ONR BAA # 13-004

Expeditionary Maneuver Warfare Applied Research and Advanced Technology Development

BROAD AGENCY ANNOUNCEMENT (BAA)

Table of Content

The following information presents the basic organization of this document as well as the location of significant information:

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and 35.016 and the Department of Defense Grants and Agreements Regulations (DoDGARS) 22.315(a). A formal Request for Proposals (RFP), other solicitation, or additional information regarding this announcement will not be issued.

The Office of Naval Research (ONR) will not issue paper copies of this announcement. The ONR reserves the right to fund all, some or none of the proposals received under this BAA. ONR provides no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

I GENERAL INFORMATION:

1. Agency Name - Office of Naval Research

2. Research Opportunity Title - Expeditionary Maneuver Warfare Applied Research and Advanced Technology Development

3. Program Name - Expeditionary Maneuver Warfare Applied Research and Advanced Technology Development

4. Research Opportunity Number – ONR BAA 13-004

5. Response Date -

White Papers: 1/15/2013 3:00 PM Eastern Standard Time

Full Proposals: 4/15/2013 3:00 PM Eastern Standard Time

6. Research Opportunity Description -

The Office of Naval Research, Expeditionary Maneuver Warfare and Combating Terrorism S&T Department (ONR 30) is soliciting white papers and proposals for both Applied Research and Advanced Technology Development.

The overall goal of this solicitation is to foster new developments in Science and Technology which may ultimately lead to future operational capabilities beyond those represented by current acquisition programs and requirements. As such, it is anticipated that successful proposals would ultimately contribute to the scientific and technological underpinning from which future Naval Expeditionary and Combating Terrorism warfighting requirements and capabilities may become possible.

By necessity, the Applied Research and Advanced Technology Development efforts are extremely technically diverse. As such, efforts are divided into nine Thrust Areas each representing operational functions critical to Expeditionary Warfare. Each white paper and proposal must address only ONE Thrust Area; however, offerors may respond, via separate proposals, to multiple Thrust Areas, if desired. Background information and specific areas of interest for new contracts or grants are described below for each Thrust Area. Mention of specific systems or programs in the background sections of this BAA is solely for the purposes of informing potential offerors of existing or evolving state-of-the-art technology.

The Thrust Areas for which proposals are sought are as follows:

6.1. Command, Control, Communications, and Computers (C4) Tactical Cyber Technologies

General background information:

The S&T investment in Command and Control is focused in three Technology Investment areas: (1) Network Centric Warfare/Interoperability - There are three major components of information efficiency which need to be considered together: information abstraction (hiding complexity from users); information assurance; and interaction with the communications network; (2) Over-the-Horizon Communications/Gateways - Application of modern signal processing techniques, such as MIMO, provide much promise in improving the performance and throughput of HF communications; and (3) Small Unit Technologies - Communications efficiency: minimizing joules/bit/ kilometer in all circumstances and minimizing detectability.

S&T investment is needed to meet the following objectives:

Provide nearly-ubiquitous communications and availability of information to squad-level maneuver units, platoon-level tactical command centers, and especially to disadvantaged naval war fighters.
• High reliability, secure access to the network by authorized, mobile users
• Access to and usability of needed information regardless of source

Provide long-reach on-the-move communications enabling technologies that allow lower-echelon war fighters to exploit the global network.
• Reach-back to higher echelons by all users
• Access to GIG services by appropriate echelons

Provide technology to allow small unit war fighters to gain timely, accurate, and nearly complete situational awareness equivalent to today's battalion level.
• Ability to communicate intra-unit and inter-echelon under all conditions
• User-centric provision of needed information
• Ready sharing of position location and intelligence products

The Vision:

To provide tomorrow's small unit naval expeditionary war fighters with the precise information they need, when they need it, especially in complex, hybrid warfare environments.

Specific areas of interest for this BAA:

(1) Wireless Distributed Tactical Computer Network Operations. As tactical, lower-echelon, naval expeditionary warfighters are provided with more and more advanced communications and computing capabilities, often on handheld, battery-powered devices, and are operating in distributed fashion we see both vulnerabilities and opportunities in the realm of wireless distributed tactical computer network operations (CNO). We are interested in pursuing applied research that will demonstrate proof of concept of either offensive or defensive operations through functionality at any layer of the OSI stack or multiple layers. Offensive possibilities include header disruption, distributed beam-forming for selective jamming and injection of misleading or incorrect information. Defensive techniques will need to consider the distributed nodes to be points of vulnerability, with further vulnerabilities at many points in the protocol stack and architecture. Proposed work should consider minimization of overhead, vulnerability of coordination and control channels, intermittent and low-throughput communications channels and movement of users. Generalized approaches are preferred that can be used with a variety of existing and emerging radios, antennas and computing devices (based on commercial smart phones). Though unclassified is preferred, proposed work up to the level of collateral SECRET will be considered.

6.2. Intelligence, Surveillance, & Reconnaissance (ISR)

General background information:

The opportunity presented by this BAA is to perform research that enables improvement to

expeditionary Intelligence, Surveillance, and Reconnaissance (ISR) capabilities that are applicable to both amphibious and irregular warfare. The opportunity described in this BAA is focused on the following development areas that the ISR Enabling Capability has identified as critical shortcomings in tactical expeditionary ISR:

• Automated sensor plan generation
• Enabling situational awareness using on-board data conditioning algorithms
• Maturation of fusion algorithms that can run on-board tactical UAS platforms having sensor suite payloads (multi-modality)
• Shipboard and automated production of the information products required by amphibious warfare missions
• Enabling complex analytics such as data fusion and mission analysis as map reduce jobs running across naval tactical clouds.
• Delivery of information to the warfighter without prior examples of relevance or subscriptions

Potential offerors should understand that ONR will give priority consideration to technology proposals that fully address the desired capability. Innovative approaches with promise of revolutionary capability that address a subset will be considered. Emphasis on capabilities means that offerors should:

• Propose development that will result in a warfighting capability that can be measured in quantitative terms and found to be "game changing."
• Address the transformational capability being required by the Department of Defense, particularly the development of a Naval Tactical Could and an ISR enterprise.
• Leverage or complement other relevant developmental systems.
• State clearly how the proposed technology development will meet warfighter needs.
• Be oriented toward rapid maturation, demonstration, and transition.

The ISR program conducts yearly integrated capability demonstrations with acquisition programs in order to validate the relevance of S&T projects as well as mature transition paths. To support this, a spiral development of capability is encouraged. Spiral development employs rapid injection of technology as well as tactics, techniques, and procedures through evolutionary modular insertion techniques to ensure systems remain effective in the face of emergent threats. Spiral Development controls costs while decreasing cycle times for technology insertion by using features such as open architecture, module interface standards, and commercial processors in conjunction with strict configuration control. Technologies of greatest interest to the Office of Naval Research for this BAA fall into two categories in regard to Spiral Development: a) technologies that can be directly inserted into naval acquisition programs due to technology maturity, enabled by open-system architecture, and b) technologies that can mature through follow-on investment until they can be inserted into programs of record.

The Vision:

Enhance situational awareness and understanding to enable real time tactical decision making for Distributed Operations and provide proactive and predictive capabilities for Asymmetric and Irregular Warfare.

Specific areas of interest for this BAA:

(1) Automated sensor plan generation. A capability is desired that can automate the generation of an optimized collection plan given a set of tracks that detail mission information needs over time and sensor capabilities and availabilities.

(2) Enabling situational awareness using on-board data conditioning algorithms. While advances have been made in the development of data conditioning capabilities, the realization of these capabilities as tactical tools is limited by the power required to enable them. Of interest are both the conditioning of video (extraction of entities, scenes and behaviors of interest) and the conditioning of text/audio (extraction of entities, themes, concepts and answers to specific question of interest) as well as the maintenance of conditions of interest and target folders. Algorithms must be implemented within special-purpose hardware or embedded system (e.g. FPGA, GPU, etc.) meeting the power, space, and cost requirements of unmanned aircraft systems (UAS) platforms.

(3) Maturation of fusion algorithms that can run on-board tactical UAS platforms having sensor suite payloads (multi-modality). In development, for the small tactical unmanned air system (STUAS), are a collection of payloads that include wide area electro-optical (EO), wide area infrared (IR), signal intelligence (SIGINT), synthetic aperture radar (SAR) and hyperspectral. A fusion capability that can optimize situational awareness on-board given disparate data is desired. A transitionable solution must run in special purpose hardware or embedded system (e.g. field programmable gate arrays (FPGA), graphics processing unit (GPU), etc.) on-board the UAS platform and optimize the translation of raw data to actionable intelligence across at least 3 modalities.

(4) Shipboard and automated production of the information products required by amphibious warfare missions. A marine expedition unit (MEU) is responsible for conducting a diverse set of missions (e.g. assaults, embassy protection, non-combatant evacuation, disaster relief) quickly and effectively. The current production process is labor intensive, involving the constant refresh of mission execution folders. When a mission warning order is given, the command must rapidly assess the delta between planning assumptions and the parameters of the assigned mission. As the Naval tactical cloud evolves, capabilities to automate this process are desired. Specifically, development activity on the following agents are desired:

• Mission finalization service: This service will be capable of understanding which existing mission template is most relevant to an assigned mission, which assumptions used in the existing template are no longer valid, and what information is needed to finalize a plan as well as being capable of assessing mission readiness.
• Mission information processing service: The advanced analytics based service will be capable of addressing information requirements for afloat and ashore amphibious mission planning and be equally effective working with cloud based and locally held data stores.
• Mission information visualization service: The visualization service will present data to all system users (afloat and ashore) in an efficient and effective manner.
• Warfighting function mission integration service: This service will be capable of integrating all available data feeds (Navy and Marine Corps) relevant to an area and will continuously provide a

fused product about the objective or target. The service will support information exchange between C4ISR and the other warfighting functions including aviation and fires.

(5) Enabling complex analytics such as data fusion and mission analysis as map reduce jobs running across naval tactical clouds. Advances in the development of a Naval tactical cloud offer afloat expeditionary forces the promise of advanced and mission relevant capability. The path, however, from naval tactical clouds to smart naval tactical clouds is less defined and less mature. Of interest is work that can show the enhancements to effectiveness and efficiency resulting from porting intelligence and C2 application functionality to a naval could architecture. Specifically, the translation of levels 1/2/3 fusion algorithms and enemy course of action (ECOA) estimation as map reduce jobs is of interest.

(6) Delivery of information to the warfighter without prior examples of relevance or subscriptions. The development of capabilities that allow warfighters to subscribe to information feeds known in advance to have mission relevance have progressed. This development does not account for the discovery and delivery of new information that has mission relevance whose existence was not know prior to the start of the mission. The desired capability will semantically enrich mission information requirements and data to reduce reliance on subscriptions.

Technology Transition:

ONR desires that capabilities funded as a result of this BAA be capable of, and ready for, integration into yearly integrated demonstrations and current or planned Marine Corps systems, using current or planned open standards and information architectures. Innovative technology proposals that ONR considers transition will be seriously considered and if selected, ONR will provide assistance in shaping that technology transition.

6.3. Force Protection

General background information:

Force Protection seeks to develop and mature technologies that provide protection from myriad modes of enemy actions through the spectrum of warfare, including concepts such as asymmetric and irregular warfare and distributed operations with a concentration on small unit and individual warfighters. End products will include capabilities that are expeditionary in nature, light weight, and provide either a significant improvement in current capability or development of new capabilities which significantly enhance the force to maintain operational tempo at the tactical unit level. Three of the capabilities sets that the thrust currently pursues are Explosive Obstacle/Hazard Defeat, Counter Tactical Surveillance and Targeting, and Air Defense/Counter Rocket, Artillery and Mortars. These capabilities sets investigate detection and neutralization of a broad range of threats including explosive obstacles, snipers, surveillance systems, rocket propelled grenades (RPG), anti-tank guided missile (ATGMs), battlefield rocket artillery and mortars and other threats to the tactical units. The fourth capability set, Personnel Protection seeks to increase survivability and reduce battlefield injuries primarily from blast and ballistic threats and from secondary threats including fire, environmental exposure and non-ballistic impact by providing modular and tailorable solutions for the specific operational scenario and threat while reducing

weight and increasing operational capability.

The Vision:

The Force Protection Thrust seeks to enhance the combat capability of the world's pre-eminent fighting force-the U.S. Marine Corps. The Thrust Area is based on the perspective that the Marines and their supporting elements-gear, weaponry, and information-must be addressed as an integrated system. Force Protection efforts are predicated on the principal hypothesis that success in combat is optimized by the application of cutting edge technologies, techniques, and methodologies across a comprehensive range of Warfighting domains.

Specific areas of interest for this BAA:

The following list provides current interest for future investments, but the thrust will consider any other innovative concepts and technologies that can significantly improve capabilities over current state-of-the-art.

(1) Explosive Obstacle/Hazard Defeat:

• Stand-off, wide-area detection of explosive hazards and their precursor components both on and off route from significant stand-off distances including personnel and vehicle borne IEDs.
• Technologies deployed from ground based platforms to pre-detonate or dud explosive hazards through the influence of individual components in the explosive chain at a distance outside the ECR of the explosive hazard.
• Vehicle signature management and duplication technologies to counter advanced fuzing for both on and off route threats

(2) Counter Tactical Surveillance and Targeting:

• Pre-shot/pre-launch detection of direct fire weapons and targeting systems beyond the weapon's maximum effective range.
• Technologies that can detect and classify surveillance systems
• Disruption of direct fire weapons targeting and guidance systems beyond the weapon's maximum effective range.
• Adaptive camouflage which disrupts targeting and surveillance capabilities.

(3) Personal Protective Equipment:

• New and improved polymers for fiber reinforced plastics and resins which can provide increased ballistic protection and lighter weight.
• New fibers and materials for energy absorption and moisture vapor permeability/cooling management.
• Improved ceramic materials capable of providing weight reductions and improved frangibility.
• Improved lightweight integrated and flexible extremity protection.
• Engineering designs which incorporate enhancements to personnel protection including area of

coverage (soft and hard armors), modular attachment points, flexibility, compatibility with existing equipment and tailorability to increasing threat levels.

6.4. Logistics

General background information:

The Logistics Thrust is responsible for managing science and technology development to address a tremendously diverse set critical warfighter needs. Projects within the logistics portfolio run the gamut from electrochemistry to quantum mechanics, from physics-based modeling of mechanical systems to operations research, and from software development to advanced materials science. Based on extensive analysis of warfighter needs and requirements, emerging warfighting doctrine and policy, geographic influences, government and industry investments, current technological state-of-the-art, and technology development trends, the Logistics Thrust has established the following Technology Investment Areas (TIAs) in which to bin projects: Logistics Information Technology (Log IT); Packaging, Handling, Shipping, and Transportation (PHS&T); Expeditionary Utilities; and Logistics Operational Analysis. Specific near-term areas of interest relevant to these TIAs are outlined below.

The Vision:

Marines of the future will benefit from a precisely tailored level of sustained logistic support from sea-based platforms to rapidly maneuvering forces ashore. Logistics delivery systems of the future will be more efficient, responsive, and flexible, enabling Marines to out-pace rapidly changing operational scenarios. Likewise, delivered logistic commodities will provide more operational value per unit weight and cube, enhancing combat unit self-sufficiency and maneuverability. Finally, operational units will benefit from technologies that maximize equipment readiness by minimizing both down-time and maintenance requirements.

Specific areas of interest for this BAA:

(1) Packaging, Handling, Shipping, and Transport of Supplies in Austere Environments. Future expeditionary warfare concepts will require novel, weight-effective approaches for small, dispersed units to more effectively package, handle, ship, and transport supplies without the benefit of conventional forklifts, cranes, or vehicles. This applies to both the immediate movement and distribution of heavy payloads to remote positions as well as sustained transport of supplies over the course of dismounted operations. In many situations, supply handling is dependent upon, and thus limited by, human muscle power. Heavy supply deliveries must often be disassembled prior to movement or storage. This has exposed a material handling gap in the 200-400lb range between human muscle power and current material handling equipment. Deliveries of bulk fuel and water are particularly problematic. Logistics commodities are most often packaged in standard containers, without holistic consideration for optimal package size to facilitate efficient movement through the limited expeditionary supply chain. As for the dismounted transport of commodities, the load typically carried in backpacks is already excessive. Novel alternative solutions for material handling and transport are sought that minimize the potential for injury while preserving the ability to negotiate narrow trails, uneven terrain, and complex urban

environments. Possible handling and transport solutions may include simple mechanical devices (unpowered or power-assisted), hybrid human-augmentation devices, or devices capable of autonomously following dismounted combatants (provided they are capable of carrying a nominal 200 lbs of supplies and sufficient fuel/energy to provide a nominal 50 mile range without compromising the detection avoidance or maneuverability of the dismounted unit to which they are assigned). Devices may be self-propelled or towed, and may be rolling or walking in nature. In all instances, concepts which minimize any imposed logistic burden such as fuel, energy, maintenance, training, etc. are preferred. Automated packaging systems are of interest for domestic, shipboard, and expeditionary packaging and handling of supplies.

(2) Expeditionary Utilities - Power. Tactical reality frequently requires military field generators to operate at only a small percentage of their designed capacity. Unfortunately when existing military generators are used at less than their full capacity, fuel consumption does not decrease proportionally. For example, a generator servicing only 20% of its design load can consume twice as much fuel per delivered kilowatt-hour as one that is loaded for peak efficiency. Since the cost of delivering fuel to remote forward operating bases can easily run 10 to 100 times the original purchase price, generator efficiency has become a significant issue. Less than optimal loading tends to be more prevalent for generators rated at 10kW or less. Innovative concepts applicable toward this output level are of primary interest. It is well recognized that linking multiple generators in a power-sharing grid is one way to improve overall fuel utilization; however, this presents the additional logistics burden of cabling for expeditionary power grids, and adds a layer of complexity with the need for appropriate grid system management. Solutions are sought to enable each individual generating device to independently deliver fuel efficient electrical power over its full load range. Examples of potential approaches may include, but are not limited to, the use of variable speed generators, energy storage buffers, partial generator shutdown facilitated by segmented design, or various combinations of the above. Equally important to minimizing fuel consumption is the capability of future generators to interface seamlessly with alternative energy sources (solar for example) whenever the operational situation permits. Innovative ideas in support of the concepts above are desired. Solutions are also sought for adaptive and dynamic "microgrid" control, management, and data distribution, as well as high efficiency, lightweight, durable power transmission. Energy harvesting solutions capable of recovering electrical energy from kinetic, thermal, electromagnetic, and other sources are also of primary interest.

(3) Expeditionary Utilities - Water. Novel concepts are sought for energy-efficient water collection, purification, and packaging at the small scale. Water sources encountered during expeditionary operations run the gamut from surface to ground water, fresh to salt water, clean to contaminated, flowing to stagnant, etc. (e.g. rivers, streams, lakes, ponds, swamps, lagoons, wells, sub-standard municipal water). Of particular interest are concepts for lightweight, hand carried, low-power water purification devices with capabilities ranging from 1 to 10 gallons per hour. The capability to remove suspended solids, dissolved salts, and micro-organisms is desirable so as to be useful over the full range of potential water sources. Other related items of interest include robust micro-filtration materials or concepts that are resistant to freeze damage, novel pre-filtration technologies and operating methodologies for membrane-based systems that avoid complex back-flushing procedures or large quantities of disposable filters, fouling and bio-growth resistant materials, and water recovery systems from atmospheric air or other non-traditional sources.

(4) Logistics Information Technology. The efficiency of the expeditionary logistics supply system is hugely dependent on information and information technology, from item-level tagging and tracking systems to worldwide transportation network modeling and analysis systems. Solutions are sought to enable rugged and reliable ultra-low-cost RFID-based tagging and tracking solutions, as well as monitoring and analysis systems capable of providing information on item or commodity condition, location, etc. Software solutions are sought for the collection, recognition, and integration of unstructured data; optimization of complex, multi-dimensional transportation problems; and modeling and simulation of logistics movement within the expeditionary supply system.

6.5. Human Performance/Training & Education (HPT&E)

General background information:

HPT&E seeks Science and Technology (S&T) solutions to enhance the cognitive, emotional, social, and physical performance of Expeditionary Warfighters. These individuals are ready to deploy anywhere in the world on short notice, serve within their team, make sound decisions, take on leadership roles, complete their missions under any extremes or circumstances, and return home uninjured. HPT&E Technology Investment Areas (TIAs) are: Decision Making and Expertise Development and Warrior Resilience. Efforts supported by these TIAs are intended to enhance the future capabilities of Expeditionary Warfighters by conducting applied research and advanced development to improve understanding and technology capabilities focused on accelerating the learning of decision making skills. Additionally, the focus is on developing multidimensional intervention strategies that enhance individual, leader, and team psychological, physical, and social resilience skills; deliver strategies that optimize physical performance and injury resistance; and harden warfighters to adapt to operations in complex, chaotic, full-spectrum environments.

The Vision:

Expeditionary warfighters who are physically and mentally resilient, and ready to deploy anywhere in the world on short notice, to serve within their team, make legal and ethical decisions, take on leadership roles, and complete their missions under any extremes.

Specific areas of interest for this BAA:

(1) Research in training of critical decision making skills at the small unit leader level, to include advanced learning strategies and the enabling technologies that efficiently and effectively support learning strategies.

(2) Decision making task analysis, knowledge extraction, and an automated training effectiveness evaluation system based on validated models of individual, leader, and team performance.

(3) Affordable, flexible, interoperable immersive training environments that optimize the learner's

ability to adapt to changing mission parameters and conditions. Create instructional training aides, automated tutor systems, and individualized learning strategies and theory.

(4) Understanding of the components of resilience, to include the integration of mental and physical training strategies, tools for reducing mental injury, maintaining lean body mass, reducing fatigue, and enhancing physical performance as a function of load, terrain, temperature, hydration, food, and altitude.

(5) Identification of the interplay between nutritional supplementation, physical conditioning, and operational performance, in the context of combat tasks.

(6) Modeling of exposure and recovery processes of body and brain to combat stressors, recovery, reset, and pre-deployment work-ups.

(7) Identification and enhancement of small team leader characteristics and social indicators associated with team resilience and performance.

(8) Develop effective training strategies and technologies that use virtual/immersive scenarios to build resilience.

6.6. Maneuver

General background information:

The Maneuver Program develops advanced technologies to increase the capabilities and effectiveness of the Marine Corps Air Ground Task Force (MAGTF), Naval Special Warfare, Naval Expeditionary Combat Forces, and Marine Special Operations Forces and aids in the execution of the Global War on Terrorism. Innovative technologies are pursued that address the entire fleet of Naval ground assets in the areas of survivability, mobility, fuel efficiency and unmanned systems. Specifically, there is interest in scientific research and technologies in the following areas: (1) advanced autonomous technologies and systems, (2) advanced power plants, power generation & distribution, (3) advanced drive trains, suspensions, and vehicle stability technologies, (4) advanced materials and survivability technology to enhance the performance and survivability of tactical and combat vehicles, and (5) other far-reaching innovative concepts or technologies that would lead to leap-ahead gains in survivability or mobility of USMC or Navy ground assets and dismounted Marines or Sailors.

Naval ground forces will maneuver from the seabase in a family of high-speed connectors that include amphibious vehicles, tilt-rotor and rotary bladed aircraft, and high-speed surface craft. Once ashore, they will maneuver to and within the objective area with speed and precision. They will utilize a family of assets to include highly mobile and survivable manned and unmanned combat and tactical vehicles, as well as systems to enable enhanced mobility of the individual warfighter.

The Vision: Expeditionary forces of the future will be significantly more agile, lethal, mobile and survivable. Technologies will be developed to increase the warfighting capabilities and

effectiveness of the Marine Air-Ground Task Force (MAGTF) with emphasis on improving survivability, providing enhanced mobility, and providing autonomous systems for Distributed Operations and Asymmetric/Irregular Warfare.
Specific areas of interest for this BAA:

(1) Autonomy and Unmanned Technologies: In particular, ONR 30 is looking for exceptionally novel and innovative technologies, approaches and methods that may contribute to the realization of an intelligent, self-driving tactical-vehicle capability. Areas of interest include, but are not limited to:

•Reliable Self-Localization. Novel and non-traditional approaches to the development of absolute and relative localization for an autonomous unmanned ground vehicle under a wide area of conditions and environments, both day and night, ranging from dense canopy that prevents the viewing of landmarks and the horizon to conditions that limit the ability to use GPS and grounded or airborne beacons.

•Passive, Low-Cost, Perception System for Nighttime Operations. Passive sensor or vision systems that would enable an autonomous unmanned ground vehicle to perceive its nearby environment at night or during low visibility conditions. Novel concepts for high-sensitivity, high-dynamic range, low-power, low-cost, sensors and/or algorithmic data fusion methods are of interest.

•Very Low-Cost Active Sensing to Augment Electro-Optical Perception System. Development of low-cost perception/classification methods for autonomous unmanned ground vehicle perception and localization that fuse the features extracted from a passive electro-optic system with information obtained from low-cost active sensor systems such as LIDAR, RADAR, or SONAR. Non-traditional and innovative methods that allow for operations at night and in low visibility environmental conditions are of particular interest.

•Machine Intelligence for Complex Warfighting Behaviors. Development of cognitive architectures, machine intelligence, machine learning, and pattern-recognition algorithms that support an autonomous unmanned ground vehicle capability. The algorithms should enhance perceptive capability and enable heightened environmental awareness and context-based situational understanding. The capability's intended purpose is to: a) allow the vehicle to make independent decisions that approach a human-like ability to drive tactically and b) allow the vehicle to seamlessly collaborate with Marines and sailors operating in small tactical units. The desired quality of the collaboration is for the individual warfighter to view the autonomous vehicle as a trusted agent capable of providing support during tactical missions by executing doctrinally appropriate, complex, adaptive behaviors.

(2) Fuel Efficiency, Ship-to-shore technologies, Thermal Management, Suspension, Modularity:

•Develop technologies to improve fuel efficiency for JP8 & DF2 fueled tactical and combat vehicles. These include the following:
•Technologies that support the electrification of front end auxiliary drive components, including fluid pumps, fans, and compressors.

•Controllable & variable displacement flow pump, compressor, and turbine technologies for load dependent control of vehicle accessories and diesel intake augmentation
•Waste heat recovery technologies applicable to military wheeled vehicles equipped with reciprocating engines operating in high ambient temperature environments. Technologies of interest include electric turbo-compounding and Rankine cycle based approaches.
•Vehicle auxiliary power management for drive and idle operation that allow for control of vehicle alternator output based on onboard vehicle power requirements.
•Variable valve lift and timing systems, variable cylinder displacement and compression ratio systems, high pressure, high frequency capable fuel injectors for common rail fuel systems, and cylinder deactivation systems for JP8 & DF2 compression ignition engines.
•Hybrid drive trains that increase vehicle efficiency and allow for greater export power
•System integration of independent driveline components with the goal of increasing overall driveline efficiency.

•Development of a dynamic propulsion system for ship-to-shore operations that accounts for the differential in the higher power requirement at sea and the lower power requirement on land. These include the following:
- System integration of independent driveline components with the goal of increasing power to achieve ship-to-shore mobility while maintaining current on land requirements.

•Develop diesel engine, electronics, and electric motor/generator thermal management systems for military wheeled vehicles and power-trains, including advanced radiator designs and materials, high performance fluid-to-fluid and fluid-to-gas heat exchanger designs, and whole vehicle thermal management and control strategies. Common cooling loop approaches and component technologies capable of cooling power electronics and electromagnetic machines such as motors and generators utilizing the internal combustion engine water/glycol cooling loop are desirable.

•Leap ahead mobility approaches such as three-dimensional extreme mobility concepts, advanced suspension control systems for terrain identification, advanced trajectory planning, predicting and reacting, and real-time terrain feature sensing technologies that could provide tremendous gains in fuel efficiency or ground mobility are of interest.

•Modularity and commonality to enhance mission capability across the existing ground vehicle fleet is desired. Modification to current vehicle platforms to support the varying mass and center of gravity of a transportation system consisting of interchangeable, scalable, and reusable self-contained functional elements, or modules, which are connected using standardized interfaces.

(3) Ground Vehicle Survivability:

•Combat and Tactical Vehicle Signature Management. Adaptive and passive systems to reduce the signature of Naval Ground Vehicles in the visible, IR & RF spectrum while stationary or moving, in day or night, and in all weather conditions.

•Lightweight Armor Technologies. (i) Low-cost advanced lightweight armor systems that take advantage of lower cost materials or manufacturing methods as compared to the current state of the art. (ii) Nano-grain ferrous and non-ferrous alloy solutions that exhibit the strength and

ductility of at least three times conventionally processed peer alloys.

•Explosively Formed Penetrator (EFP) Armor Solutions. Lightweight composite materials with improved performance over Kevlar, Dyneema, S2 glass, etc.

•Rocket Propelled Grenade (RPG) and ATGM defeat solutions. Active and passive approaches for defeat of unitary and/or tandem warheads and ATGMs.

•Active Protection System Sensor systems. Sensor systems and control software to detect, classify, and handoff acquisition information to various kill mechanisms to protect Naval Ground Vehicles and small boats against RPGs and ATGMs.

•Combat and tactical vehicle seating systems with shock mitigating characteristics. (i) seating systems that reduce the incidence or severity of injuries during mine blast or IED events that result in both vertical and non-vertical accelerations/loads (i.e., underbody centerline and non-centerline events with a probability of less than 10% Average Injury Score [AIS] Level 2), and (ii) innovative seat restraint systems which allow occupants rapid ingress/egress, good visibility, and low probability of fouling on body armor or other combat equipment.

•Combat and tactical vehicle underbody Improvised Explosive Device (IED)/mine blast event mitigation technologies such as advanced energy absorbing materials, active blast countermeasures, etc.

•End-to-end modeling and simulation capability for combat and tactical vehicle underbody IED and mine blast events, including the capability to model blast/IED effects on platforms and translate that to loads into personnel for the purposes of determining crew incapacitation.

6.7. Fires

General background information/Vision:

Warfighters capable of being employed in small, distributed units will locate and decisively engage larger enemy forces by applying timely, reliable, precise, and accurate fires (kinetic and non-kinetic) from a myriad of platforms. Tactical units will be able to operate well beyond conventional parameters of direct fire mutual support. Warfighters will use integrated, lightweight optics and sensors to see through all battlefield conditions (day, night, low light and obscuration) and they will use lightweight, organic, manned and unmanned platforms and advanced weapons for the rapid, accurate, effective application of firepower across the full range of military operations. They will also apply non-organic and joint fires optimally. Increased intelligence capabilities delivered by company intelligence cells will generate more potential targets in the future.

Specific areas of interest for this BAA:

(1) Targeting and Engagement Technology:
Advanced targeting and engagement systems will empower warfighters of the future to acquire

and apply precision fires against unconventional and hybrid targets, across the full range of military operations and environments by developing targeting technologies (detection, locating, identification, designation, and tracking) for faster, more precise engagements, while simplifying tasks for the warfighter. Specific interests include:
• Lightweight, all weather, precision location of targets, reduction of ballistic flight error, and eye-safe, low-power, designation technologies. These include miniature guidance, navigation, and control system for high explosives projectiles to enable affordable precision fires. Also, technologies that enable automated fire control systems, for mounted and dismounted infantry to locate, discriminate, and acquire targets, and transmit the information necessary for immediate engagement by direct or indirect fires, at extended ranges, in all weather. Examples may include 360 degree, long range, all weather target acquisition systems; target location, ranging, ballistic compensation, and target data handoff systems for infantry weapons; and hand-held target location systems providing target location error (TLE) of 10 meters at 10 kilometers range, with night and adverse weather operating capabilities.
• Technologies are sought for lightweight, durable, low power consumption, continuous day-through-night, easy to use optics for target detection and discrimination or designation; for individual and crew served infantry weapons and for watercraft weapons at their maximum effective ranges. Examples may include carbon nanotubes (metallic or semi-conducting single wall carbon nanotubes with or without chromophores, or multi-walled carbon nanotubes); optical or infrared (IR) frequency black silicon focal plane arrays (FPA); and conformal optoelectronic systems using stretchable silicon or other polymers over curved FPAs for lightweight, wide field of view sights.
• Technologies with the capability to mark targets of interest at near or extended stand-off distances are also desired. These may include remotely deployed tags with associated delivery and activation systems, and miniaturized marking technology with the ability to survive extended range delivery. Examples may include MEMS based inertial navigation technologies for assisted projectile markers having adequate power for signal transmission and observer-oriented activation (by laser, RF, or other means), and covert tagants that may be infrared reflective or have other unique tagging signatures.
• Technologies that enable automatic target detection, recognition, identification, tracking, and hand-off in dismounted targeting systems are also desired. These may include real-time, sensor data fusion, and automatic target recognition (ATR) technologies. Specific examples may be pattern recognition algorithms using IR, SWIR, or other sensor arrays with classification libraries of target types.

(2) Advanced Ammunition and Energetics Technology:
Future ammunition will provide improved lethality and dominance of the individual warfighter within his area of influence through advanced warhead, propulsion, and ammunition technologies, enabling engagement of the enemy from greater distances and with tailorable effects by providing more capable, lighter weight ammunition across the spectrum of lethality (to include contained collateral damage situations); with increased reliability, range, and precision; for direct and indirect fire weapons, small arms through major caliber; with low costs and logistics burden, and increased operating, transportation, and storage safety; and increased shelf life with reduced storage maintenance requirements. Specific interests include:
• Technologies for low cost, modular, scalable effects munitions are desired, for personnel, vehicles, light armor, or watercraft targets; and may include means for decreasing Circular Error

Probable (CEP) and tailoring Effective Casualty Radius (ECR), to minimize collateral damage.
• Technologies to attack disparate target types including a variety of watercraft, to create personnel entry points in double reinforced concrete structures and triple brick walls, or to defeat targets behind walls are sought. Examples may include enhanced high energy combinations and hypergolic mixtures for lethal effect on fast moving watercraft, enhanced high energy warhead designs for hardened targets, advanced penetrating warheads combining multiple effects, and dispersed explosive powders or nanoscale powders.
• Technologies to defeat advanced armor systems for all classes of ground vehicles, future advanced protection materials, and future body armor systems are sought.
• Technologies are desired for ammunition to deliver less than lethal effects on personnel, vehicles, and watercraft, suitable for warning or suppression fires from crew served weapons, with effective ranges beyond 150 meters. Examples may include .50 caliber, 7.62mm, or other ammunition compatible with service weapons to enable rapid escalation of force from warning, to non-lethal, to lethal effects. Insensitive primary explosives and fuses for advanced warheads are also desired. These may include high output explosives with low sensitivity to environmental, handling, and intrusive conditions. Specific examples may include porous chromium oxide matrices that control the ignition and detonation of high output explosives with advanced nano-circuits for reduced sensitivity.

(3) Advanced Weapons Technology:
Future weapons will be lightweight and affordable, enabling engagement of diverse and hybrid threats from ground and naval platforms, with the ability to escalate from non-lethal to lethal force, over the full spectrum of military operations by increasing the capabilities and reducing the weight of Marine Corps ground weapons systems and Navy Expeditionary Combat Command organic weapons systems. Specific interests include:
• Technologies are sought for increased range, improved precision, increased responsiveness, improved user ergonomics, and scalability of lethality for direct and indirect fire weapons, small arms through major caliber, to decrease weights, costs, and logistics burdens, with improved weapons systems or components service life, and improved operating, transportation, and storage safety characteristics. Examples may include combustion light gas guns and lightweight components such as gun barrels.
• Technologies for low cost guided flight control for light, medium, and heavy mortar munitions (60mm, 81mm, and 120mm) are sought, to provide flight trajectory shaping and precision fires. Examples may include novel seekers, control systems, and means of projectile maneuver to increase first round Probability of Kill (Pk).
• Technologies to correct the course of small caliber rounds, including sniper ammunition, are desired. Examples may include laser target detection and bullet guidance; use of Micro-ElectroMechanical Systems (MEMS) or nanotechnology applications for miniature stabilization, guidance, and control; and LIDAR-visible nanoscale coatings on bullet tail and sides for small course corrections.
• Technologies are desired for lightweight stand-off weapons systems for use by expeditionary watercraft in direct or indirect fire support roles, against inbound small, fast watercraft used as suicide or autonomous bombers (the "go-fast" threat), able to defeat multiple craft engaged in swarm tactics, and against moving ground vehicles near the shoreline. Examples may include multi-role precision guided munitions and man-portable missile systems suitable for maritime and littoral environments, and may include lethal, less-than lethal, or variable lethality systems to

disable or halt watercraft.
• Technologies are desired for low cost, lightweight, stabilized mounts for families of weapons systems for watercraft, suitable for harsh maritime operating environments.
• Technologies that will enable precision engagement and escalation of force from unmanned ground, air, and surface platforms are also desired. These may include wireless lethal effectors for safe and legally permissible employment from unmanned platforms. Specific examples may include null latency targeting and C2 technologies and autonomous on-board target recognition algorithms. Non lethal fires technologies are also desired which may include inexpensive nonlethal weapons effects and munitions. Specific examples may include directed energy, electromagnetic pulse generators, variable density projectiles, and phaser technologies.

6.8. Human Social Cultural Behavioral (HSCB) Sciences

General background information:

The HSCB Sciences program at ONR funds multidisciplinary research to investigate the influence of cultural, social and cognitive factors on human behavior, develop data collection and analysis methods, build computational models, and validate operationally applicable tools. The need to understand human behavior, how it varies cross-culturally, and what innately human behavior extends across cultural boundaries is required at all levels of military operations. Furthermore, in order to develop effective strategies and courses of action decisions across a broad range of operational environments, mission sets, and problem types, the U.S. military must be able to forecast behaviors of groups or perhaps key individuals in operational contexts. Such forecasts depend upon the ability to detect relevant indicators amid the baseline noise, an ability that can only be acquired through a deep understanding of the culture, social structure, and history of a region of interest.

The Vision:

The HSCB program seeks knowledge and technologies to provide military decision makers with methods and tools to understand the social, cultural, and behavioral dynamics of socially and culturally diverse populations at varying levels of granularity (country, region, province, etc.) through the development of data collection and analysis methods, computational social science models, and socio-cultural theory and understanding. Expertise from, but not limited to, the fields of neuroscience, behavioral endocrinology, behavioral psychology, cognition, cultural anthropology, social psychology, linguistics, organizational psychology, intercultural communication, sociology statistics, geography, and political science should be brought to bear on this topic.

Specific areas of interest for this BAA:

With these factors in mind, ONR is interested in receiving proposals that may address the following research areas and questions:

(1) Understanding Social, Cultural, and Human Behavior Theory:

• Socio-cultural theory and understanding to support thorough perception and comprehension of operational environments, grounded in social, behavioral, and cognitive sciences.
• Validation of interdisciplinary social, cultural, and behavioral theory as applied to military needs across operational contexts that can be instantiated in computational models which can provide the military decision maker insight into a population or region of interest.
• Understanding the social, cognitive, and cultural components that influence, characterize, and enable human networks. Establish and verify the conditions and influences that stimulate shifts with individuals and group decision frameworks.
• Develop frameworks for integrating socio-cultural theories.
• Tactical level access to resources that support rapid situational awareness and ongoing adaptability.

(2) Data Collection and Management:

• Tools and methods to understand emerging data sources and their ability to represent opinions and sentiment of populations.
• Tools and methods to understand emerging data sources and their ability to provide insight of social networks and organizations.
• Validation of the use of social media or other readily available data compared to traditional polling or survey approaches.
• Approaches and methods available in austere environments or denied access environments.

(3) Course of Action (COA) Analysis and Modeling:

• The development of methods, tools and models for COA analysis that provide option awareness, uncertainty analysis, and what-if analysis to end users, including modeling capabilities for forecasting plausible reactions to U.S./coalition actions.
• Exploratory modeling of alternative COAs, and the resulting distribution of outcomes for each COA, to enable comprehensive analysis of the decision space.
• COA analysis for maintaining stability during and after draw-downs.
• COA analysis for Civil-Military Operations activities in local populations, and analysis of non-kinetic COAs. For non-kinetic COA analysis the desired end state is the ability to identify, simulate, and forecast the interactive effects of kinetic and non-kinetic COAs.
• Development and validation of metrics for gauging the effects of non-kinetic COAs, along with tools and systems for planning integrated implementation of kinetic and non-kinetic COAs.

(4) Socio-cultural Modeling Capabilities:

• Development of methods and infrastructure for rapidly developing, validating and integrating new forecast models for events of interest. Focus should not be on the development of a single event of interest, but on how to reduce the time, cost and resources required for the development of new events of interest. Forecast models should be based in theory from the social science community and transparent to the user.
• Research into the validity of social network analysis assumptions regarding influence and communication within networks over multiple data types. What are the limitations of influence models developed with emerging data, and development of methods to validate or test models

against ground truth? Understanding networks where a highly influential entity is likely to spur people to action (at either the individual or group level).
• Development of methods to measure and track the impact of specific military activities in the full range of military operations in the non-kinetic domain to include strategic communications campaigns, information operations campaigns, cyber activities, and humanitarian assistance/disaster relief. Methods and tools developed should consider multiple data sources, ability to assign causality between USG actions and effects, and to characterize the patterns of effectiveness temporally. Critical is the ability to do this with minimal footprint and cost.

6.9. Naval Expeditionary Dog Program (NEDP)

General background information/The Vision:

The goal of the Naval Expeditionary Dog Program (NEDP) is to identify those areas in which a scientific or technological solution can establish or improve dog performance against a range of missions, threats and environments. As an example, properly trained dogs provide one of the most effective means of conducting standoff detection of explosives, explosive components and precursors by the squad on dismounted patrol or by personnel searching a given area. Ten years of conflict in Iraq and Afghanistan, however, have provided better understanding of the factors affect detector dog performance and the detection challenges provided by the nature and use of buried home-made explosives (HME). The expeditionary environment places emphasis on ruggedness, ease of use and light weight applications; thus, NEDP believes that better informed selection, conditioning and training prior to deployment can significantly advance performance and limit the need for operational interventions. Accordingly, knowledge-based products are a primary goal for the research, funded work may leverage previous research with other species or develop novel applications for existing research. Of particular interest are the areas of cognition and learning associated with detection training, the effects of the environment on olfaction and physical performance and the autonomous movement of dogs through a given environment. Additionally, novel concepts for the use of dogs in other applications are encouraged.

Specific areas of interest for this BAA:

(1) Canine Sciences:
Olfactory stimulus discrimination and generalization, particularly as it applies to HME detection. Research efforts may include:

• Determining the ability of dogs to assign novel odors to existing functional categories of target odors.
• Using behavioral methods to determine how olfactory cues are stored in memory and how that memory can be stabilized rapidly and robustly.
• Methods to increase deviation from average values for olfactory "just meaningful difference" while still retaining a narrow enough response aperture to maintain search reliability.
• Determine the effect of heat, cold, humidity and altitude on olfaction both in terms of the odor plume produced and physiological changes to the dog's respiratory, cognitive and olfactory systems.

Dog learning and cognition. Military working dog training has traditionally focused exclusively on operant conditioning; ONR would like to leverage the past 40 years' of research into comparative cognition in order to increase effectiveness and efficiency of the methods used to select and train dogs. The goal is to improve operational performance across a range of activities, such as human/substance detection, tracking, controlled aggression, etc in high stimulus environments. Research efforts in this area may include:

• Development of more effective methods for training odor discrimination than the discriminative stimulus - cued response- positive reward conditioning process currently used. Effectiveness would include memory duration, plasticity of new odor learning and response reliability.
• Determining the effects of primary and secondary reward salience on training and how operational use may change those effects (negative/positive contrast and peak shift).
• Investigation of cognitive demand variance between response selection and response inhibition and development of methods to enhance priority of response selection even in high stimulus environments.
• Measuring and mitigating the impact of environmental context on detection task performance.
• Research into the development, functions and properties of olfactory memory.

Cognitive mapping and movement. Dogs, within familiar terrain, can reach an objective by following a novel route when encountering obstacles. Is this cognitive mapping or some other spatial mechanism? Can that process be leveraged to allow a similar activity on unfamiliar terrain when moving towards a generally stated human-determined objective? Ability to move a dog through a series of pre-determined, technology-established waypoints is not an area of interest for this objective, autonomous movement is.

Stress. Elevated stress levels caused by environmental factors can be counterproductive to canine performance and challenge our ability to provide the best quality of life for these valuable living assets. ONR is seeking proposals to explore methods to measure, predict, mitigate and rehabilitate stress in canines in deployed environments. Understanding the factors that influence dogs' susceptibility to stress-induced health and performance effects and the causes and course of progression (and/or regression) of such effects will allow for preventative and restorative procedures to be developed. Of particular interest is research that assesses the effect of human response to high-stress environments on dog stress and re. Efforts can include literature reviews and novel applications of research from zoos, humane societies, and laboratory animal welfare associations.

Physical conditioning and sustainment. Dogs deploy anywhere that the military deploys and often lives in austere environments that do not include climate-controlled kenneling. Military working dogs must be able to deploy safely from a range of ground and air transportation; move efficiently over various terrains and obstacles; operate in various climates; have good posture, balance, stability, agility, coordination, speed, power, flexibility and superior muscular and cardiovascular endurance. They must be resistant to fatigue and fatigue-caused injury and have the stamina needed to perform their tasks.

(2) Customized Training:
ONR is seeking proposals to develop customized training routines or technology to increase

canine training effectiveness by increasing consistency of learning, reducing training time, increasing duration of training retention or variations of those goals.

(3) Technology Enhancements:
ONR is seeking proposals to research and develop technology enhancements to improve the human-canine interface and to support the use of dogs for detection beyond line of sight. Additionally, the traditional use of auditory and visual cues for directional control commands increase user risk so alternate methods of communication, including novel methods for technology-assisted directional control and autonomous navigation/guidance systems, are of interest. All technology development must consider the constraints of operational canine/user form factor requirements, bandwidth limitations, use of dismounted counter radio-controlled IED electronic warfare (CREW) jammers by dismounted patrols and energy limitations inherent to the battle space. Tasks are likely to include:

• Developing technical solutions for fully autonomous canine searches.
• Developing technical solutions for semi-autonomous canine searches, including means for technology-assisted feedback.

Animal Welfare. Whether an academic organization acts alone or in partnership with a commercial organization, any recipient performing research, experimentation, or testing involving the use of animals shall comply with the rules on animal acquisition, transport, care, handling, and use in: (i) 9 CFR parts 1-4, Department of Agriculture rules that implement the Laboratory Animal Welfare Act of 1966, as amended, (7 U.S.C. 2131-2159); (ii) the guidelines described in National Institutes of Health Publication No. 86-23, "Guide for the Care and Use of Laboratory Animals"; (iii) DoD Directive 3216.01, "Use of Laboratory Animals in DoD Program." Preference will be given to proposals that do not require purchase or provision of animals as government furnished equipment but, instead, make animals available for IACUC-approved research while ultimately remaining under the ownership of the proposer.

In every case, for submissions containing animal use, proposals should briefly describe plans for Institutional Animal Care and Use Committee (IACUC) review and approval. Animal studies in the program will be expected to comply with the PHS Policy on Humane Care and Use of Laboratory Animals, available at http://grants.nih.gov/grants/olaw/olaw.htm. No animal studies may be conducted using DoD/ONR funding until the USAMRMC Animal Care and Use Review Office grants approval. As a part of this secondary review process, the Recipient will be required to complete and submit an ACURO Animal Use Appendix, which may be found at https://mrmc.amedd.army.mil/AnimalAppendix.asp. This requirement is in addition to IACUC review and approval.

7. Point(s) of Contact -

Questions of a technical nature should be submitted to:

Laura L. Worcester
Program Manager
ONR Code 30

Office of Naval Research
One Liberty Center
875 N. Randolph Street, Arlington, VA 22203
Email: laura.worcester@navy.mil

Questions of a business nature should be submitted to:

Peter Donaghue
Contract Specialist
ONR Code 255
Office of Naval Research
One Liberty Center
875 N. Randolph Street, Arlington, VA 22203
Email: desmond.donaghue@navy.mil

Any questions regarding this solicitation must be provided to the Technical Point of Contact and Business Point of Contact listed in this solicitation. All questions shall be submitted in writing by electronic mail.

Questions submitted within 2 weeks prior to a deadline may not be answered, and the due date for submission of the white paper and/or full proposal will not be extended.

Amendments will be posted to one or more of the following webpages:

- Federal Business Opportunities (FEDBIZOPPS) Webpage - https://www.fbo.gov/
- Grants.gov Webpage - http://www.grants.gov/
- ONR Broad Agency Announcement (BAA) Webpage - http://www.onr.navy.mil/en/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx

Questions of a security nature should be submitted to:

Diana Pacheco
Industrial Security Specialist
Office of Naval Research
Security Department, Code 43
One Liberty Center
875 N. Randolph Street
Arlington, VA 22203-1995
Email Address: diana.pacheco@navy.mil

Any CLASSIFIED questions shall be handled through the ONR Security POC. Specifically, any entity wanting to ask a CLASSIFIED question shall send an email to the ONR Security POC with copy to both the Technical POC and the Business POC stating that the entity would like to ask a CLASSIFIED question. DO NOT EMAIL ANY CLASSIFIED QUESTIONS. The Security POC will contact the entity and arrange for the CLASSIFED question to be asked through a secure

method of communication.

8. Instrument Type(s) - Contracts and Grants

Awards may take the form of Contracts and Grants as appropriate. ONR reserves the right to award a different instrument type if deemed to be in the best interest of the Government.

Any contract awards resulting from this BAA will incorporate the most current FAR, DFARs, NMCARS and ONR clauses. Examples of model contracts can be found on the ONR website at the following link: http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/contract-model-awards.aspx.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

12.300

10. Catalog of Federal Domestic Assistance (CFDA) Titles -

DoD Basic & Applied Scientific Research

11. Other Information -

Work funded under a BAA may include basic research, applied research and some advanced technology development (ATD). With regard to any restrictions on the conduct or outcome of work funded under this BAA, ONR will follow the guidance on and definition of "contracted fundamental research" as provided in the Under Secretary of Defense (Acquisition, Technology and Logistics) Memorandum of 24 May 2010. As defined therein the definition of "contracted fundamental research", in a DoD contractual context, includes [research performed under] grants and contracts that are (a) funded by Research, Development, Test, and Evaluation Budget Activity 1 (Basic Research), whether performed by universities or industry or (b) funded by Budget Activity 2 (Applied Research) and performed on campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the applied research effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant.

Pursuant to DoD policy, research performed under grants and contracts that are a) funded by Budget Category 6.2 (Applied Research) and NOT performed on-campus at a university or b) funded by Budget Category 6.3 (Advanced Research) does not meet the definition of "contracted fundamental research." In conformance with the USD(AT&L) guidance and National Security Decision Direction 189, ONR will place no restriction on the conduct or reporting of unclassified "contracted fundamental research," except as otherwise required by statute, regulation or Executive Order. For certain research projects, it may be possible that although the research being performed by the prime contractor is restricted research, a subcontractor may be conducting "contracted fundamental research." In those cases, it is the ***prime contractor's responsibility*** in the proposal to identify and describe the subcontracted unclassified research and include a statement

confirming that the work has been scoped, negotiated, and determined to be fundamental research according to the prime contractor and research performer.

Normally, fundamental research is awarded under grants with universities and under contracts with industry. ATD is normally awarded under contracts and may require restrictions during the conduct of the research and DoD pre-publication review of research results due to subject matter sensitivity.

As regards to the present BAA, the Research and Development efforts to be funded will consist of basic research, applied research, advanced technology development. The funds available to support awards are Budget Activity 6.1, 6.2, and 6.3.

FAR Part 35 restricts the use of Broad Agency Announcements (BAAs), such as this, to the acquisition of basic and applied research and that portion of advanced technology development not related to the development of a specific system or hardware procurement. Contracts and grants and other assistance agreements made under BAAs are for scientific study and experimentation directed towards advancing the state of the art and increasing knowledge or understanding.

THIS ANNOUNCEMENT IS NOT FOR THE ACQUISITION OF TECHNICAL, ENGINEERING AND OTHER TYPES OF SUPPORT SERVICES.

II. AWARD INFORMATION

1. Amount and Period of Performance- Estimated Total Amount of Funding Available ($K):

FY2014	FY2015	FY2016	FY2017	FY2018	Total
$6000	$10000	$12000	$9000	$8000	$45000

Anticipated Number of Awards: One or more awards per Topic.
Each white paper and proposal must address only ONE Thrust Area; however, offerors may respond, via separate proposals, to multiple Thrust Areas, if desired.
Anticipated Range of Individual Award Amounts: As required to complete each Topic.
Anticipated Period of Performance: Up to five (5) years.

2. Peer Reviews-

In the case of proposals funded as basic research, ONR may utilize peer reviewers from academia, industry, and Government agencies to assist in the periodic appraisal of performance under the awards, as outlined in ONR Instruction 3966.1. Such periodic program reviews monitor the cost, schedule and technical performance of funded basic research efforts. The reviews are used in part to determine which basic research projects will receive continued ONR funding. Peer reviewers who are not U.S. Government employees must sign nondisclosure agreements before receiving full or partial copies of proposals and reports submitted by the basic research performers. Offerors

may include travel costs for the Principal Investigator (PI) to attend the peer review.

3. Production and Testing of Prototypes-

In the case of funded proposals for the production and testing of prototypes, ONR may during the contract period add a contract line item or contract option for the provision of advanced component development or for the delivery of additional prototype units. However, such a contract addition shall be subject to the limitations contained in Section 819 of the National Defense Authorization Act for Fiscal Year 2010.

III. ELIGIBILITY INFORMATION

All responsible sources from academia and industry may submit proposals under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit proposals and join others in submitting proposals. However, no portion of this BAA will be set aside for HBCU and MI participation.

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, teaming arrangements between FFRDCs and eligible principal bidders are allowed so long as they are permitted under the sponsoring agreement between the Government and the specific FFRDC.

Navy laboratories and warfare centers as well as other Department of Defense and civilian agency laboratories are also not eligible to receive awards under this BAA and should not directly submit either white papers or full proposals in response to this BAA. If any such organization is interested in one or more of the programs described herein, the organization should contact an appropriate ONR POC to discuss its area of interest. The various scientific divisions of ONR are identified at http://www.onr.navy.mil/. As with FFRDCs, these types of federal organizations may team with other responsible sources from academia and industry that are submitting proposals under this BAA.

University Affiliated Research Centers (UARC) are eligible to submit proposals under this BAA unless precluded from doing so by their Department of Defense UARC contracts.

Teams are also encouraged and may submit proposals in any and all areas. However, Offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors, as well as with system integrators, selected by ONR.

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.

For Grant applications:

The Federal Funding Accountability and Transparency Act of 2006 (Public Law 109-282), as amended by Section 6202 of Public Law 110-252, requires that all agencies establish requirements

for recipients reporting information on subawards and executive total compensation as codified in 2 CFR 33.110. Any company, non-profit agency or university that applies for financial assistance (either grants, cooperative agreements or other transaction agreements) as either a prime or sub-recipient under this BAA must provide information in their proposal that describes the necessary processes and systems in place to comply with the reporting requirements identified in 2 CFR 33.220 and Appendix A. Entities are **exempt** from this requirement **UNLESS** in the preceding fiscal year, it received: a) 80 percent or more of its annual gross revenue in Federal contracts (and subcontracts), loans, grants (and subgrants), and cooperative agreements; b) $25 million or more in annual gross revenue from Federal contracts (and subcontracts), loans, grants (and subgrants), and cooperative agreements; and c) the public does not have access to information about the compensation of the senior executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 or section 6104 of the Internal Revenue Code of 1986.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process - White Paper, Full Proposals

White Papers are required prior to submitting a Full Proposal. The due date for White Papers is no later than 3 p.m. (Eastern Standard Time) on 1/15/2013. White papers must be submitted via E-MAIL to the technical POC, Laura Worcester, at laura.worcester@navy.mil. Initial Navy evaluations of the White Papers will be issued via E-mail notification on or about 2/15/2013. Detailed technical and cost proposals will be subsequently encouraged from those Offerors whose proposed technologies have been identified through the above-referenced E-mail as being of "particular value" to the Navy. However, any such encouragement does not assure a subsequent award. Any offeror may submit a full proposal even if its white paper was not identified as being of "particular value". Full Proposals will not be considered under this BAA unless a white paper was received before the white paper due date specified above.

The due date for receipt of Full Proposals is 3 p.m. (Eastern Standard Time) on 4/15/2013. It is anticipated that final selections will be made by 5/30/2013. Proposals received after the published due date and time may be considered for funding under a separate BAA at a later time, if funding is available. As soon as the final proposal evaluation process is completed, the Offeror will be notified via email of its selection or non-selection for an award. Proposals exceeding the page limit may not be evaluated.

2. Content and Format of White Papers/Full Proposals -

White Papers and Full Proposals submitted under the BAA are expected to be unclassified ; however, confidential/classified responses are permitted. Contracts or other instruments resulting from a classified proposal will be unclassified. .

Unclassified Proposal Instructions:

Unclassified White Papers and Full Proposals shall be submitted in accordance with Section IV. Application and Submission Information.

Classified Proposal Instructions:

Classified White Papers and Full Proposals shall be submitted directly to the attention of ONR's Document Control Unit at the following address:

OUTSIDE ENVELOPE (no classification marking):

Office of Naval Research
Document Control Unit
ONR Code 43
875 North Randolph Street
Arlington, VA 22203-1995

The inner wrapper of the classified proposal should be addressed to the attention of Laura Worcester (laura.worcester@navy.mil), ONR Code 30 and marked in the following manner:

INNER ENVELOPE (stamped with the overall classification of the material)
Program: Expeditionary Maneuver Warfare Applied Research and Advanced Technology Development
Office of Naval Research
Attn: Laura Worcester
ONR Code: 30
875 North Randolph Street
Arlington, VA 22203-1995

An 'unclassified' Statement of Work (SOW) must accompany any classified proposal.

Proposal submissions will be protected from unauthorized disclosure in accordance with FAR Subpart 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

IMPORTANT NOTE: Titles given to the White Papers/Full Proposals should be descriptive of the work they cover and not be merely a copy of the title of this solicitation.

a. 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
- Max. Number of Pages permitted: 10 pages (excluding cover page, resumes, bibliographies, and table of contents)
- Copies - One (1) electronic copy in Adobe PDF or Word 2007 delivered via email. Electronic (email) submissions should be sent to the attention of the TPOC at:

laura.worcester@navy.mil. The subject line of the email shall read "ONR BAA13-004 White Paper Submission."

NOTE: 1) Do not send .ZIP files; 2) Do not send password protected files.

In order to provide traceability and evidence of submission, Offerors may wish to use the "Delivery Receipt" option available from Microsoft Outlook and other email programs that will automatically generate a response when the subject email is delivered to the recipient's email system. Consult the User's Manual for your email software for further details on this feature.

White Paper Content

- **Cover Page:** The Cover Page shall be labeled "WHITE PAPER", and shall include the BAA number, proposed title, Offeror's administrative and technical points of contact, with telephone numbers, facsimile numbers, and Internet addresses, and shall be signed by an authorized officer.

- **Technical Concept:** A description of the technology innovation and technical risk areas.

  A five (5) page technical section which clearly describes the objectives of the proposed effort, technical issues to be resolved to accomplish objectives, the technical approach proposed to resolve these issues, an assessment of the proposed new capability over the existing state of the art, and a comparison against competing technological developments. This section should include references.

- **Future Naval Relevance:** A description of potential Naval relevance and contributions of the effort to the agency's specific mission.

- **Operational Naval Concept:** A description of the project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements.

- **Operational Utility Assessment Plan:** A plan for demonstrating and evaluating the operational effectiveness of the Offeror's proposed products or processes in field experiments and/or tests in a simulated environment.

- **ROM:** A rough order of magnitude (ROM) which describe the estimated costs of the proposed effort, to include program duration, broken out by Government Fiscal Year (01 OCT - 30 SEP). ROM should include costs for labor, travel, and other relevant costs.

b. FULL PROPOSALS

i. INSTRUCTIONS FOR CONTRACTS (Does not include Grants)

NOTE: Submission instructions for BAAs issued after FY 2010 have changed significantly from previous requirements. Potential Offerors are advised to carefully read and follow the instructions below. The new format and requirements have been developed to streamline and ease both the submission and the review of proposals.

Proposal Package: The following three documents with attachments comprise a complete proposal package:

(1) Technical Proposal Template (pdf)
(2) Technical Content (word) – **25 Page Limit**
(3) Cost Proposal Spreadsheet (excel)

These documents can be found at: http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/cost-proposal.aspx

All have instructions imbedded into them that will assist in completing the documents. Also, both the Technical Proposal Template and the Cost Proposal Spreadsheet require completion of cost-related information. Please note that attachments can be incorporated into the Technical Proposal Template for submission.

The format requirements for any attachments are as follows:

- Paper Size- 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing- single or double spaced
- Font- Times New Roman, 12 point

The Cost Proposal Spreadsheet can be found by following this link: http://www.onr.navy.mil/Contracts-Grants/submit-proposal/contracts-proposal/cost-proposal.aspx. Click on the "proposal spreadsheet" link and save a copy of the spreadsheet. Instructions for completion have been embedded into the spreadsheet. Any proposed options that are identified in the Technical Proposal Template or Technical Content documents , but are not fully priced out in the Cost Proposal Spreadsheet, will not be included in any resulting contract or other transaction. If proposing options, they must be separately priced and separate spreadsheets should be provided for the base period and each option period. In addition to providing summary by period of performance (base and any options), the Contractor is also responsible for providing a breakdown of cost for each task identified in the Statement of Work. The sum of all costs by task worksheets MUST equal the total cost summary.

For proposed subcontracts or interorganizational transfers over $150,000, Offerors must provide a separate fully completed Cost Proposal Spreadsheet in support of the proposed costs. This spreadsheet, along with supporting documentation, must be provided either in a sealed envelope

with the prime's proposal or via e-mail directly to both the Program Officer and the Business Point of Contact at the same time the prime proposal is submitted. The e-mail should identify the proposal title, the prime Offeror and that the attached proposal is a subcontract, and should include a description of the effort to be performed by the subcontractor. Offerors should also familiarize themselves with the new subcontract reporting requirements set forth in Federal Acquisition Regulation (FAR) clause 52.204-10, Reporting Executive Compensation and First-Tier Subcontract Awards. The pertinent requirements can be found in Section VII, Other Information, of this document.

Offerors should submit one (1) electronic copy on CD-ROM as discussed with the cognizant Program Officer, of their proposal package. The electronic copy should be submitted in a secure, pdf-compatible format, except for the electronic file for the Cost Proposal Spreadsheet which should be submitted in a Microsoft Excel 2007 compatible format. All attachments should be submitted in a secure, pdf-compatible format.

The secure pdf-compatible format is intended to prevent unauthorized editing of the proposal prior to any award. A password should not be required for opening the proposal document, but the Government must have the ability to print and copy text, images, and other content. Offerors may also submit their Technical Proposal Template and Technical Content in an electronic file that allows for revision (preferably in Microsoft Word) to facilitate the communication of potential revisions. Should an Offeror amend its proposal, the amended proposal should be submitted following the same hard and electronic copy guidance applicable to the original proposal.

The electronic submission of the Excel spreadsheet should be in a "useable condition" to aid the Government with its evaluation. The term "useable condition" indicates that the spreadsheet should visibly include and separately identify within each appropriate cell any and all inputs, formulas, calculations, etc. The Offeror should not provide "value only spreadsheets" similar to a hard copy.

ii. INSTRUCTIONS FOR GRANTS

Grant proposals shall be submitted through Grants.Gov using the Grants.gov forms from the application package template associated with the BAA on the Grants.Gov website. To be considered for award, applicants must fill out block 4 of the SF 424 R&R as follows: Block 4a, Federal Identifier, enter N00014; Block 4b Agency Routing Number, Enter the ONR Department code [] and the Program Officer's name [",]. Applicants who fail to provide a Department code identifier may receive a notice that their proposal will be rejected.

The following information must be completed as follows in the SF 424 to ensure that the application is directed to the correct individual for review: Block 4a, Federal Identifier: Enter the previous ONR award number, or N00014 if the application is not a renewal or expansion of an existing award; Block 4b, Agency Routing Number: Enter the three (3) digit Program Office Code (301) and the Program Officer's name, last name first, in brackets [Worcester, Laura]. Applicants who fail to provide a Department code identifier may receive a notice that their proposal will be rejected.

To attach the technical proposal in Grants.gov, download the application package
Click on "Research and Related Other Project Information"
Click on "Move form to Submission List"
Click on "Open Form"
You will see a new PDF document titled "Research & Related Other Project Information"
Block 7 is the Project Summary/Abstract -> click on "Add attachment" and attach the project summary/abstract. (You will not be able to type in the box, therefore, save the file you want to attach as Project Summary or Abstract).
Block 8 is the Project Narrative -> click on Add attachment and attach the technical proposal. (Save the file as Volume I- Technical Proposal since you will not be able to type in the box).

Full Proposal Format - Volume 1 - Technical Proposal and Volume 2 - Cost Proposal

- Paper Size - 8.5 x 11 inch paper
- Margins - 1 inch
- Spacing - single-spaced
- Font - Times New Roman, 12 point
- Number of Pages - Volume (Vol. 1) is limited to no more than 25 pages. Limitations within sections of the proposal, if any, are indicated in the individual descriptions shown below. The cover page, table of contents, resumes and current and pending project and proposal submissions information are excluded from the page limitations. Full Proposals exceeding the page limit may not be evaluated. There are no page limitations to Volume 2.
- Copies - the full proposal should be submitted electronically at http://www.grants.gov as delineated in paragraph 5 below.

Volume 1: Technical Proposal

- **Cover Page:** This should include the words "Technical Proposal" and the following:
    1. BAA number 13-004;
    2. Title of Proposal;
    3. Identity of prime Offeror and complete list of subawards, if applicable;
    4. Technical contact (name, address, phone/fax, electronic mail address)
    5. Administrative/business contact (name, address, phone/fax, electronic mail address) and;
    6. Proposed period of performance (identify both the base period and any options, if included);
    7. Signature of Authorized Representative.

- **Table of Contents:** An alphabetical/numerical listing of the sections within the proposal, including corresponding page numbers.

- **Technical Approach and Justification:** The major portion of the proposal should consist of a clear description of the technical approach being proposed. This discussion should provide the technical foundation / justification for pursuing this particular approach / direction and why one could expect it to enable the objectives of the proposal to be met.

- **Future Naval Relevance:** A description of potential Naval relevance and contributions of the effort to the agency's specific mission.
- **Operational Naval Concept:** A description of the project objectives, the concept of operation for the new capabilities to be delivered, and the expected operational performance improvements.
- **Operational Utility Assessment Plan:** A plan for demonstrating and evaluating the operational effectiveness of the Offeror's proposed products or processes in field experiments and/or tests in a simulated environment.

- **Project Schedule and Milestones:** A summary of the schedule of events and milestones.

- **Reports:**

  The following are sample reports that are typically required under a research effort:

  -Technical and Financial Progress Reports
  -Presentation Materials
  -Final Report

  Grants do not include the delivery of software, prototypes, and other hardware deliverables.

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/subcontractor/subrecipient relationships; government research interfaces; and planning, scheduling and control practice. Identify which personnel and subcontractors/subrecipients (if any) will be involved. Include a description of the facilities that are required for the proposed effort with a description of any Government Furnished Equipment/Hardware/Software/Information required, by version and/or configuration.

- **Current and Pending Project and Proposal Submissions:** Offerors are required to provide information on all current and pending support for ongoing projects and proposals, including subsequent funding in the case of continuing contracts, grants, and other assistance agreements. Offerors shall provide the following information of any related proposal submissions from whatever sources (e.g., ONR, Federal, State, local or foreign government agencies, public or private foundations, industrial or other commercial organizations).

  The information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including ONR. Concurrent submission of a proposal to other organizations will not prejudice its review by ONR:
  1) Title of Proposal and Summary;
  2) Source and amount of funding (annual direct costs; provide contract and/or grant numbers for current contracts/grants);
  3) Percentage effort devoted to each project;

4) Identity of prime Offeror and complete list of subawards, if applicable;
5) Technical contact (name, address, phone/fax, electronic mail address)
6) Administrative/business contact (name, address, phone/fax, electronic mail address);
7) Duration of effort (differentiate basic effort);
8) The proposed project and all other projects or activities requiring a portion of time of the Principal Investigator and other senior personnel must be included, even if they receive no salary support from the project(s);
9) The total award amount for the entire award period covered (including indirect costs) must be shown as well as the number of person-months or labor hours per year to be devoted to the project, regardless of source of support; and
10) State how projects are related to the proposed effort and indicate degree of overlap.

- **Qualifications:** A discussion of the qualifications of the proposed Principal Investigator and any other key personnel. Include resumes for the Principal Investigator and other key personnel and full curricula vitae for Principal Investigators and consultants. The resumes and curricula vitae shall be attached to the proposal and will not count toward the page limitations.

VOLUME 2: Cost Proposal

The offeror must use the Grants.gov forms (including the Standard Form (SF) Research and Related (R&R) Budget Form) from the application package template associated with the BAA on the Grants.gov web Site located at http://www.grants.gov/. If options are proposed, the cost proposal must provide the pricing information for the option periods; failure to include the proposed costs for the option periods will result in the options not being included in the award. Assume that performance will start no earlier than four (4) months after the date the cost proposal is submitted. A separate Adobe .pdf document should be included in the application that provides appropriate justification and/or supporting documentation for each element of cost proposed.

Part 1: The itemized budget must include the following

- Direct Labor - Individual labor categories or persons, with associated labor hours and unburdened direct labor rates. Provide escalation rates for out years.

  Administrative and clerical labor – Salaries of administrative and clerical staff are normally indirect costs (and included in an indirect cost rate). Direct charging of these costs may be appropriate when a major project requires an extensive amount of administrative or clerical support significantly greater than normal and routine levels of support. Budgets proposing direct charging of administrative or clerical salaries must be supported with a budget justification which adequately describes the major project and the administrative and/or clerical work to be performed.

- Fringe Benefits and Indirect Costs - (i.e., F&A, Overhead, G&A, etc) - The proposal should show the rates and calculation of the costs for each rate category. If the rates have

been approved/negotiated by a Government agency, provide a copy of the memorandum/agreement. If the rates have not been approved/negotiated, provide sufficient detail to enable a determination of allowability, allocability and reasonableness of the allocation bases, and how the rates are calculated. Additional information may be requested, if needed. If composite rates are used, provide the calculations used in deriving the composite rates.

- Travel -The proposed travel cost should include the following for each trip: the purpose of the trip, origin and destination if known, approximate duration, the number of travelers, and the estimated cost per trip must be justified based on the organizations historical average cost per trip or other reasonable basis for estimation. Such estimates and the resultant costs claimed must conform to the applicable Federal cost principals. Offerors may include travel costs for the Principal Investigator to attend the peer reviews described in Section II of this BAA.

- Subawards - Provide a description of the work to be performed by the subrecipients. For each subaward, a detailed cost proposal is required to be submitted by the subrecipient(s). The proposed subawardee's or subrecipient's cost proposal can be provided in a sealed envelope with the recipient's cost proposal or via e-mail directly to both the Program Officer and the business point of contact at the same time the prime proposal is submitted. The e-mail should identify the proposal title, the prime Offeror and that the attached proposal is for either a subcontract or a sub-agreement. A proposal and supporting documentation must be received and reviewed before the Government can complete its cost analysis of the proposal and enter negotiations.

- Consultants - Provide a breakdown of the consultant's hours, the hourly rate proposed, any other proposed consultant costs, a copy of the signed Consulting Agreement or other documentation supporting the proposed consultant rate/cost, and a copy of the consultant's proposed statement of work if it is not already separately identified in the prime contractor's proposal.

- Materials & Supplies - Provide an itemized list of all proposed materials and supplies including quantities, unit prices, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).

- Recipient Acquired Equipment or Facilities - Equipment and/or facilities are normally furnished by the Recipient. If acquisition of equipment and/or facilities is proposed, a justification for the purchase of the items must be provided. Provide an itemized list of all equipment and/or facilities costs and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists). Allowable items normally would be limited to research equipment not already available for the project. General purpose equipment (i.e., equipment not used exclusively for research, scientific or other technical activities, such as personal computers, laptops, office equipment) should not be requested unless they will be used primarily or exclusively for the project. For computer/laptop purchases and other general purpose equipment, if proposed, include a statement indicating how each item of equipment will be integrated into the program or used as an integral part of the research

effort.

- Other Direct Costs - Provide an itemized list of all other proposed other direct costs such as Graduate Assistant tuition, laboratory fees, report and publication costs, and the basis for the estimate (e.g., quotes, prior purchases, catalog price lists).

  NOTE: If the grant proposal is for a conference, workshop or symposium, the funds provided by ONR may be used to pay for food or beverages as a direct cost only in exceptional circumstances. The funds will not be used for food or beverages unless (1) the grant proposal contains a request for such funding that is fully supported factually in accordance with the cost principles of the relevant OMB Circular, and (2) the grants officer determines that the funding is a reasonable, allocable, allowable expense under the relevant cost principles.

- Options - The Base Period of Performance and Option Periods must be priced at the submission of the proposal. Unpriced options will not be included in any resulting award or agreement.

- Fee/Profit - Fee/profit is unallowable under assistance agreements at either the prime or subaward level but may be permitted on any subcontracts issued by the prime awardee.

Part 2 - Cost breakdown by Government fiscal year and task/sub-task corresponding to the same task breakdown in the proposed Statement of Work. When options are contemplated, options must be separately identified and priced by task/subtask.

3. Significant Dates and Times -

Event	Date	Time
White Paper Due Date	1/15/2013	3:00 PM Eastern Standard Time
Notification of White Paper Evaluation*	2/15/2013	
Full Proposal Due Date	4/15/2013	3:00 PM Eastern Standard Time
Notification of Selection: Full Proposals*	5/30/2013	
Awards*	10/1/2013	

**These dates are estimates as of the date of this announcement.*

NOTE: Due to changes in security procedures since September 11, 2001, the time required for hard-copy written materials to be received at the Office of Naval Research has increased. Materials submitted through the U.S. Postal Service, for example, may take seven days or more to be received, even when sent by Express Mail. Thus any hard-copy proposal should be submitted long enough before the deadline established in the solicitation so that it will not be received late and thus be ineligible for award consideration.

4. Submission of Late Proposals -

Any proposal, modification, or revision that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered unless it is received before award is made, the contracting officer determines that accepting the late proposal would not unduly delay the acquisition and:

a. If it was transmitted through an electronic commerce method authorized by the announcement, it was received at the initial point of entry to the Government infrastructure not later than 5:00 P.M. E.S.T. one working day prior to the date specified for receipt of proposals; or
b. There is acceptable evidence to establish that it was received at the Government installation designated for receipt of proposals and was under the Government's control prior to the time set for receipt of proposals; or
c. It was the only proposal received.

However, a late modification of an otherwise timely and successful proposal that makes its terms more favorable to the Government will be considered at any time it is received and may be accepted.

Acceptable evidence to establish the time or receipt at the Government installation includes the time/date stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony or statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the Government office designated for receipt of proposals by the exact time specified in the announcement, and urgent Government requirements preclude amendment of the announcement closing date, the time specified for receipt of proposals will be deemed to be extended to the same time of day specified in the announcement on the first work day on which normal Government processes resume.

The contracting officer must promptly notify any offeror if its proposal, modifications, or revision was received late and must inform the offeror whether its proposal will be considered.

5. Submission of Grant Proposals through Grants.gov

Detailed instructions entitled "Grants.Gov Electronic Application and Submission Information" on how to submit a Grant proposal through Grants.gov are under the Submit Proposals section of the website at http://www.onr.navy.mil/Contracts-Grants/submit-proposal/grants-proposal/grants-gov.aspx

White Papers should not be submitted through the Grants.gov Apply process, but rather should be sent directly to ONR. White Papers should be e-mailed directly to the Technical Point of Contact. White Paper format requirements are found in Section IV, item 2a above.

By completing Block 17, the Grant Applicant is providing the certification on lobbying required

by 32 CFR Part 28. Refer to Section VI, "Award Administration Information" entitled "Certifications" for further information.

For electronic submission of grant full proposals, there are several one-time actions that must be completed in order to submit an application through Grants.gov. These include obtaining a Dun and Bradstreet Data Universal Numbering System (DUNS) number, registering with System for Award Management (SAM), registering with the credential provider, and registering with Grants.gov. See www.grants.gov, specifically www.grants.gov/GetStarted.

Use the Grants.gov Organization Registration Checklist at http://www.grants.gov/applicants/register_your_organization.jsp which will provide guidance through the process. Designating an E-Business Point of Contact (E-Biz POC) and obtaining a special password called 'MPIN' are important steps in the SAM registration process. Applicants who are not registered with SAM.gov and Grants.gov should allow at least 21 days to complete these requirements. The process should be started as soon as possible. Any questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 (1-606-545-5035 for foreign applicants) or support@grants.gov.

Special Notices Relative to Grant Applications to be submitted through Grants.Gov:

All attachments to grant applications submitted through Grants.Gov must be in Adobe Portable Document Format (i.e., .PDF files). Proposals with attachments submitted in word processing, spreadsheet, or any format other than Adobe Portable Document Format will not be considered for award.

Applicants who have registered with Grants.gov are urged to submit their proposals electronically at least three days before the date and time that proposals are due so that they will not be received late and be ineligible for award consideration.

Proposal Receipt Notices:

After a full proposal is submitted through Grants.gov, the Authorized Organization Representative (AOR) will receive a series of three e-mails. You will know that your proposal has reached ONR when the AOR receives e-mail Number 3. You will need the Submission Receipt Number (e-mail Number 1) to track a submission. The three e-mails are:

Number 1 - The applicant will receive a confirmation page upon completing the submission to Grants.gov. This confirmation page is a record of the time and date stamp that is used to determine whether the proposal was submitted.

Number 2 - The applicant will receive an e-mail indicating that the proposal has been validated by Grants.gov within two days of submission (this means that all of the required fields have been completed). After an institution submits an application, Grants.gov generates a submission receipt via email and also sets the application status to "Received." This receipt verifies the Application has been successfully delivered to the Grants.gov system. Next, Grants.gov verifies the

submission is valid by ensuring it does not contain viruses, the opportunity is still open, and the applicant login and applicant DUNS number match. If the submission is valid, Grants.gov generates a submission validation receipt via email and sets the application status to "Validated." If the application is not validated, the application status is set to "Rejected." The system sends a rejection email notification to the institution, and the institution must resubmit the application package. Applicants can track the status of their application by logging in to Grants.gov.

Number 3 - The third notice is an acknowledgement of receipt in e-mail form from ONR within ten days from the proposal due date, if applicable. The e-mail is sent to the authorized representative for the institution. The e-mail for proposals notes that the proposal has been received and provides the assigned tracking number.

6. Address for the Submission of White Papers and Full Proposals for Contracts.

White Papers must be emailed to Laura Worcester at the following email address: laura.worcester@navy.mil. The DVD or CD-ROM of the Full Proposal including all supporting documentation should be sent to the Office of Naval Research at the following addresses:

Felicia Bush	**David Lemmeyer**
Office of Naval Research Attn: Felicia Bush ONR Department Code: 30 875 North Randolph Street Arlington, VA 22203-1995	Office of Naval Research Attn: David Lemmeyer ONR Department Code: 30 875 North Randolph Street Arlington, VA 22203-1995

V. EVALUATION INFORMATION

1. Evaluation Criteria -

Awards under this BAA will be made to proposers on the basis of the evaluation criteria listed below, and program balance to provide overall value to the Government. The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. The Government reserves the right to remove proposers from award consideration should the parties fail to reach agreement on award terms, conditions, and cost/price within a reasonable time, or the proposer fails to timely provide requested additional information. Evaluations will be conducted using the following evaluation criteria. Criteria 1 through 4 are significantly more important than Criterion 5, and Criteria 1 through 4 are of equal value.

1. Overall scientific and technical merits of the proposal;
2. Potential Naval relevance and contributions of the effort to the agency's specific mission.
3. The offeror's capabilities, related experience, facilities, techniques or unique combinations of these which are integral factors for achieving the proposal objectives.
4. The qualifications, capabilities and experience of the proposed Principal Investigator (PI), team leader and key personnel who are critical in achieving the proposal objects, and

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

The degree of importance of cost will increase with the degree of equality of the proposals in relation to the other factors on which selection is to be based, or when the cost is so significantly high as to diminish the value of the proposal's technical superiority to the Government.

The ultimate recommendation for award of proposals is made by ONR's scientific/technical community. Recommended proposals will be forwarded to the contracts department will perform costs analysis prior to any ensuing negotiations. Any notification received from ONR that indicates that the Offeror's full proposal has been recommended, does not ultimately guarantee an award will be made. This notice indicates that the proposal has been selected in accordance with the evaluation criteria above and has been sent to the contracting department to conduct cost analysis, determine the offeror's responsibility, and any take any other relevant steps necessary prior to commencing negotiations with the offeror.

Industry-Academia Partnering - ONR highly encourages partnering among industry and academia with a view toward speeding the incorporation of new science and technology into fielded systems. Proposals that utilize industry-academic partnering which enhances the development of novel S&T advances will be given favorable consideration.

Industry-Government Partnering - ONR highly encourages partnering among industry and Government with a view toward speeding the incorporation of new science and technology into fielded systems. Proposals that utilize industry-Government partnering which enhances the development of novel S&T advances will be given favorable consideration.

2. Commitment to Small Business - (For Contract Awards Only)

The Office of Naval Research is strongly committed to providing meaningful subcontracting opportunities for small businesses, small disadvantaged businesses (SDBs), woman-owned small businesses (WOSBs), historically underutilized business zone (HUBZone) small businesses, veteran-owned small business (VOSBs), service disabled veteran-owned small businesses (SDVOSBs), historically black colleges and universities, and minority institutions and other concerns subject to socioeconomic considerations through its awards.

a.) Subcontracting Plan - For proposed awards to be made as contracts that exceed $650,000, large businesses and non-profits (including educational institutions) shall provide a Subcontracting Plan that contains all elements required by FAR 52.219-9, as supplemented by DFARS 252.219-7003. Small businesses are exempt from this requirement.

The Subcontracting Plan should be submitted as an attachment to the "Technical Proposal Template" and will not be included in the page count. If a company has a Master Subcontracting Plan, as described in FAR 19.701 or a Comprehensive Subcontracting Plan, as described in DFARS 219.702, a copy of the plan shall also be submitted as an attachment to the "Technical Proposal Template."

Plans will be reviewed for adequacy, ensuring that the required information, goals, and assurances

are included. Zero Percent (0%) for goals, or Zero Dollars ($0), or Not Applicable (N/A), are unacceptable. If a subcontracting plan is not submitted with the proposal package or the negotiation of an acceptable subcontracting plan is required, there could be a delay in the issuance of an award. In addition, in accordance with FAR 52.219-9, failure to submit and negotiate a subcontracting plan may make an offeror ineligible for contract award.

Offerors shall propose a plan that ensures small businesses (inclusive of SDBs, WOSBs, HUBZone, VOSBs and SDVOSBs, etc…) will have the maximum practicable opportunity to participate in contract performance consistent with its efficient performance.

As a baseline, offerors shall to the best extent possible propose realistic goals to ensure small business participation in accordance with the current fiscal year subcontracting goals found on the Department of Defense Office of Small Business Program website at: http://www.acq.osd.mil/osbp/ If proposed goals are below the statutory requirements, then the offeror should provide a viable written explanation as to why small businesses are unable to be utilized and what attempts have been taken to ensure that small business were given the opportunity to participate in the effort to the maximum extent practicable.

b.) Small Business Participation Statement -

If subcontracting opportunities exist, all prime Offerors shall submit a Small Business Participation Statement regardless of size in accordance with DFARS 215.304 when receiving a contract for more than the simplified acquisition threshold (i.e., $150,000). All offerors shall provide a statement of the extent of the offeror's commitment in providing meaningful subcontracting opportunities for small businesses and other concerns subject to socioeconomic considerations through its awards and must agree that small businesses, VOSBs, SDVOSBs, HUBZones, SDBs, and WOSBs concerns will have to the maximum practicable opportunity to participate in contract performance consistent with its efficient performance.

NOTE: Small Business Offerors may meet the requirement using work they perform themselves.

This assertion will be reviewed to ensure that it supports this policy by providing meaningful subcontracting opportunities. The statement should be submitted as a part of the proposal package and will not be included in the page count.

3. Options -

The Government will evaluate options for award purposes by adding the total cost for all options to the total cost for the basic requirement. Evaluation of options will not obligate the Government to exercise the options during the period of performance.

4. Evaluation Panel -

Technical and cost proposals submitted under this BAA will be protected from unauthorized disclosure in accordance with FAR 3.104-4 and 15.207. The cognizant Program Officer and other Government scientific experts will perform the evaluation of technical proposals. Restrictive

notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. However, proposal selection and award decisions are solely the responsibility of Government personnel. Each support contractor's employee having access to technical and cost proposals submitted in response to this BAA will be required to sign a non-disclosure statement prior to receipt of any proposal submissions.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements -

• North American Industry Classification System (NAICS) code – The NAICS code for this announcement is "541712" with a small business size standard of "500 employees".

• System for Award Management (SAM): All Offerors submitting proposals or applications must:

1) be registered in the SAM prior to submission;
2) maintain an active SAM registration with current information at all times during which it has an active Federal award or an application under consideration by any agency; and
3) provide its DUNS number in each application or proposal it submits to the agency.

The System for Award Management (SAM) is a free web site that consolidates the capabilities you used to find in CCR/FedReg, ORCA, and EPLS. Future phases of SAM will add the capabilities of other systems used in Federal procurement and awards processes.
SAM may be accessed at https://www.sam.gov/portal/public/SAM/

• Access to your Grant, Cooperative Agreement, Other Transaction and Contract Award

Effective 01 October 2011, hard copies of award/modification documents are no longer mailed to Offerors. All Office of Naval Research (ONR) award/modification documents will be available via the Department of Defense (DoD) Electronic Document Access System (EDA).

EDA is a web-based system that provides secure online access, storage, and retrieval of awards and modifications to DoD employees and vendors.

If you do not currently have access to EDA, complete a self-registration request as a "Vendor" via http://eda.ogden.disa.mil following the steps below:

Click "New User Registration" (from the left Menu)
Click "Begin VENDOR User Registration Process"
Click "EDA Registration Form" under Username/Password (enter the appropriate data)
Complete & Submit Registration form

Allow five (5) business days for your registration to be processed. EDA will notify you by email when your account is approved.

Registration questions may be directed to the EDA help desk toll free at 1-866-618-5988,

Commercial at 801-605-7095, or via email at cscassig@csd.disa.mil (Subject: EDA Assistance)

• Grants:
Grant awards greater than $100,000 require a certification of compliance with a national policy mandate concerning lobbying. Grant applicants shall provide this certification by electronic submission of SF424 (R&R) as a part of the electronic proposal submitted via Grants.gov (complete Block 17). The following certification likewise applies to each cooperative agreement and normal OTA applicant seeking federal assistance funds exceeding $100,000:

CERTIFICATION REGARDING LOBBYING ACTIVITIES

(1) No Federal appropriated funds have been paid or will be paid by or on behalf of the applicant, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the applicant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The applicant shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including sub contracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S.C. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Government research facilities and operational military units are available and should be considered as potential government-furnished equipment/facilities. These facilities and resources are of high value and some are in constant demand by multiple programs. It is unlikely that all facilities would be used for any one specific program. The use of these facilities and resources

will be negotiated as the program unfolds. Offerors submitting proposals for contracts, cooperative agreements and Other Transaction Agreements should indicate in the Technical Proposal Template, Section II, Blocks 8 and 9, which of these facilities are critical for the project's success. Offerors submitting proposals for grants should address the need for government-furnished facilities in their technical proposal.

2. Security Classification

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible. Normally, work done under a grant does not require access to classified material. If it is determined that access to classified information will be required during the performance of an award, a Department of Defense (DD) Form 254 will be attached to the contract; and FAR 52.204-2 - Security Requirements will be incorporated into the contract. The Offeror must clearly identify such need by completing Section II, Block 11, DD 254 – Security Classification Specification, of the Technical Proposal Template.

If it is determined that access to classified information will be required during the performance of an award, a Department of Defense (DD) Form 254 will be attached to the contract; and FAR 52.204-2 – Security Requirements will be incorporated into the contract.

Normally, work done under a grant does not require access to classified material.

3. Use of Animals and Human Subjects in Research

If animals are to be utilized in the research effort proposed, the Offeror must complete a DoD Animal Use Protocol with supporting documentation (copies of AALAC accreditation and/or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. For assistance with submission of animal research related documentation, contact the ONR Animal Use Administrator at (703) 696-4046.

Similarly, for any proposal for research involving human subjects, the Offeror must submit or indicate an intention to submit prior to award: documentation of approval from an Institutional Review Board (IRB); IRB-approved research protocol; IRB-approved informed consent form; proof of completed human research training (e.g., training certificate or institutional verification of training); an application for a DoD-Navy Addendum to the Offeror's DHHS-issued Federal wide Assurance (FWA) or the Offeror's DoD-Navy Addendum. In the event that an exemption criterion under 32 CFR.219.101 (b) is claimed, provide documentation of the determination by the Institutional Review Board (IRB) Chair, IRB vice Chair, designated IRB administrator or official of the human research protection program including the category of exemption and short rationale statement. This documentation must be submitted to the ONR Human Research Protection Official (HRPO), by way of the ONR Program Officer. Information about assurance applications and forms can be obtained by contacting ONR_343_contact@navy.mil. If the research is determined by the IRB to be greater than minimal risk, the Offeror also must provide the name and contact information for the independent medical monitor. For assistance with submission of human subject research related documentation, contact the ONR Human Research Protection

Official at (703) 696-4046.

For contracts and orders, the award and execution of the contract, order, or modification to an existing contract or order serves as notification from the Contracting Officer to the Contractor that the HRPO has approved the assurance as appropriate for the research under the Statement of Work and also that the HRPO has reviewed the protocol and accepted the IRB approval or exemption determination for compliance with the DoD Component policies. See, DFARS 252.235-7004.

4. Recombinant DNA

Proposals which call for experiments using recombinant DNA must include documentation of compliance with Department of Human and Health Services (DHHS) recombinant DNA regulations, approval of the Institutional Biosafety Committee (IBC), and copies of the DHHS Approval of the IBC letter.

5. Use of Arms, Ammunition and Explosives

Safety
The Offeror is required to be in compliance with DoD manual 4145.26-M, *DoD Contractor's Safety Manual for Ammunition and Explosives* if ammunitions and/or explosives are to be utilized under the proposed research effort. (See DFARS 223.370-5 and DFARS 252.223-7002) If ammunitions and/or explosives (A&E) are to be utilized under the proposed research effort, the Government requires a preaward safety survey in accordance with DFARS PGI 223.370-4(C)(iv) entitled *Preaward survey*. The Offeror is solely responsible for contacting the cognizant DCMA office and obtaining a required preaward safety survey before proposal submission. The Offeror should include required preaward safety surveys with proposal submissions.

If the Offeror proposes that the Government provide Government-furnished A&E containing any nitrocellulose-based propellants and/or nitrate ester-based materials (such as nitroglycerin,) or other similar A&E with a tendency to become chemically unstable over time, then NMCARS 5252.223-9000 will also apply to a resulting contract award. (See NMCARS 5223.370-5)

Security
If arms, ammunition and explosives (AA&E) are to be utilized under the proposed research effort, the Government requires a preaward security survey. The Offeror is solely responsible for contacting the cognizant DCMA office and obtaining a required preaward security survey before proposal submission. The Offeror should include a required preaward security survey with proposal submission. (See DoD manual 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition and Explosives*, paragraph C1.3.1.4)

If AA&E are to be utilized under the proposed research effort, the Government may require the Contractor to have perimeter fencing around the place of performance in accordance with DoD 5100.76-M, Appendix 2.

If AA&E are to be utilized under the research effort, the Offeror is required to provide a written

copy of the Offeror's AA&E accountability procedures in accordance with DoD 5100.76-M. If the Offeror is required to provide written AA&E accountability procedures, the Offeror should provide the respective procedures with its proposal submission. See DoD 5100.76-M Appendix 2.12.

6. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S&T and RDT&E communities with use-access to very powerful high performance computing systems. Awardees of ONR contracts, grants, and assistance instruments may be eligible to use HPCMP assets in support of their funded activities if ONR Program Officer approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at http://www.hpcmo.hpc.mil/.

7. Organizational Conflicts of Interest

All Offerors and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any ONR technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the offeror supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5) must be disclosed. The disclosure shall include a description of the action the offeror has taken or proposes to take to avoid, neutralize, or mitigate such conflict. In accordance with FAR 9.503 and without prior approval, a contractor cannot simultaneously be a SETA and a research and development performer. Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award. Additional ONR OCI guidance can be found at http://www.onr.navy.mil/About-ONR/compliance-protections/Organizational-Conflicts-Interest.aspx. If a prospective offeror believes that any conflict of interest exists or may exist (whether organizational or otherwise), the offeror should promptly raise the issue with ONR by sending his/her contact information and a summary of the potential conflict by e-mail to the Business Point of Contact in Section I, item 7 above, before time and effort are expended in preparing a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively avoided, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

8. Project Meetings and Reviews

Individual program reviews between the ONR sponsor and the performer may be held as necessary. Program status reviews may also be held to provide a forum for reviews of the latest results from experiments and any other incremental progress towards the major demonstrations. These meetings will be held at various sites throughout the country. For costing purposes, offerors should assume that 40% of these meetings will be at or near ONR, Arlington VA and 60% at other contractor or government facilities. Interim meetings are likely, but these will be accomplished via

video telephone conferences, telephone conferences, or via web-based collaboration tools.

9. Executive Compensation and First-Tier Subcontract Reporting

The FAR clause 52.204-10, "Reporting Executive Compensation and First-Tier Subcontract Awards," will be used in all procurement contracts valued at $25,000 or more. A similar award term will be used in all grants and cooperative agreements.

10. Military Recruiting On Campus (APPLIES ONLY TO GRANTS)

Military Recruiting on Campus (DoDGARS Part 22.520) applies to domestic U. S. colleges and universities. Appropriate language from 32CFR22.520 Campus access for military recruiting and Reserve Officer Training Corps (ROTC) will be incorporated in all university grant awards.

11. Combating Trafficking in Persons

Appropriate language from FAR Clause 52.222-50 will be incorporated in all awards.

12. Updates of Information regarding Responsibility Matters

FAR clause 52.209-9, Updates of Publicly Available Information Regarding Responsibility Matter, will be included in all contracts valued at $500,000 where the contractor has current active Federal contracts and grants with total value greater than $10,000,000.

13. Employment Eligibility Verification

As per FAR 22.1802, recipients of FAR-based procurement contracts must enroll as Federal Contractors in E-verify and use E-verify to verify employment eligibility of all employees assigned to the award. All resultant contracts from this solicitation will include FAR 52.222-54, "Employment Eligibility Verification." This clause will not be included in grants, cooperative agreements, or Other Transactions.

14. Intellectual Property

Offerors responding to this BAA must submit a separate list of all technical data or computer software that will be furnished to the Government with other than unlimited rights. The Government will assume unlimited rights if offerors fail to identify any intellectual property restrictions in their proposals. Include in this section all proprietary claims to results, prototypes, and/or deliverables. If no restrictions are intended, then the offeror should state "NONE."