is possible. I know that over a three year period different things may occur but I would encourage you to have identified the people and companies you will be using up front and identify what part each plays in the overall effort. Changes that are necessitated due to unforeseen circumstances in the future would be resolved through modification of the initial contract.

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Q1: Is there an option to combine your funding with a company's IRAD?

A1: Possibly. The question would be, "Is the government receiving any benefit in doing this?" It's not the practice of ONR to fund a company to build up their own capability without benefiting the government. There would most likely be intellectual property and data rights issues which would limit the government's ability to use the technology in other efforts they

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Q2: Is there room for negotiation on this matter of the government retaining full data rights?

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Government/Industry Teaming:

Q1: Will you fund a company effort if they are also working with the Army or Air Force Research Labs?

A1: Yes, I would be willing to consider it. Just because you are not currently working with a Navy lab should not prevent you from submitting a white paper. However, I would discuss the effort with my colleagues from the other services to determine if there is any background to the effort in their service. Each paper would be handled on a case-by-case basis.

Q2: I'm curious as to the possibilities of combining a proposed effort with other government funded efforts that may happen.

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clearly indicate how the work will be divided among the participants, the roles of each, and recommend a contracting strategy for industry/academic participation (ONR contract (industry) or grant (academia))? Lab contract? Other contract vehicle? Note that in such a combined effort the government lab participation should have a clear technical value-added and not just act as project manager or as a contracting facilitator.

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Funding:

Q1: Is there a single pot of money to fund industry efforts and a separate pot for government efforts?

A1: No, a single funding source will be used for all the selected efforts whether they are from industry, academia, FFRDC, UARC, government labs, or warfare centers. There are no earmarks for any offeror or group of offerors; the only consideration for funding decisions is the content of the proposal and the available budget.

Q2: Is this funding you have sent aside for 2012 new starts affected by multiyear efforts from previous years and efforts from future years that may be funded?

A2: No, this funding has been identified and set aside for each of the next three years to fund efforts in the Research Areas identified in the BAA.

Q3: How many efforts will be funded in each year?

A3: That depends upon how much the selected efforts cost. As stated in the BAA we anticipate most efforts to cost around \$500K - \$1,500K per year for 3 years. It is always possible that higher priced efforts may be selected. However, if you proposed an effort costing \$6 million per year you would need to convince the panel of reviewers that your effort deserves a budget that is 4x above the norm and, quite frankly, that would be very difficult to do. Generally speaking, efforts that request more than \$1.5 million per year need to show a very compelling reason both technically and programmatically to convince the panel of reviewers that they are worthy of being selected.

Q4: Over how many years will efforts be funded?

A4: Generally, the efforts are three year efforts. One year and two year efforts are fine but if you have a four year effort you need to take a look at the schedule and see if there is any way to compress it down into three years.

Q5: Is there additional funding available in the out-years?

A5: Possibly, but those funds are currently planned to support new start efforts in those years and any funds used to continue current efforts will cut into the amount available for new starts.

Q6: Regarding program funding, is there a profile that is considered more desirable than others?

A6: Not necessarily, but the profile should make sense with respect to the effort being proposed. One would normally not expect the funding to be front-loaded but rather spread out over the life of the program, possibly with a slightly higher profile in the final year as testing and other more costly events occur. But whatever profile is proposed it must be justified by the program plan.

ONR BAA 11-006 Points of Contact:

Technical

Dr. Peter Craig
Electronic Warfare Program Manager
Office of Naval Research (ONR 312)
875 North Randolph Street, Suite 1112
Arlington, VA 22203-1995
E-mail: peter.craig@navy.mil

Business

Ms. Lynn Christian
Contract Specialist
Office of Naval Research (BD 0251)
875 North Randolph Street, Suite W1275
Arlington, VA 22203-1995
E-mail: lynn.christian@navy.mil

ONR BAA 11-006 Schedule

01 Feb 2011 White paper responses to EW research areas due to ONR
18 Feb 2011 ONR notify selected parties to prepare briefing for EW Review
07 Mar 2011 Quad Chart due to ONR
10 Mar 2011 Briefings due to ONR
16 Mar 2011 Oral presentations at the ONR EW S&T Review
25 Mar 2011 ONR notify selected parties to prepare/submit full proposal
03 May 2011 Full technical/cost proposal due to ONR
01 Jun 2011 ONR notify selected parties of intent to fund efforts
03 Jan 2012 ONR issues awards