

ONR BAA Announcement # 07-037



BROAD AGENCY ANNOUNCEMENT (BAA)

INTRODUCTION:

This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Federal Acquisition Regulation (FAR) 6.102(d)(2) and the Department of Defense Grants and Agreements (DoDGARS) Subpart 22.315(a). A formal Request for Proposals (RFP), solicitation, and/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 select for award all some or none of the proposals in response to 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.

Awards may take the form of contracts, grants, cooperative agreements (CAs), or other transactions (OTs) agreements, but no award will be made in the form of a Section 845 agreement. Proposals submitted as a result of this announcement thus may fall under the purview of either the Federal Acquisition Regulation (FAR) or the Department of Defense Grant and Agreement Regulations (DODGARS).

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 07-037

5. Response Date -

White Papers Due: 03 Aug 2007

Full Proposals Due: 14 Sep 2007

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 Marine Corps 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 six Thrust Areas each representing operational functions critical to Expeditionary Warfare. 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.

Brief descriptions of ongoing efforts within the Expeditionary Maneuver Warfare thrust areas are posted at http://www.onr.navy.mil/sci_tech/30/. Other references describing concepts for Marine Corps future warfighting include MC Strategy 21, Expeditionary Maneuver Warfare and the Expeditionary Maneuver Warfare Capability List, Science & Technology Strategic Plan, and Distributed Operations that can be found at <https://www.mccdc.usmc.mil/>.

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

1. Command, Control, Communications, and Computers (C4)

General background information:

The S&T investment in Command and Control is focused in three main areas: (1) implementing the FORCENet concept and its Marine Corps instantiation, Marine Air Ground Task Force Command and Control (MAGTF C2), with technologies to securely exchange data and information with and among distributed tactical forces; (2) developing decision support systems that enable tactical warfighters to take advantage of the FORCENet and MAGTF C2 and tactically extend Net-Enabled Command and Control (NECC) for shared situational awareness; and (3) providing effective position location determination and combat identification of enemy combatants, friendly forces, and non-combatants especially in restricted communications environments. S&T investment is needed in all three of these areas to enable the realization of the USMC Distributed Operations.

The Vision: Through a seamless information architecture, future comprehensive command and coordination will be characterized by increased freedom of action and enhanced access to all distributed elements of national power through comprehensive interconnected networks.

Specific areas of interest for this BAA:

1. Basic research in materials and fabrication that has potential to lead to reduced size, weight, and power consumption components for radio frequency distribution systems in military VHF and UHF bands (30-512 MHz). Of particular interest are matching networks, channelizers, circulators, linear amplifiers, filters and electromagnetic interference architectures. Power handling ability and low-noise operation are also important factors.
2. Applied research in the areas of:
 - a. Lightweight, efficient, distributed authentication of mobile wireless tactical communications hosts and gateways; and lightweight, efficient, distributed protection of data in mobile wireless tactical networks. ONR has particular interest in proposed solutions that show a plausible path toward National Security Administration certification; have low communications overhead; are quickly configurable; and can rely on decentralized authority for validation.
 - b. Free space optical communications technologies that can operate in deteriorating and marginal atmospheric conditions with ranges up to 25 miles. Link robustness, range, and operating in adverse conditions are considered much more important than raw data throughput. Potentially low cost/complexity/weight/volume/power consumption solutions that permit optical communications networking are especially of interest. Air-to-

ground, ground-to-air, ground-to-ground and air-to-air and hybrid RF communications systems are envisioned to be applications.

3. One-year applied research and advanced technology development in the areas of:
 - a. Decentralized autonomous policy-based network management.
 - b. Auto-configuration and continuous network adaptation.
 - c. Mobile security architectures.
 - d. Middleware-enabled user application control.
 - e. Interoperability among autonomous routing and security domains.
 - f. Link diversification among multiple heterogeneous, line of sight (LOS) and satellite communication (SATCOM) facilities and load balancing.
 - g. Communications network loss and disruption tolerance.

2. Intelligence, Surveillance, & Reconnaissance (ISR)

General background information:

The S&T investment in intelligence, surveillance and reconnaissance is focused on providing real-time actionable intelligence for small unit operations (to include Distributed Operations) at the tactical edge. Specific focus areas are (1) advanced tactical sensor technologies; (2) agile tactical sensor nets; (3) tagging, tracking and locating; (4) exposing hidden enemy networks; (5) dynamic threat mapping; and (6) mission-aware agile sensor fields in support of distributed operations.

The Vision: Asymmetric and irregular warfare tactics negate our conventional combined arms superiority. Enemies blend in with locals in complex (often urban) terrain. Advanced, agile, netted sensors that can provide higher information content about entities and entity associations (e.g., identification, geolocation, intent) are needed. Tagging, tracking and locating technologies provide a way to disambiguate entities of interest from clutter, classify entities and learn entity associations. The capability to expose, understand and anticipate the underlying network of the irregular actors (e.g., social, command and control, communication, facilities, logistics, financial) that support hostile activity is required in order to defeat this enemy. Future ISR systems must provide realtime tactical decision making.

Specific areas of interest for this BAA:

1. Advanced Tactical Sensor Technologies.

A. Integrated sensor/processor unit

Objective:

Produce tactical solar/battery powered tactical sensors capable of mapping signatures to entities. Signal processing done at the sensor node decreases communications bandwidth requirements for the sensor network. This allows for the identification of specific entities at the tactical level.

Discussion:

The availability and affordability of advanced energy efficient processors potentially enables complex signal processing to be performed at the sensor node. These sensor/processor units must have small size, low weight and low power consumption (SWAP) in order to be relevant to tactical units. It is intended that these sensors would be left unattended for weeks or months.

Sensor modalities of interest are:

- a) RF
- b) Acoustic
- c) EO/IR

These sensors must be able to act independently or be capable of integrating into a sensor network capable of fusing and relaying data. The sensor needs to be able to capture a unique signature of detected entities.

Other desired capabilities (Goal)

- a) Ability to perform geolocation on detected entity
- b) Ability to track entity
- c) NSA Type I encryption

B. Remote biometric capture

Objective 1:

Provide capability to capture iris biometric data with increased standoff distance for moving entities of interest. Greater standoff distances than what is currently possible are desired.

Objective 2:

Provide means to capture face recognition biometric data under night time conditions at a standoff distance of at least 25 meters. Illumination can be used provided it is not visually detectable (ultra-violet [UV] or infrared [IR]).

Discussion:

The ability to quickly and accurately obtain an accurate biometric on an individual will make a difference by enabling a positive identification of a suspect entity. Entity associations are also enabled, enabling human networks to be derived.

2. Agile Tactical Sensor Nets

- Fusion of voices/acoustic to faces/imagery

Objective:

Be able to match a voice track from an acoustic sensor to a specific person from imagery. This multi-modal biometric identification of a person enables human networks diagrams to be derived across multiple modalities. The desired capability should also provide multi-modal context of the messages (e.g., is the person gesturing, smiling, etc.). Acoustic sensor and EO/IR camera may be on different platforms which may be mobile or stationary. The offeror may assume that a capability exists to separate acoustic sources and reconstruct conversations. The offeror may also assume that all the acoustic and EO-IR data streams are time synchronized. The offeror may not assume the existence of intelligent video algorithms capable of inferring speech or interpreting expression.

Discussion:

This work will leverage ongoing work in isolating speakers in clutter. The long range goal is to enable the fusion of human networks derived from audio files with human networks derived from imagery. The matching of a sound track to a video also provides a richer context message. The technical approach should consider multi-sensor, multi-modal processing for robust person localization, tracking and identification under constrained conditions (acoustic noise, visual occlusion, non-frontality, illumination variation), body expression at various scales (body movements, gestures and postures), and multi-modal emotion identification by facial expression analysis and emotional voice classification.

3. Tagging, Tracking, and Locating Technologies/Demonstrations

- A. UAV payload for detecting optical tags

Objective:

Be able to detect the presence of numerous optical tags dispersed over a wide area from a UAV platform (UAV Tier II (threshold) / UAV Tier I (Goal)) and provide precise geolocation of the tags.

Discussion:

Optical taggants phosphoresce in a certain wavelength when illuminated/interrogated by a different wavelength. Taggants can be interrogated by laser, UV or infrared sources and will phosphoresce in UV, IR, Near Infrared (NIR), and Short Wavelength Infrared (SWIR). A multi-spectral (tunable) interrogator/ detector are preferred.

- B. UAV payload for reading dynamic optical tags (DOTS)

Objective:

Be able to extract mega/giga-bytes of data from a sensor with an integrated dynamic optical tag using a Tier-2 UAV interrogator payload.

Discussion:

Dynamic optical tags could potentially be used to extract information from smart sensors deployed in hostile areas. DOT technology enables the sensor to quietly store information until interrogated by a laser. A capability such as a Tier-2 UAV interrogator payload is needed to extract valuable information in a tactically relevant manner from very large standoff distances.

C. Exploitation of Wide Area Surveillance Data with Advanced Processors

Objective:

Be able to translate wide area surveillance data into actionable intelligence and provide more accurate asymmetric threat forecast than currently possible.

Discussion:

Specific desired capabilities include:

- Automated object identification and geolocation from imagery sources such as Angle Fire and Constant Hawk
- Automated and near real time tracking of all movers
- Track/object classification based on deviations from normal, movements of interest or proximity to other entities of interest.

Tools may be developed separately. Inferencing based on the output of multiple analysis algorithms described above should also be considered. Developed capabilities should be able real-time event forecasts in addition to forensic investigations.

4. Exposing Hidden Enemy Networks

A. Behavior Anticipation.

Objective:

Provide innovative approaches for combining the output of space/time feature to outcome statistical models with techniques for probabilistic forecasting of behaviors of interest that considers open source information in addition to conventional intelligence data sources.

Discussion:

The game changer in irregular warfare is gaining the capability to model, predict and stimulate decisions of interest to order to anticipate or influence behaviors of interest. Modeling in the complex urban environment must leverage all available data sources and prior knowledge including derived patterns of normal and dynamic behaviors. The techniques involved in establishing causal feature to behavior relationships include linear correlation, discrete choice modeling, statistical causality and linear structural equations. The techniques leveraged in anticipating events include Bayesian belief nets and Markov Hidden Models. The current research objective is to combine the techniques so that intent can be predicted based on observations of statistically derived causal features. Prior knowledge can be considered only if it is readily available.

B. Mapping open source data to space and time features for prediction of enemy activity

Objective:

Create a “human terrain map” from web-logs (blogs) and other open sources. Develop techniques to aggregate entities to social networks whose activity can be correlated in space and time to events or behaviors of interest. Provide a toolset to expose enemy networks from open source data and for threat forecasting.

Discussion:

The Internet provides a unique new environment for observing, characterizing and modeling attitude dynamics. Blogs are used as online diaries, containing an ongoing commentary of the author's candid responses to local and international events, often including contributed comments and links to other blogs. This data provides a new resource for measuring opinion formation and diffusion. Meeting the objectives described above will provide new methods for understanding the origin and growth of networks of interest and potentially new techniques for exposing enemy networks and anticipating behaviors of interest.

5. Dynamic Threat Mapping: Know the Enemy

Objective:

Combine fundamental social modeling and observed trends with statistical threat mapping to generate more accurate dynamic 2-D threat maps.

Discussion:

Technical approaches are sought to enable the development of techniques to raise or lower statistically derived dynamic 2-D threat surfaces based on cultural models and strategic trends. Algorithms development is needed to support the following analysis tasks:

- Identify, compute and spatially represent strategic, wide area trends, factors that may make areas generally safer or less safe and factors that may affect responses to own action. Strategic trends to consider include economic activity, polling data, government actions, recurring news themes, etc.
- Identify and spatially represent time in-variant but spatially correlated factors that may make areas generally safer or less safe and factors that may affect responses to own action. Time in-variant factors may include cultural models including motivations, core values and social structures.
- Adjust statistically determined threat surfaces based on time in-variant but spatially dependent cultural models and based on time/space dependent strategic wide area trends.
- Translation of own force actions into changes in strategic trends and dependent threat surfaces.

6. Mission Aware Agile Sensor Fields

Objective:

Development of agile sensors fields that provide near real time decision support to distributed operations.

Discussion:

Sensor fields capable of supporting the rapid decision processes notionally required by the emerging distributed operations concept do not exist today. Netted sensor layers (strategic to tactical) are required that can produce a continuum of support in near real time to agile low level tactical units. Strategies for vertical and horizontal sensor cooperative behaviors are needed in order to provide mission aware support. Study and modeling efforts should consider tactical (fixed & moving) and strategic sensor assets when demonstrating design concepts and design viability.

3. Force Protection

General background information:

The S&T investment in Force Protection is intended to prevent or mitigate hostile actions against personnel, facilities, and equipment. These actions conserve the forces' fighting potential so it can be applied at the decisive time and place. The Force Protection Thrust is defined to contain technologies relating to the following focus areas: defeat of explosive hazards (landmines and improvised explosive devices); counter-rocket, artillery, mortars, rocket propelled grenades and snipers; personnel protective equipment; and physical and installation security.

The Vision: Our vision is to provide increased protection to the Marine and Navy forces operating in an expeditionary environment by preventing, detecting, mitigating or defeating known or anticipated threats. The investment is intended to provide increased survivability across the spectrum of conflict.

Specific areas of interest for this BAA:

1. Mine countermeasures and counter-improvised explosive devices should emphasize scientific concepts that can be applied to the detection, neutralization, destruction and mitigation of the effects of these devices, and to the prediction of the occurrence or potential for occurrence of IED events. Classes of IEDs that are of interest include stationary explosive devices (either exposed, buried, or concealed), mobile explosive devices such as car or truck bombs, and explosive devices that may be carried by humans, animals, or other normally innocuous transportation methods. Both fully assembled devices and components in storage or assembly factories are of concern.
2. Counter-rocket, artillery, mortars, rocket propelled grenades and snipers should focus on improved sensing and warning of targeting or the incoming threats, technologies that can intercept or defeat incoming threats, and technologies to enhance protection of expeditionary shelters, personnel, and equipment.
3. Personnel protective equipment should focus on lightening the load through advanced ballistic materials and physics and mathematical-based human models and surrogates for analysis of injury effects.
4. Physical and installation security should focus on enhanced physical security of individuals and facilities, hardened expeditionary structures and control points, and facility security systems (including biometrics, portal devices and other screening technologies). This may also include counter-surveillance technologies, covert technologies to rapidly facilitate kidnapping recovery, identification of friend and foe technologies.

4. Logistics

General background information:

The S&T investment in logistics emphasizes the research and development of new technologies pertinent to the following three aspects of logistics: (1) providing comprehensive asset visibility, (2) optimizing asset transport/delivery (3) ensuring sustainment of operations by enhancing the self-sufficiency of operational units.

The Vision: Marines of the future, operating as distributed forces supported from the sea, will benefit from a precisely tailored level of logistic sustainment from sea-based platforms to rapidly maneuvering forces ashore. Logistic planning and delivery systems of the future will be both more responsive and flexible, enabling them to keep pace with rapidly changing operational scenarios. Likewise, the commodities that are delivered will provide more operational value per unit weight in order to enhance both self sufficiency and operational maneuverability. Finally, operational units will benefit from technologies that permit them to safely capitalize on the opportunistic local availability of logistic commodities such as fuel and water.

Specific areas of interest for this BAA:

1. Lightweight Electrical Energy for Dismounted Marine Squads or Platoons:

a. Advanced development of a multi-fuel lightweight, quiet, 250 watt prototype battery charger powered (primarily) by unmodified JP-8 logistic fuel. Possible concepts might include high efficiency thermo-electrics or external combustion engines. Internal combustion engines and turbines may also be considered provided that reasonable fuel versatility and quieting can be achieved. A successful prototype would be capable of charging a useful variety of current military rechargeable batteries and would likely constitute an optimal tradeoff between desirable attributes such as fuel versatility, energy conversion efficiency, power-to-weight ratio, simplicity, reliability and quiet operation. The effort would culminate in the delivery and testing of two prototype units.

b. Basic research toward novel concepts for high specific energy metal-air primary batteries: The intent is pursue novel electrochemical concepts that could conceivably lead to fielding of a battery with significantly more specific energy (watt-hrs/kg) than military zinc-air batteries currently in service. An increase in specific power (watts/kg) over existing zinc-air batteries would also be desirable, but less important.

c. Basic or applied research toward lightweight electrochemical capacitors: Novel electrochemical concepts are sought for capacitors that enable high specific energy (but low specific power) sources to operate high peak power, but low duty cycle loads, such as radio transmitters. The intent of the research would be to enhance the specific capacity (minimize weight) of capacitors functioning as buffers in lightweight hybrid power systems where the weight of the power source has been reduced to the point where it is incapable of meeting peak momentary power demands without an intermediate buffer.

2. Advanced Development and Demonstration of a Portable Fuel Analyzer: The intent is to provide highly mobile small combat units with a hand-held capability to perform rapid analysis of locally available or captured fuel. In addition to determining the fuel type and general suitability for use, the analysis should also be capable of detecting a reasonable

assortment of locally available adulterants that might be used to sabotage hastily abandoned fuel. The device would ideally not require more than an hour of specialized training. If necessary, remote analysis of radio transmitted spectra would be permissible, provided it could be performed in near real-time. The effort would culminate in field testing of several prototype units.

3. Applied Research/Advanced Development of Alternative Human Load Carrying Systems: Novel prototype devices are sought that minimize the adverse ergonomic consequences of human transport of heavy loads. The intent is to reduce the forces on human joints while also reducing human energy expenditure when transporting the contents of a typical military backpack. Ideally devices would not significantly compromise human mobility (over existing backpacks), although some sacrifice in mobility might be acceptable provided the device could be easily jettisoned when necessary. The effort would culminate in field testing of several prototype units.

4. Advanced Development of Novel Aerial Casualty Evacuation Concepts for Distributed Operations: Novel concepts are sought that would enable rapid, but gentle, aerial casualty evacuation from Marine squads or platoons operating deep within hostile territory. The capability would be intended for situations when conventional helicopter evacuation would be either too dangerous or would compromise the location of the small unit. The hardware necessary to implement the concept could conceivably be precision air-dropped via JPADS or some other means, so that the small unit wouldn't necessarily be burdened with the additional logistic load. The effort would culminate in a simulated field evacuation of an appropriately instrumented dummy.

5. Human Performance/Training & Education

General background information:

The S&T investment in Human Performance Training and Education (HPT&E) is intended to enhance future Marine Corps capabilities by developing technologies, which seek to close human performance gaps utilizing training and education technologies as well as physiological and nutritional solutions. The focus shall be to prepare Marines for distributed/asymmetric warfare— from fire teams through the MAGTF level – in order to exploit emerging simulation and collaborative training technologies and enablers, which permit integration of live, virtual, and constructive simulations for training.

The Vision: HPT&E seeks to enhance the combat efficiency of the U.S. Marine Corps through the development of technology enablers. HPT&E is based on the perspective that the Marines and their supporting elements – gear, weaponry and information – must be addressed as an integrated system¹. HPT&E S&T efforts are predicated on the principal hypothesis that success in combat is optimized by application of innovative technologies, techniques and methodologies across a comprehensive range of Warfighting domains. The ultimate product of the HPT&E vision is a Marine and unit optimized and prepared for complex operations-- a scalable Marine infantry unit, acting in concert with the commander's intent, exercising the initiative to act independently and/or as part of a task-organized team.

Specific areas of interest for this BAA:

1. Command Post Information Integration - Current Marine Corps Command Posts are overwhelmed with information overload, leading to poor SA, poor decision-making and the inability to share and process important relevant information to seniors or subordinates. With the increase in distributed/asymmetric operations, this problem may increase significantly. Therefore, establishing and validating quantitative benchmarks for operational perceptual and decision-making performance are necessary. Also, key information and data exchange strategies, including both hardware and software infrastructures and adaptive, technological prototypes, are needed to facilitate efficient and effective sharing and distribution of information and Situation Awareness (SA) attainment, and understanding of contributing operational factors (e.g., sensor data quality, stress, fatigue, operational metrics, etc). Key metrics include increased cognitive processing in the combat environment by greater than 50%.

2. Real-time Cognitive/Physiological Monitoring and Modeling in the Field - monitoring the physiological and cognitive status of individuals in the field could be a valuable asset for the allocation of labor and successful completion of mission requirements, particularly during prolonged missions in dynamic/asymmetric combat environments. Innovative methods and technologies to facilitate such monitoring are needed, as well as the need to demonstrate such using relevant distributed operations tasks. Implicit is the need for a thorough understanding of such tasks, including identifying and modeling functional and physiological indicators of individual and team cognition and performance via quantifiable operational metrics. Also important is the need for developing strategies for mitigating the adverse effects of sleep deprivation, fatigue, extreme heat and cold, high altitude, ergonomic load, information overload, emotional stressors, and other relevant factors in order to enable future Marines to perform at a level an order of magnitude greater than possible today (e.g., physiological and physical load modeling). The application of these tools should include fatigue models that address human performance limits for tasks requiring substantial physical exertion.

3. Ergonomic and Physiologic Optimization Tools - Strict Ergonomic and Physiologic rules dictate how much 'power' an Infantryman can produce in order to physically propel himself, cognitively prepare himself, and holistically sustain himself under the rigors of extended combat. The applied sciences of human factors and ergonomics offer powerful tools for optimizing physical and cognitive performance and the interactive effects among brain, body, and combat gear. These tools have yet to be fully harnessed to the challenge of optimizing the Infantryman. In addition, models are needed that quantify the power production potential of the individual Infantryman and relate that potential to time-to-failure on military tasks taking into account the modifying effects of environmental conditions. Thus, a suite of tools and techniques based on merging human factors and ergonomics with the engineering power of advanced anthropometric, behavioral and cognitive modeling and simulation is a necessity for optimized performance in distributed/asynchronous combat missions. This includes tools that enable rapid and simultaneous prototyping of multiple technology solutions to a desired system/component requirement level; include system specifications and form factor analyses, bounded by the

multi-factor aspects of the Marine System and small unit teams, to ensure a smooth, integrated capability; and enable the attainment/maintenance of physiological readiness before, during and after missions.

4. Culture, Language, Ethics, and Values Non-kinetic Training Techniques – USMC lacks tools and techniques to train critical aspects of operations that do not include the use of lethal force. Training technologies and techniques are needed to teach cultural awareness and basic language skills. USMC core values and ethics are well defined, but tools and techniques are needed to train for situations in which their application may be ambiguous, stressful, and conflicting with Tactics, Techniques, and Procedures (TTPs). These tools must be compatible with the Deployable Virtual Training Environment (DVTE) family of applications.

The Goal: The goal of the Human Performance (HP) Focus Area is the optimization of individual and team performance in distributed/asymmetric combat environments using a range of solutions, scaleable across all leadership levels, elements of the MAGTF, and command echelons. HP places dual emphasis on understanding Warfighter capabilities and limitations as they apply to the combat arena by expanding the former and mitigating the latter. The goal of the Training & Education (T&E) Focus Area is to provide technologies, which support the fundamental Knowledge, Skills and Abilities (KSAs) that make up the complete Warfighter. T&E includes a continuum of methods that support combat effectiveness, from basic knowledge and skills acquisition, to consolidation in mission-specific, scenario-based training, to targeted education in specialties such as critical thinking to prepare for complex, ambiguous combat conditions (“Train for certainty...educate for uncertainty”). Optimized T&E is the edge that enables Marines to respond quickly and to “think on their feet.”

6. Maneuver

General background information:

The Maneuver Thrust Area develops advanced technologies to increase the capabilities and effectiveness of the Marine Corps Air Ground Task Force (MAGTF) and aids in the execution of the Global War on Terrorism. Innovative technologies are pursued that address the entire fleet of USMC ground assets in the areas of survivability, mobility, fuel efficiency and unmanned systems. Specifically, there is interest in technologies in the following areas: (1) Advanced power plants, drive trains, and suspensions, (2) Advanced materials and survivability technology to enhance the performance and survivability of combat vehicles, and (3) Advanced robotic systems.

The Vision: Marines 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, Marines will maneuver utilizing a family of highly mobile and survivable combat and tactical vehicles.

Specific areas of interest for this BAA:

1. Develop technologies to improve current vehicles and support a new family of vehicles that are lighter in weight, more fuel efficient, and more capable of being effectively transported by air from the seabase ashore. Advanced propulsion, drive trains, and suspensions to improve performance over rough terrain are required to enable greater agility enhanced by speed and mobility.

Of particular interest is the application of an advanced suspension for the USMC Light Armored Vehicle (LAV). Advanced suspension technologies include, but are not limited to, magnetorheological, compressible fluid, electromagnetic, and rack-and-pinion technologies, to name a few. The intention is to improve vehicle ride quality, incorporate ride height adjustment, load leveling and other high performance capabilities. Suspension technologies applicable to other vehicles with weight ranges from 20,000 to 40,000 lbs. are also of interest.

Develop technologies relative to infinitely variable transmissions to improve fuel efficiency, reduce weight and volume, reduce complexity, and be cost affordable specifically for wheeled vehicles in the HMMWV class and for future vehicles in the 10,000 to 30,000 lb. range.

Develop technologies to improve fuel efficiency and reduce fuel consumption for diesel powered wheeled vehicles to include carburetion, turbo charging improvements, etc.

Develop technologies to improve crash avoidance for military vehicles in environments such as fog, night, white out, stealth, and sandstorm conditions, and during convoy operations.

2. Develop technologies to improve the survivability of both current and future tactical and combat vehicles through the use of innovative passive and active technologies.

Develop combat / tactical vehicle seating systems with shock mitigating characteristics to reduce the incidence or severity of injuries during mine blast or IED events. Innovative seat restraint systems which allow occupants rapid ingress / egress, good visibility, and low probability of fouling on body armor or other combat equipment is of special interest.

3. Develop technologies for robotics, teleoperation, autonomous operation, machine vision, and related means for taking the human out of direct involvement in hazardous and exceptionally arduous missions.

7. Firepower

General background information:

The S&T investment in fires is focused in five areas: (1) target detection, (2) advanced weapons systems, (3) munitions and fuses, (4) less lethal fires alternatives, and (5) the development of directed-energy weapons.

The Vision: Marines of the future will be focused on seamlessly applying Naval and Joint fires using a universal spotter concept enabled by the shared situational awareness afforded by the netted battlespace. They will also have an enhanced capability to apply scalable lethal and non-lethal effects with great precision, resulting in less collateral damage and less fratricide.

Specific areas of interest for this BAA:

1. Location and Rate Sensor Technologies: Research to enable development of miniature sensors that would be suitable for diverse applications such as hand-held target and own position location systems, gun-mounted fire control systems, and within inertial navigation systems of guided projectiles that must survive launch accelerations up to 40k Gs. Sensors must be uninfluenced by urban environments with particular concern for magnetic field perturbations. Sensors must be of compatible size to be housed within 2 in³ and smaller inertial measurement units; therefore sensors sized less than 0.2 in³ are desired. Performance goals include \leq 1-mil accuracy in heading and attitude determination, 1-degree/hr bias stability, and a dynamic rate range of ± 1440 deg/sec. Research means to achieve auto-alignment/calibration within 30 seconds. Research means to achieve performance while moving and in the presence of platform vibration whether thru active cancellation and or isolation.
2. Wind Sensor Technologies: Research technologies to covertly measure wind speed and direction in order to account and correct for their influence on the ballistic flight of munitions. Form factor and mass should be suitable for sniper rifle mounting with a means to cue the gunner to adjust the aim point to account for subsequent wind forces on in-flight direct and indirect munition flight paths. Sensor should be ruggedized for integration within fire control units of larger caliber weapons such as machine-guns, mortar launchers, and howitzers. Wind speed and direction data is needed for small arms direct fire to 2,000 m, minor caliber direct fire to 5,000 m and indirect fire altitudes up to 10,000 m. Must be able to take measurements at specified range gates.
3. Warhead Enhancement Technologies: Research technologies to control the effective yield and/or lethal radius via pre-flight programmable function – scaleable effect munitions. Research reactive materials and or other warhead improvements and capability enhancements. Research means to improve insensitivity of warheads. Research means to extend the range of 81 mm and 60 mm mortar munitions by at least 30% over current effective ranges. Research methods to develop low-cost precision guidance in mortar munitions that could allow potential use in urban environments. Research methods to increase the Effective Casualty Radius of 60 mm and 81 mm mortar munitions. Research ability to breach walls with shoulder launch warhead - desired breach must be 39" diameter

with two rounds (threshold), one round (objective), in a 12" triple brick wall (threshold), 8" double reinforced concrete wall (cutting rebar) (objective). Warhead must be able to be fired from confined/enclosed space and may be fired from SMAW launcher or inexpensive disposable launcher that can be rendered useless after firing.

4. Lighten the load technologies: Research technologies to develop a lightweight firearm with a maximum effective range of 500 m that takes advantage of caseless ammunition technology and is at least 50% lighter than the M4. Research sound and flash suppression technologies that do not affect range or ballistics of the projectile.

7. Point(s) of Contact -

Any questions regarding this solicitation must be provided to the Science and Technology Point of Contact and/or Business Point of Contact listed in this solicitation. Questions must be submitted by 3:00 p.m. Eastern Time on 31 JULY 2007. Questions after this date and time may not be answered and the due date for submission of the proposals will not be extended.

** Important Notices Regarding Questions**

- All Questions shall be submitted in writing by electronic mail.
- Questions and responses will be posted on the [ONR web site at www.onr.navy.mil](http://www.onr.navy.mil). No e-mail response will be provided.
- Questions presented by telephone call, fax message, or other means will not be responded to.
- There will be no meetings between potential offerors and ONR personnel.
- Questions regarding full proposals must be submitted by 3:00 p.m. Eastern Time on [Monday, 10 September 2007](#). Questions after this date and time may not be answered and the due date for submission of the proposals will not be extended.

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

Science and Technology Point of Contact:

Point of Contact Name: Ms. Laura Worcester

Point of Contact Occupation Title: Deputy, Programming, Planning and Operations

Department Title: Expeditionary Maneuver Warfare & Combating Terrorism S&T
Department

Department Code: ONR 30

Address: Office of Naval Research
One Liberty Center, OLC 1163
875 N. Randolph St., Suite 1425
Arlington, VA 22203-1995

E-mail address: laura.worcester@navy.mil

Questions of a *business nature* shall be directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:

Point of Contact Name: Tia Belton
Point of Contact Occupation Title: Contract Specialist
Division Title: Contract & Grant Awards, Management
Division Code: Code ONR 0253
Address: Office of Naval Research
One Liberty Center, OLC 1263A
875 N. Randolph St., Suite 1425
Arlington, VA 22203-1995
Email Address: tia.belton@navy.mil

8. Instrument Type(s) -

It is anticipated that awards may take the form of contracts, grants, cooperative agreements, and non-Section 845 other transaction agreements, as appropriate.

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

12.300

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

DOD Basic and Applied Scientific Research

II. AWARD INFORMATION

Total amount of funding available: ~ \$30M spread over FY08, 09 and 10.

Anticipated average Award Value: \$500k to \$3M

Period of Performance: Up to 36 months

Funding Type: Research and Development Funding of Budget Activity 1 (Basic Research), Budget Activity 2 (Applied Research), and Budget Activity 3 (Advanced Technology Development) is available for this effort.

III. ELIGIBILITY INFORMATION

All responsible sources may submit a proposal, which shall be considered by the Agency. Historically Black Colleges and Universities (HBCU) and Minority Institutions (MI) 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 due to the impracticality of reserving discrete or severable areas of this technology for exclusive competition among these entities.

Foreign-owned and based firms will be considered for award under this Announcement in accordance with FAR 25, FAR 35, and DFARS 225. Foreign offerors, or proposed Foreign team or subcontract participants, must consider and address, in writing, any and all relevant import or export rules, regulations, law, and guidance (i.e., FAR, DFARS, ITAR, etc.) that may impact the offeror's ability to perform the required effort.

Independent organizations and teams are encouraged to submit proposals in any or 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.

For purposes of this announcement, please note that Government Entities are encouraged to participate in industry-led teams under this BAA and team with other public or private organizations, as appropriate. Federal Funded Research and Development Centers (FFRDCs) may also participate in teams under this BAA, unless otherwise restricted under their agreements with sponsoring agencies.

Note: Funding for Government entities and/or FFRDCs will be provided separately from any resultant award. Funding will transferred from ONR directly to the Government entity and/or FFRDC.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process -

White Papers are required prior to submitting a Full Proposal - The due date for White Papers is no later than 3 p.m. (Eastern Time) on 8/3/2007. Initial Navy evaluations of the White Papers will be issued via E-mail notification on or about 8/17/2007. 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.

Full Proposals - The due date for receipt of Full Proposals is 3 p.m. (Eastern Time) on 9/14/2007. It is anticipated that final selections will be made by 9/28/2007. Proposals received after the published due date may be considered for funding 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 -

The Proposals submitted under this BAA are expected to be unclassified. However confidential/classified proposals are permitted. Classified proposals must be submitted directly to the Technical Point of Contact identified in Section I, Paragraph 7 of this BAA. Contracts or other instruments resulting from a classified proposal will be unclassified, so an unclassified Statement of Work must accompany any classified proposal. The Proposal submissions will be protected from unauthorized disclosure in accordance with FAR 15.207, applicable law, and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

White Paper Format

- Paper Size – 8.5 x 11 inch paper
- Margins – 1” inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – No more than six (6) single-sided pages (excluding cover page and resumes). White Papers exceeding the page limit may not be evaluated.
- Copies – one (1) electronic copy in Microsoft® Word or PDF format submitted via E-mail.

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

- Paper Size – 8.5 x 11 inch paper
- Margins – 1” inch
- Spacing – single or double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – Volume 1 is limited to no more than 39 pages. Volume 2 has no page limitations. Limitations within sections of the Technical Proposal are indicated in the individual descriptions shown below. The cover page, table of contents, and resumes are excluded from the page limitations. Full Proposals exceeding the page limit may not be evaluated.
- Copies – one (1) original, 4 copies and one electronic copy on a 3.5” Diskette or CD-ROM (in Microsoft® Word or Excel 97 compatible or .PDF format).

White Paper Content

- **Cover Page** – The Cover Page shall be labeled “PROPOSAL WHITE PAPER” and shall include the BAA number, proposed title, relevant Thrust Area within this BAA, and the Offeror’s administrative and technical points of contact along with their telephone numbers, facsimile numbers, and Internet addresses. The cover page shall be signed by an authorized officer.
- **Technical Concept** – A three (3) 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.
- **Programmatic Section** - A one (1) page programmatic section that includes milestones and a timetable.
- **Resumes** – A single page (each) summary resume (including previous relevant experience and pertinent publications) for the Key Person (KP) and Principal Technical Investigator (PI).
- **Deliverables** – A one (1) page list of any deliverables for the effort.
- **Cost** - A one (1) page summary of costs segregated by tasks.

Full Proposal Content

Volume 1: Technical Proposal:

Volume 1 of the Full Proposal shall include the following sections.

- **Cover Page:** This should include the words “Technical Proposal” and the following:
 - 1) BAA number;
 - 2) Title of Proposal;
 - 3) Identity of prime Offeror and complete list of subcontractors, if applicable;
 - 4) Technical contact (name, address, phone/fax, electronic mail address);
 - 5) Administrative/business contact (name, address, phone/fax, electronic mail address);
 - 6) Duration of effort (differentiate the basic effort from any proposed options)
 - 7) Relevant Thrust Area within this BAA
- **Table of Contents**
- **Abstract:**
 - a. Concise (approximately 200 words) abstract of the proposed effort.

b. Discussion of how the proposed research effort will respond to the objectives of ONR.

- **Statement of Work:**

a. A description (in sufficient detail to evaluate the proposal) of the scientific background, scope, and objective of the proposed effort, along with appropriate references to the scientific literature. It is anticipated that the proposed SOW will be incorporated as an attachment to any resultant award instrument. To this end such proposals must include a severable, self-standing SOW without any proprietary restrictions, which can be included as an attachment to any resultant contract. Include a detailed listing of the technical tasks/subtasks organized by year. When options are contemplated, the SOW must clearly identify separate optional tasks and their periods of performance.

b. A description of general and special facilities available for performing the proposed work, and the rationale for requested support of any facilities, equipment, or materials

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

- **Assertion of Data Rights and/or Rights in Computer Software:**

For a contract award an Offeror may provide with its proposal assertions to restrict use, release or disclosure of any pre-existing data and/or computer software that will be provided in the course of contract performance. The rules governing these assertions are prescribed in Defense Federal Acquisition Regulation Supplement (DFARS) clauses 252.227-7013, -7014 and -7017. These clauses may be accessed at the following web address:

<http://farsite.hill.af.mil/VFDFARA.HTM>

The Government may challenge assertions that are provided in an improper format or that do not properly acknowledge earlier federal funding of related research by the Offeror.

- **Deliverables:** A detailed description of the results and products to be delivered, along with suggested due dates.

- **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 relationships, government research interfaces, and planning/scheduling/control practice. Identify which personnel and subcontractors (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. Discuss how the proposed effort might be coordinated with Navy and industrial counterparts.

- **Technical Approach** - (Limited to no more than 20 pages) The offeror shall provide a detailed plan that coherently describes the technical approach proposed for contract performance which demonstrates a technical understanding of the proposed Statement of Work (SOW). The technical approach should address each of the numbered task areas delineated in the SOW providing specific or unique techniques to be employed and anything else the offeror considers relevant in performing the SOW. The technical approach should indicate how the work will be performed, including the capabilities and resources which will be applied, what problem areas exist, the proposed solutions and a full explanation of the proposed disciplines, procedures and techniques to be followed. Emphasis should be placed upon the extent that the offeror's technical approach ensures timely delivery and successful completion of the tasks outlined by the SOW submission.
- **Personnel** - The offeror shall provide resumes of proposed key personnel to be utilized by the contractor/subcontractor in the performance of this contract. The offeror shall ensure that the proposed personnel are fully capable of performing in an efficient, reliable and professional manner.
- **Past Performance** - Past performance consists of a description of the offeror's Government and commercial contracts (both prime and major subcontracts) received during the past three years for the performance of work similar to the effort being proposed. The offeror may describe any quality awards or certificates that indicate the offeror possesses a high quality process for providing desired research and development outcomes.

Volume 2: Cost Proposal

The Cost Proposal shall consist of a cover page and two parts. Part 1 will provide a detailed cost breakdown of all costs by cost category by calendar or Gov't fiscal year; and Part 2 will provide a cost breakdown by task/sub-task corresponding to the task numbers in the proposed Statement of Work. Options must be separately priced.

Although not required and provided for informational purposes only, detailed instructions, entitled "Instructions for Preparing Cost Proposals for Contracts and Agreements", including a sample template for preparing costs proposals for contracts may be found at ONR's website listed under the 'Acquisition Department – Contracts & Grants Submitting a Proposal' link at: http://www.onr.navy.mil/02/how_to.asp

Cover Page: The use of the SF 1411 is optional. The words "Cost Proposal" should appear on the cover page in addition to the following information:

- BAA number
- Title of Proposal
- Identity of prime Offeror and complete list of subcontractors, if applicable

- Technical contact (name, address, phone/fax, electronic mail address)
- Administrative/business contact (name, address, phone/fax, electronic mail address) and
- Duration of effort (separately identify basic effort and any proposed options)
- Summary Statement of Costs
- Cognizant DCAA and DCMA point of contact, address, phone/fax and e-mail address (if readily available)

Part 1: Detailed breakdown of all costs by cost category by calendar or Gov't fiscal year. If options are contemplated, options must be separately identified and priced.

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (Must show base amount and rate)
- Travel – Number of trips, destination, duration, etc.
- Subcontract – A cost proposal as detailed as the Offeror's cost proposal will be required to be submitted by the subcontractor. The subcontractor's cost proposal can be provided in a sealed envelope with the Offeror's cost proposal or will be obtained from the subcontractor prior to contract award.
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate
- Materials should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Include a brief description of the Offeror's procurement method to be used (Competition, engineering estimate, market survey, etc.)
- Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the contractor/recipient. Justifications must be provided when Government funding for such items is sought. Include a brief description of the Offeror's procurement method to be used.
- Proposed Fee/Profit.

Note: Costs proposed for Government Entities and/or FFRDCs should be included in the cost proposal but should not be subject to any overhead rates of the proposer since they will be separately funded by the Government.

Part 2 : Cost breakdown by task/sub-task using the same task numbers in the Statement of Work. When options are contemplated, options must be separately identified and priced by task/sub-task corresponding to the same task numbers in the Statement of Work.

3. Significant Dates and Times-

Anticipated Schedule of Events		
Event	Date	Eastern Time
White Paper Due Date	03 August 2007	3 P.M.
Notification of Initial Evaluations of White Papers*	17 August 2007	N.A
Full Proposal Due Date	14 September 2007	3 P.M.
Proposal Evaluations Complete*	28 September 2007	N.A
Estimated Award Date*	Prior to 31 Dec 2007	N.A

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

4. Submission of Late Proposals –

1. *Contracts*: In accordance with FAR Subpart 15.208 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. 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 extend 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.

2. *Grants*: Any proposal submitted through ‘Grants.gov’ after the deadline for proposal submission will be late and will not be evaluated unless the ‘Grants.gov’ website was not operational on the due date and was unable to receive the proposal submission. If this occurs, the time specified for the receipt of the proposals through Grants.gov will be extended to the same time of day specified in this BAA on the first workday on which the ‘Grants.gov’ website is operational.

5. Submission of Grant Proposals to Grants.gov

Grant proposals may be submitted through Grants.gov or by hard copy. Regardless of whether Grants.gov is used or “hardcopy” submission, the offeror must use 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 include the ONR Department Code in Block 4 entitled ‘Federal Identifier’ of the Standard Form (SF) 424 R&R. Use ONR Code 30 for this BAA. However, it should be noted that “white papers” should not be submitted through the Grants.govApply process. White papers must be submitted (either electronically or paper) directly to the cognizant ONR Program Officer/Program Manager.

For electronic submission of full proposals, there are several one-time actions that must be completed in order to submit an application through Grants.gov (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See www.grants.gov, specifically www.grants.gov/GetStarted.

Use the Grants.gov Organization Registration Checklist at <http://www.grants.gov/assets/OrganizationRegCheck..doc> http://www.grants.gov/applicants/register_your_organization.jsp which will provide guidance through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called ‘MPIN’ are important steps in the CCR registration process. Applicants who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible. Additionally, in order to download the application package, applicants will need to install PureEdgeViewer. This small, free program will allow applicants to access, complete and submit applications electronically and securely. For a free version of the software, visit the following website: www.grants.gov/DownloadViewer. If any questions that may arise 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 or support@grants.gov.

Detailed instructions entitled, “Grants.Gov Electronic Application and Submission Information”, on how to submit a Grant proposal through Grants.gov may be found at the ONR website listed under the ‘Acquisition Department – Contracts & Grants Submitting a Proposal’ link at: http://www.onr.navy.mil/02/how_to.asp

6. Address for the Submission of Electronic White Papers and Hard Copy White Papers and Full Proposals

A. Address for the Submission of White Papers (electronic copy)

White papers should be submitted as a PDF file or Microsoft Word Document email attachment to:

laura.worcester@navy.mil

B. Address for the Submission of hard copy White Papers and for Full Proposals

Mail to:

Office of Naval Research
One Liberty Center
875 North Randolph Street, Suite 1425
Attn: Ms. Laura Worcester, ONR-30
OLC 1163
Arlington, VA 22203-1995

If using United States Postal Service (USPS), please allow additional business days for the package to be delivered to this address since USPS mail is being sent to a central location for special processing before it is delivered to this address. Commercial carriers such as FedEx and Ups may also encounter delays in delivery, so early submission is recommend to avoid late receipt of proposal.

FULL PROPOSALS SENT BY FAX OR EMAIL WILL NOT BE CONSIDERED

V. EVALUATION INFORMATION

1. Evaluation Criteria –

The following evaluation criteria apply to both the White Papers and the Full Proposals. Proposals will be selected through a technical/scientific/business decision process with technical and scientific considerations being more important than cost. Criteria A-D are listed in descending order of priority. Any subcriteria listed under a particular criterion are of equal importance to each other.

A. Overall scientific and technical merits of the proposal

1. The degree of innovation
2. The soundness of technical concept
3. The Offeror's awareness of the state/of/the/art and understanding of the scope of the problem and the technical effort needed to address it

B. Potential naval relevance and contributions of the effort to the agency's specific mission.

- C. Offeror's capabilities, related experience, and past performance, including the qualifications, capabilities and experience of the proposed principal investigator and personnel.
1. The quality of technical personnel proposed
 2. The Offeror's experience in relevant efforts with similar resources
 3. The ability to manage the proposed effort.
- D. The realism of the proposed costs.

For proposed awards to be made as contracts to large businesses, the socio-economic merits of each proposal will be evaluated based on the extent of the Offeror's commitment in providing meaningful subcontracting opportunities for small businesses, small disadvantaged businesses, woman-owned small businesses, HUBZone small businesses, veteran-owned small businesses, service disabled veteran-owned small businesses, historically black colleges and universities, and minority institutions.

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.

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. The evaluation of options will not obligate the Government to exercise the option(s).

2. Evaluation Panel -

Government technical experts from the Office of Naval Research and possibly other Federal entities will perform the evaluation of proposals. The Government may use selected non-government personnel or support contractor personnel to assist in the evaluation and administrative functions of any White Papers and proposals ensuing from this solicitation. Such non-government personnel will be bound by appropriate non-disclosure agreements to protect proprietary and source-selection information.

VI. AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements –

- The North American Industry Classification System (NAICS) code – The North

American Industry Classification System (NAICS) code for this announcement is 541710 with a small business size standard of 500.

CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant, contract, cooperative agreement, or other transaction agreement. Information on CCR registration is available at <http://www.onr.navy.mil/02/ccr.htm>.

- Certifications – In accordance with FAR 4.1201, prospective contractors shall complete and submit electronic annual representations and certifications at <http://orca.bpn.gov>. The Online Representations and Certifications Application (ORCA) will be supplemented by DFARS and contract specific representations and certifications found at http://www.onr.navy.mil/02/rep_cert.asp.

For grant proposals submitted through grants.gov, the following certification applies to each applicant seeking federal 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 subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients 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.

- Subcontracting Plans - Successful contract proposals that exceed \$500,000, submitted by all but small business concerns, will be required to submit a Small Business Subcontracting Plan in accordance with FAR 52.219-9, prior to award.

2. Reporting -

The following deliverables, primarily in contractor format, are anticipated as necessary. However, other specific deliverables (including software and hardware deliverables under contracts) should be proposed by each Offeror and finalized with the contracting agent:

- Technical and Financial Progress Reports
- Presentation Material
- Other Documents or Reports
- Final Report

VII. OTHER INFORMATION

1. Project Meetings & Reviews

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.

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

Each proposer must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. This description should indicate whether or not each particular piece of equipment/hardware will be included as part of a deliverable item under the resulting award. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. It is the Government's desire to have the contractors purchase the equipment/hardware for deliverable items under their contract. The purchase on a direct reimbursement basis of special test equipment or other equipment that is not included in a deliverable item will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

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 the basic and applied research. The use of these facilities and resources will be negotiated as the program unfolds. Offerors should explain as part of their proposals which of these facilities they recommend are critical for the projects success.

3. 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. If access to classified material will be required at any point during performance, the Offeror must clearly identify such need prominently in their proposal.

4. 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 AAALAC accreditation and/or NIH OLAW Animal Welfare Assurance approval letter, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) prior to award. Similarly, for any proposal for research involving human subjects the Offeror must submit prior to award: documentation of approval from an Institutional Review Board (IRB); IRB-approved informed consent form; IRB-approved research protocol; an executive summary of planned research (one-half to one page in length); proof of completed human research training (e.g., training certificate, institutional verification of training, etc.); an application for a DoD Navy Addendum to the Offeror's DHHS-issued Federalwide Assurance (FWA) or the Offeror's DoD Navy Addendum number. The forms for assurance applications can be found at http://www.onr.navy.mil/sci_tech/34/343/. 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. [Note: for research involving human subjects that is greater than minimal risk, administrative procedures to protect human subjects from medical expenses (not otherwise provided or reimbursed) that are the direct result of participation in a research project must be addressed. Documentation describing those procedures may be requested. For additional information on this topic please email 343_contact@onr.navy.mil.] For assistance with submission of animal and human subject research related documentation, contact the ONR Animal/Human Use Administrator at (703) 696-4046.

5. Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S & T and DT & 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/>.

6. Protection of Proprietary and Sensitive Information

The parties acknowledge that, during performance of the contract or agreement resulting from this BAA, the recipient may require access to certain proprietary and confidential information (whether in its original or derived form) submitted to or produced by the Government. Such information includes, but is not limited to, business practices, proposals, designs, mission or operation concepts, sketches, management policies, cost and operating expense, technical data and trade secrets, proposed Navy budgetary information, and acquisition planning or acquisition actions, obtained either directly or indirectly as a result of the effort performed on behalf of ONR. The recipient shall take appropriate steps not only to safeguard such information, but also to prevent disclosure of such information to any party other than the Government. The recipient agrees to indoctrinate company personnel who will have access to or custody of the information concerning the nature of the confidential terms under which the Government received such information and shall stress that the information shall not be disclosed to any other party or to recipient personnel who do not need to know the contents thereof for the performance of the contract agreement. Recipient personnel shall also be informed that they shall not engage in any other action, venture, or employment wherein this information will be used for any purpose by any other party.

ⁱ The Naval Research Advisory Committee's (NRAC) Distributed Operations (DO) Summer Study recommendation to Secretary Etter and the United States Marine Corps (USMC) Commandant to direct the Chief of Naval Research (CNR) to establish a "DO Marine as a System" science and technology (S&T) program (NRAC, 2006).