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**Department of Defense Rapid Innovation Fund;
Research Opportunity Number: HQ0034-14-BAA-RIF-0001**

Deadlines for question period:

July 9, 2014 3PM EST; Deadlines for submission: August 8, 2014 3PM EST

Amount of funding available:

The target award value for contracts is \$3 million (M) or less.

Eligibility:

All responsible sources capable of satisfying the Government's needs may submit a White Paper under this BAA (small businesses, non-profits, institutions, etc). However, selection preference will be given to small business proposals addressing the evaluation criteria. Awards to other than small business Offerors are allowed but ONLY after the award selection approval authority determines the award is superior to proposals received from a small business.

Description:

The Rapid Innovation Program provides DoD with the authority to fund programs that facilitate the rapid insertion of innovative technologies into military systems or programs that meet critical national security needs. The proposed project should significantly increase or improve military capabilities in relationship to requirements identified by service. For funding through the Army, the project should be used to develop technology relevant to an Army acquisition program including how the approach enhances the military capability; accelerates the development of military capability; reduces the development costs; and/or reduces the sustainment costs of fielding systems. For the Department of the Navy, the 2014-2018 budget submission reflects its plans to increase the number of ships which are Forward Stationed or Forward Operating and increase the DoN's presence in the Asia-Pacific region. For the Air Force, the target is technology that has matured to Technology Readiness Level (TRL) 7 (system/subsystem model or prototype demonstration in a relevant environment) for purposes of white paper/proposal submission. Technology presented should be able to mature to TRL 8 or 9 (qualified through testing and ready for production) within 24 months.

Defense-wide, the technology must accelerate or enhance a military capability, or reduce the development, acquisition, sustainment, or lifecycle costs of defense acquisition programs or fielded systems, or reduce technical risk, or improve the timeliness and thoroughness of test and evaluation outcomes.

Link to additional information: <http://www.defenseinnovationmarketplace.mil/RIF.html>

Specific References to Health Include

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Requirement Title:

Energy Efficient Patient Warming in support of Naval Expeditionary Health Services

Requirement #:

FY14-DoN-RIF-BUMED-01

Military System or Acquisition Program Customer:

Naval Expeditionary Health Services Support & Advanced Medical Development Program Office.

Description:

Combat casualty care in Expeditionary Operations is challenged by the requirement for contained self-sufficiency. The energy demand of combat casualty support for forward units is a major limiting factor in the delivery of cutting-edge medical/surgical care, intensive care, and acute care. This is particularly true for units charged with providing care and support in austere environments where the time and distance between levels of care can be substantial. There is a need for a low-power, energy-efficient patient warming capability that can be FDA approved. The overarching goals are reduced cube, weight and power consumption compared with current systems while maintaining patient warming equal to or greater than current systems. The proposed patient warming capability should be compatible with existing medical care systems, capable of being used in all operational environments, and usable in air, aquatic, and ground vehicles employed for patient movement.

Technical POC: W. K. Prusaczyk, keith.prusaczyk@med.navy.mil

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Aerodynamic Test Facility Health and Flow Monitoring (Arnold Engineering and Development Center)

Seeking technologies that lead to improved industrial equipment health diagnostics and airflow characterization in wind tunnel and engine test facilities.

The test facilities at AEDC, many of which are over fifty years old, are required to perform developmental and sustainment testing for current and future flight airframe and propulsion systems that enter the US inventory. Programs such as the upcoming Long Range Bomber, Next Gen Air Dominance, and other next generation military aircraft will gather hundreds of hours of test data in these facilities as part of their development. Therefore, the facility subsystems must be kept modern in order to provide the increasingly refined tolerances and data rates required by the new programs.

Candidate technologies may include, but are not limited to, those which assess compressor vibration and performance, static and dynamic airloads, power consumption, and flow uniformity. Improved data acquisition system hardware and sensors must be able to communicate high frequency data efficiently over distances typical of modern wind tunnels.

Technical POC: Mr. Chris Leone (christopher.leone.2@us.af.mil, 931-454-6112)

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Requirement Title:

Enhanced Monitoring for Weapons of Mass Destruction (WMD) Proliferation Activity

Military System or Acquisition Customer:

WMD Sensors Program

Description:

Diagnosis of activity associated with the nuclear fuel cycle or nuclear weapons development challenges current methods and instrumentation, particularly in the context of broad area, persistent surveillance and under certain operational conditions of interest to the DOD. Commonly-used “crude sampling” techniques are not sufficiently refined to determine timing and quantity of effluent release or to reliably detect specific constituents uniquely associated with processes of interest. The combination of variable biotic and abiotic conditions in a given environment further confounds adequate characterization. Similar factors affect detection scenarios for WMD (chemical and biological signatures) that are not related to nuclear weapons production. Development of novel detection systems will facilitate analysis of proliferation activities not readily discernible by current methods of monitoring or provide orthogonal surveillance tools to aid intelligence analysis and identify sites where illicit activities are occurring.

Biologically-based detection systems provide a promising alternative to conventional techniques due to their exceptional specificities and sensitivities. The public and private sectors have designed, fabricated, and deployed sensor systems using biologically-based recognition elements including aptamers, peptides, and enzymes. However, large scale production and purification of biomaterials are currently costly and time-consuming, and such materials often degrade in military operational environments. By contrast, microbes (e.g., bacteria, yeast, microalgae) can be produced in large quantities using established culturing methods, are easy to manipulate, and exhibit better stability in harsh environs. Whole-cell biosensors that incorporate microbial species as interfacial materials demonstrate utility for a number of applications ranging from environmental monitoring to public health, and several are already in commercial use. Single point/single analyte, as well as arrayed sensors which incorporate two or more microbial species, are developed. Genetic engineering yields production of microbial biosensors with superior ability to selectively concentrate desired analytes while excluding interferents, thus increasing signal-to-noise ratios and reducing both false positives and false negatives. Moreover, compatibility of microbial systems with commonly-used sensor platforms is established.

The present topic seeks development of a sensor based upon an arrayed electrochemical platform that addresses the above-mentioned design elements, whereby microorganisms serve as the recognition elements for radioactive- and/or non-radioactive (e.g., industrial solvents, heavy metals) residues indicative of nuclear proliferation processes. Ideally the detection system will operate in more than one medium (aqueous, soil, air). Systems that obviate the need for external energy input and bulky emplacement architectures are desirable.

Technical POC: Heather Meeks, (703) 767-3059, heather.meeks@dtra.mil

COMPONENT INSTRUCTIONS AND REQUIREMENTS

9.1 Introduction

Each White Paper must support one of the following specific DoD Component requirement, more fully described in the DoD Component Instructions and Requirements Annexes:

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Department of the Army Rapid Innovation Fund Annex

Proposals

The Invitation Letter to submit a proposal will be sent by the Army Contracting Office that will be handling any subsequent contract award, which is NOT the business office that issued this BAA. Offerors should follow the instructions provided in the Invitation Letter.

Technical Point of Contacts

Questions of a technical nature for specific Army topics should be addressed to the Technical Point of Contact listed after each topic number in this Annex. Questions of a general technical nature should be addressed to Rob Saunders, Robert.m.saunders14.civ@mail.mil, (703) 617-0279. Please include the term "U.S. Army RIF technical question" in the subject line.

Additional Army specific Instructions for White Paper preparation

The White Paper shall describe:

- (1) How the technology meets and addresses one of the topics specified in this Annex of the BAA.
- (2) How and to what degree the technical approach is relevant to an Army acquisition program including how the approach enhances the military capability; accelerates the development of military capability; reduces the development costs; and/or reduces the sustainment costs of fielding systems.
- (3) The current Technology Readiness Level (TRL) of the technology and/or product and how will it transition to military systems or programs.

Army FY 14 Rapid Innovation Fund Requirements

Requirement Number: MRMC01

Title: Waste Treatment System for the Combat Support Hospital (CSH)

Military System or Acquisition Program Customer: PM Medical Support Systems (MRMC)

Description: Demonstrate affordable, medical wastewater treatment and reclamation system with reduced power consumption to increase safety and reduce logistical burden by an anticipated 25% or more. Measure the effluent of the wastewater system to ensure it meets the requirements of Section 304(a)(1) of the Clean Water Act, criteria for water quality, and Water Quality Standards: Code of Federal Regulations (CFR) Title 40 Part 131 for "contaminants of emerging concern" (CECs), particularly from unmetabolized drugs.

Technical Point of Contact: Jake Fox, USAMRMC, U.S. Army Medical Materiel Development Activity (USAMMDA), james.fox13@us.army.mil, 301-619-4533

Requirement Number: MRMC02

Title: Human Systems Performance Optimization through integrated, real-time physiological signals that predict Military-relevant individual/unit performance status.

Military System or Acquisition Program Customer: PEO-Soldier, the Integrated Soldier Sensor Suite (ISSS) program

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Description: Develop and demonstrate an ultra low-power wearable system-on-a-chip that integrates and interprets real-time physiological signals and other sensor inputs to predict individual/unit performance status. The system-on-a-chip will provide actionable information for mission planning and decision support applications that minimize the likelihood of non-battle injuries and optimize Soldier performance across varied missions. Expand existing thermal work strain predictive algorithms to inform water and ration requirements. Expand and validate existing thermal work strain model to predict metabolic, fatigue, and cognitive status derived from measurements of load carriage and physical activity and biochemical, biomechanical, neurophysiological and environmental sensor measurements.

Technical Point of Contact: Dr. Reed Hoyt, Chief, Biophysics and Biomedical Modeling Division, USARIEM (MCMR-EMB) (reed.w.hoyt.civ@mail.mil; 508-233-4802)

Requirement Number: PEOAMMO01

Title: Non-Toxic, Non-Incendiary Obscurant Smoke

Military System or Acquisition Program Customer: Army PEO Ammunition

Description: Deliver non-toxic, non-incendiary obscurant smoke solutions that will provide equal or better obscurant performance as currently used formulations. Provides increased environmental and safety compliance. For use in artillery, mortars, grenades, etc.

Technical Point of Contact: Paul Manz, PEO Ammo Chief Scientist, 973-724-9795, paul.c.manz.civ@mail.mil

Requirement Number: PEOAMMO02

Title: Next Generation Survey

Military System or Acquisition Program Customer: Army PEO Ammunition

Description: Deliver the next generation of battlefield/artillery survey equipment that can be used by typical field artillery and infantry/mortar personnel. Capabilities should provide accurate survey and communication capability while resistant to GPS jamming and spoofing with significant reduction in size, weight and power.

Technical Point of Contact: Paul Manz, PEO Ammo Chief Scientist, 973-724-9795, paul.c.manz.civ@mail.mil

Requirement Number: PEOAMMO03

Title: Non-Destructive Small Caliber Bullet Catcher

Military System or Acquisition Program Customer: PEO Ammunition/PM Maneuver Ammunition Systems

Description: During failure analysis, a great deal could be learned from recovered bullets if a method of catching bullets without damaging them could be developed. We could examine potential root causes of problems such as Bullet Burst and Bullet Integrity, if we could examine unaltered fragments from such a malfunction without damage from impact.

Technical Point of Contact: Paul Manz, PEO Ammo Chief Scientist, 973-724-9795, paul.c.manz.civ@mail.mil

Requirement Number: PEOAMMO04

Title: IED Defeat Sensors – Detection, Marking & Neutralization

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Military System or Acquisition Customer: Army PEO Ammunition/PM Close Combat Systems/Product Manager Counter Explosive Hazard

Description: Provide operational forces a cost effective and highly reliable capability of detecting, marking and/or neutralizing concealed and buried Improvised Explosive Devices (IEDs) while travelling at convoy speeds.

Technical Point of Contact: Paul Manz, PEO Ammo Chief Scientist, 973-724-9795, paul.c.manz.civ@mail.mil

Requirement Number: PEOAVN01

Title: Rotary Wing Dynamic Component Tracking Sensor

Military System or Acquisition Customer: PEO Aviation

Description: A novel (non-vibratory) sensor approach to monitoring and tracking rotary wing dynamic components. The sensor/system should be miniature and self-powered and easily interrogated for data extraction into the fielded aircraft notebook environment. The methodology should focus on components not already monitored by the HUMS Drivetrain Diagnostics, however exploiting the data currently recorded or developing algorithms using the vibration sensors in place to further enhance dynamic component damage will be considered as part of a holistic dynamic component monitoring methodology. Additionally, models of noted dynamic components with higher than normal failure rates shall be developed to supplement the early detection algorithms in use by the monitoring system. The models shall also use the recorded HUMS regime profile data to further predict dynamic components failures by determining how the aircraft is being flown and by identifying maneuvers that have large effects on component life.

Technical Point of Contact: Travis Sinclair, 256-876-1238 travis.s.sinclair.civ@mail.mil

Requirement Number: PEOAVN02

Title: Portable Accelerometer and Wiring Test and Operational Verification Kit

Military System or Acquisition Customer: PEO Aviation

Description: A nondestructive means to detect - in situ - corrosion of aircraft wiring and installation and operability of vibration sensors. It appears that the current state of nondestructive wire testing is largely limited to detecting shorts/discontinuities rather than degraded wiring. Corroded wire often still has enough integrity remaining to pass current through it - and often the corrosion byproducts themselves are conductive - so current can still flow through the wire even when highly degraded and likely to soon fail. For example, a braided wire shield of 50 conductors may only have a few strands still intact but still pass current and be difficult to detect. Largely the cable shielding is deteriorating and the only known method to identify the issue is visually. Unfortunately, much of the wiring is hidden from view either because of the installed location in the aircraft or the casing/cover/jacket over the wire. Removing wire for inspection that is not already known to be "bad" is normally not an option. A means to test the wire is required. The testing needs to be able to determine the location of defects on the wire and detect defects less severe than a complete break/short. A goal of the system would be to (simply, easily, nondestructively) sample a subset of the aircraft fleet to determine the prevalence of red plague issues.

Technical Point of Contact: Travis Sinclair, 256-876-1238 travis.s.sinclair.civ@mail.mil

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Requirement Number: PEOAVN03

Title: Adaption of Extended Area Protection & Survivability (EAPS) Miniature Hit To Kill (MHTK) Technology to 2.75” Rockets

Military System or Acquisition Customer: PEO Aviation

Description: The proliferation of UAS worldwide and the emergence of maritime threats in littoral areas have formed a capability gap for Joint and coalition forces to detect, identify, and defeat them. MHTK technology provides a miniaturized radar (RF) based technology solution to aerial, maritime, and ground based target sets. Adapting this technology to 2.75” rockets will result in improved guidance capabilities being extended into rotary wing aircraft while retaining the 2.75” rockets’ destructive warhead and longer ranged rocket motor as well as increasing the number of stowed kills per platform. An assessment of the feasibility and a conceptual design is needed.

Technical Point of Contact: Tom Weigartz, 256-313-4207, thomas.a.weigartz.civ@mail.mil

Requirement Number: PEOAVN04

Title: Apache Longbow Multipurpose Upper Receive (UR) Mount with Precision Radar Frequency Interferometer (RFI) Mounting Face

Military System or Acquisition Program Customer: PM Apache

Description: The number of systems that can be mounted above the rotor blades of Apache Attack Helicopter has grown significantly in recent years. With this influx of systems, a common mounting point has yet to be developed to simplify the logistics and maintenance of these systems, while retaining modular capabilities to meet future needs. It is also key to mount any of these systems in conjunction with the Radar Frequency Interferometer (RFI), with its unparalleled Radar Frequency (RF) detection capabilities creates a compelling synergy with all of the RF systems mounted above the rotor blades. Currently, the RFI can only be mounted with the Fire Control Radar (FCR), which greatly reduces the effectiveness of Apache’s not equipped with the RFI. With this multipurpose mount, the RFI would be mountable with any configuration of systems above the rotor blades, increasing Apache effectiveness.

Technical Point of Contact: Holly Carr, 256-313-4230, holly.l.carr2.civ@mail.mil

Requirement Number: PEOAVN05

Title: Dynamic Component Fatigue Life Prediction

Military System or Acquisition Program Customer: Program Managers for Aircraft, Combat Vehicles and Ships

Description: Develop and demonstrate a high fidelity analytical capability for the prediction of fatigue life of critical dynamic and static components on aircraft, ground vehicles, and ships. This required analytical prediction capability will enable the USG to better understand the impacts that certain operations and maneuvers have on component lives and enable the extension of their operational lives to enhance readiness and reduce operational and sustainment costs. This analytical capability will enhance and promote safety through the prediction and assessment of the fatigue lives of critical components while allowing the USG to extend or modify the component time-on-vehicle lives, subject to the operational usage spectrum. The analytical tool shall also be utilized to support the component design process for high demand and/or expensive components through the tailoring of the components for fatigue life optimization based on specific applications and known vehicle usage spectrum. The fatigue prediction analysis shall

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also be used as a virtual testing tool to help avoid test and qualification costs through the reduction in the amount of required physical testing.

Technical Point of Contact: Dr. Jerry Higman, 256-313-4191, jerry.p.higman.civ@mail.mil

Requirement Number: PEOAVN06

Title: Reduce the Cost and Workload to keep pace with Obsolescence

Military System or Acquisition Program Customer: Post Milestone C acquisition programs, logistics centers, depots, arsenals.

Description: Demonstrate practices, technologies, processes, or capabilities to reduce turmoil caused by the interaction between weapons system longevity and accelerated electronics obsolescence cycles. Develop a holistic tool set for Program Managers, recommendations to lawmakers, and develop capabilities within the acquisition infrastructure to reduce risks and turmoil associated with obsolescence management.

Technical Point of Contact: Daphne Henry, 256-842-1083, daphne.a.henry.civ@mail.mil

Requirement Number: PEOC3T01

Title: Improved Electronic Protection for Lower and Mid-Tier Tactical Networks

Military System or Acquisition Program Customer: PEO C3T, PM Joint Tactical Network Program Office

Description: Joint forces are dependent on the tactical networks (e.g. SRW, WNW and Link 16) to communicate to assure operational maneuver and weapons employment in all environments and with the highest possible confidence. There is a need for (1) affordable approaches to make these tactical networks more reliable/robust in the presence of electronic interference/jamming along with (2) methods of quantifying threats to network performance that may be termed "situational awareness". Technologies are needed to improve network performance during operations of increased RF interference, such as adaptive filtering and interference cancellation are of interest.

Technical Point of Contact: Krunal Amin, (619) 524-0572, krunal.amin@navy.mil

Requirement Number: PEOC3T02

Title: Interference Resistant Transponded SATCOM System

Military System or Acquisition Customer: PEO C3T PM WIN-T

Description: Rapid development of an affordable, lightweight, interference resistant wideband SATCOM system based on the already deployed Network Centric Waveform (NCW). Integrate this system into Army Configuration Items and demonstrate robust tactical communications in the presence of interfering signals. Work closely with the tactical user community, DoD Laboratories, and other partners throughout the process to ensure requirements are met.

Technical Point of Contact: Doug Chaney, 443.395.8440, William.d.chaney8.civ@mail.mil

Requirement Number: PEOC3T03

Title: Cyber Defense for Tactical Software Systems (Army)

Military System or Acquisition Customer: PEO C3T, PEO IEW&S

Description: Seeking to find Cyber Defense Tools that supplement current tactical software architecture. The tools should aid in defending against: zero-day attacks, insider threats and security configuration anomalies.

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Technical Point of Contact: Dan Woolley, 443-395-2605,
daniel.j.woolley4.civ@mail.mil

Requirement Number: PEOC3T04

Title: Blue Force Tracking (BFT) Upgrade

Military System or Acquisition Program Customer: Joint Battle Command - Platform/
Mounted Computing Environment

Description: Seeking avenues for engineering design, development services and test for enhancements to the existing BFT-2 network and creation of the requirements for the next generation of BFT, to include satellite transceivers and associated equipment. Specifically seeking to enhance the current BFT-2 network by increasing the security of the data transmission, determine methodologies that will allow the BFT-1 and BFT-2 networks to operate within the same RF channels, create a tiered network topology that allows for higher throughput terminals that battlefield commanders could utilize, incorporate dual transmission pathways, outside of the current L-Band channels, into the existing terminals thus increasing the accessibility from near global coverage to total global coverage. Currently, BFT-2 platforms use commercial L-band satellite communications as the transport mechanism for messaging and sharing Situation Awareness (SA) and Command and Control (C2) data across the battlefield. Seeking to focus the next generation system on use of military satellite communications, if possible, thus allowing the Government better control and visibility of the BFT network, while maintaining a data throughput of greater than 230 kbps with 99.95% message completion rate and maintain the current form factor.

Technical Point of Contact: Andrew Stevens, 443-395-2053, andrew.r.stevens4.civ@mail.mil

Requirement Number: PEOC3T05

Title: COTS for Classified

Military System or Acquisition Program Customer: Joint Battle Command - Platform/
Mounted Computing Environment

Description: Currently the Joint Battle Command- Platform family of Command and Control/ Situational Awareness systems use a hardware inline encryptor to secure the communications channel. Seeking alternate Commercial Off -the-Shelf technologies to perform the same security functions while reducing Size, Weight, and Power on the platform.

Technical Point of Contact: Mahesh Shah, (443)395-2009, mahesh.s.shah.civ@mail.mil

Requirement Number: PEOC3T06

Title: Quickly Deployable Multi-carrier Low Passive Inter Modulation (PIM) X-Band Hub Terminal

Military System or Acquisition Program Customer: PEO C3T/PdM SATCOM/PM WIN-T

Description: Develop and demonstrate a 4-meter class low PIM X-Band satellite communications hub terminal that will allow rapid transport and setup of high-bandwidth hub operations in theater. There are four known deficiencies that the technologies developed in this RIF needs to address: 1) current SATCOM terminals cannot radiate more than one carrier signal at X-band due to electro-mechanical interactions, 2) Legacy SATCOM hub terminals are bulky, heavy, and cannot be deployed rapidly, 3) Legacy SATCOM hub terminals have no in-place, or quickly available, spares to provide continuous capability if they are destroyed or damaged, 4)

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Legacy SATCOM terminals have high acquisition and maintenance costs. The terminal developed in this RIF need to offer at least a 20:1 reduction in weight and volume relative to current trailer mounted 4-meter class hub terminals and needs to be able to support multiple, simultaneous channels on commercial and military satellites. Terminals will have to be ARSTRAT certified and meet all requirements listed in MIL-STD-188-164A including multi-carrier operations. The terminals need to be field-ready with a training program sufficient to meet operational needs.

Technical Point of Contact: John Lane, 443-395-8454, john.lane5@us.army.mil

Requirement Number: PEOC3T07

Title: Improved Reliability and Manufacturability of High Capacity Battery for Rifleman Radio

Military System or Acquisition Customer: PEO C3T/PM Tactical Radios

Description: The US Army has an interest in technologies, processes and products that increase the reliability and/or reduce costs and challenges associated with the manufacture of high capacity batteries for the currently operated Rifleman Radio. Manufacturability improvements will aid in the easing of fabrication processes that will improve efficiency of production and reduce costs of the battery while maintaining or improving the effectiveness of higher capacity and extreme temperature operation from -30°C to +55°C. The battery design must deliver mission time over 10 hours or better for this operating range.

Technical Point of Contact: Dr. M. Sayeed Hasan, 443-395-8734 & 732-318-5868, email: Sayeed.hasan@us.army.mil

Requirement Number: PEOC3T08

Title: Tactical Network Throughput Improvements (All Components)

Military System or Acquisition Customer: PEO C3T, PM Joint Tactical Network Program Office

Description: Joint operational forces require an ever increasing amount of information to remain aware of the situation on the battlespace. Dramatic improvements to battlefield tactical network capacity are required to keep up with the communication needs and applications employed by these forces. These technology improvements to existing tactical networks (e.g. SRW and WNW) are required to obtain an order-of-magnitude increase in data throughput and/or nodes per subnet.

Technical Point of Contact: Krunal Amin, (619) 524-0572, krunal.amin@navy.mil

Requirement Number: PEOC3T09

Title: Expeditionary Command Posts

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can help Command Posts be more expeditionary (lighter / smaller / more power efficient / quicker to setup). Examples may include (but are not limited to) software based zero clients, software based multiple security domain clients, modular vehicle borne server components, personal device (e.g., smartphone) docking stations and commercial suite B cryptography. Goals include reducing hardware count or size, decreasing setup time, migrating to shared infrastructure,

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Technical Point of Contact: Thomas Brutofsky, 256-774-6782,
thomas.brutofsky1.civ@mail.mil

Requirement Number: PEOC3T10

Title: Content Based Networking

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can change the way we share data across a limited bandwidth, occasionally disconnected tactical network. Topics of interest include (but are not limited to) ways to access data with a resource handle, ways to cache data in multiple locations, ways to de-conflict and merge disparate and concurrent offline edits to the same data and ways to update data when connectivity is restored. Goals include accessing authoritative data from the closest source possible and processing content at or close to the point of origin with the intent of reducing network overhead.

Technical Point of Contact: Portia Crowe, 443-395-8387, portia.i.crowe.civ@mail.mil

Requirement Number: PEOC3T11

Title: Alternative User Interfaces

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can provide an alternative to traditional mouse / keyboard style user interaction. Topics of interest include (but are not limited to) touch and gesture based interaction compatible with heavy gloves, voice or audio based interaction that works in noisy environments, and digital assistants. Goals include ease of use / interaction for on the move environments (e.g., in vehicles), in command posts and dismounted.

Technical Point of Contact: Portia Crowe, 443-395-8387, portia.i.crowe.civ@mail.mil

Requirement Number: PEOC3T12

Title: Spectrum Sharing w/ Commercial

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can assist with Dynamic Spectrum Access / Spectrum Sharing with Commercial / Industry. PEO C3T is investigating options to operate the tactical network in environments that do not have dedicated frequency bands devoted to military use. Topics of interest include (but are not limited to) automatic frequency in use detection and net migration, automatic power level adjustment per local environment and automatic interference mitigation.

Technical Point of Contact: Chad Claussen, 443-395-8381, chad.m.claussen.civ@mail.mil

Requirement Number: PEOC3T13

Title: Mobile Phone as a Tactical Radio

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can assist in converting an “off the shelf” mobile phone into a tactical radio. Examples may include (but are not limited to) running

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a tactical waveform on the mobile phone's chipset with an alternative firmware load or creating a 'sled' that attaches to the phone.

Technical Point of Contact: Chad Claussen, 443-395-8381, chad.m.claussen.civ@mail.mil

Requirement Number: PEOC3T14

Title: Tactical Authentication Schemes

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: PEO C3T has an interest in technologies that can authenticate users in environments where traditional token based PKI does not work, and where secure username and password combinations are a hindrance to the mission. Proposed technologies must encompass at least two different factors (e.g., something you are and something you know). Proposed technologies must be rapidly reconfigurable in the field, and must work in a disconnected, intermittent, and latent network environment.

Technical Point of Contact: Chad Claussen, 443-395-8381, chad.m.claussen.civ@mail.mil

Requirement Number: PEOC3T15

Title: Modular Network Communications Package with reduced SWAP-C.

Military System or Acquisition Program Customer: Army PEO Command Control Communications – Tactical (PEO C3T) and supporting PMs

Description: The Army requires modular, rugged, small form factor network-based communications systems with reduced size, weight, power, and cooling (SWAP-C). A modular system with a uniform hardware "kit" design enabling quick insertion into tactical operations centers (TOCs); mounted platforms, and dismounted environments would provide a significant improvement compared to current systems available in the marketplace. This system would also take advantage of software-defined networking (SDN) technologies to reduce the configuration complexities and administrative burdens on the soldier. From a standards based perspective, the system would be designed/developed to adhere to Common Operating Environment (COE) and Victory standards.

Technical Point of Contact: Christopher Ernst, 443-395-2424, christopher.j.ernst4.ctr@mail.mil

Requirement Number: PEOC3T16

Title: Integrated Training Environment (Army)

Military System or Acquisition Customer: PEO C3T, PEO IEW&S

Description: Searching for a generic training environment that could be tailored to work with Ozone Widget Frame compatible widgets. The training environment should support mission rehearsal, course of action analysis and computer based training.

Technical Point of Contact: Dan Woolley, 443-395-2605, daniel.j.woolley4.civ@mail.mil

Requirement Number: PEOC3T17

Title: Low cost GPS SAASM (Selective Availability Anti-Spoof Module) Receiver for Rifleman Radio

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Military System or Acquisition Customer: PEO C3T/PM Tactical Radios

Description: The Rifleman Radio (AN/PRC-154A) is a lightweight, body-worn tactical radio for secure voice, data communication, and situational awareness. The current Rifleman Radio uses embedded commercial (C/A Code) GPS receiver for position location information (PLI) due to its attractive size, weight, power and cost (SWaP-C). The PLI from commercial GPS receiver is vulnerable to certain types of threats and hence DoD has mandated that all military GPS systems be based on the secure navigation solution from Selective Availability Anti-Spoof Module (SAASM). The DoD however has issued the waiver to use the commercial GPS receiver in the Rifleman radio due to the high SWaP and cost of the current SAASM receivers.

There have been recent advancements and innovations in the SAASM GPS receiver technology that have demonstrated significant reduction in the SWaP of the SAASM receiver compared to the legacy SAASM technology. Additional technical maturity and improvement in the manufacturing processes of the SAASM GPS receivers is needed in order to reduce the cost of acquisition for use in the Rifleman radios and qualify the SAASM products for military environmental requirements.

Technical Point of Contact: Dr. M. Sayeed Hasan, 443-395-8734 & 732-318-5868, email: Sayeed.hasan@us.army.mil

Requirement Number: PEOC3T18

Title: Improved Soldier Radio Waveform (SRW) Spectral Efficiency (All Components)

Military System or Acquisition Program Customer: PEO C3T: PM TR and PM JTN

Description: Improved spectrally efficiency of the Soldier Radio Waveform (SRW) through the development of a Combat Net Radio (CNR) voice and Position Location Information (PLI) only radio. CNR voice communications and PLI is an essential capability for both commanders and soldiers and is currently available using the SRW Waveform Application (WFA). The SRW WFA as developed and operating on Joint Tactical Radio (JTR) utilizes 1.2 MHz channel bandwidths in the congested Ultra High Frequency (UHF) band and L band. This effort would design, develop, and integrate a spectrally efficient form of SRW to utilize a channel bandwidth that is on the order of 5 to 10 times smaller than the current 1.2 MHz channels. SRW's existing CNR voice capabilities to include the Mixed-Excitation Linear Prediction (MELP) vocoder and hybrid Carrier Sensing & Time Division Multiple Access (TDMA) slot structure would be leveraged to reduce development schedule and cost. A reduced spectral SRW footprint would allow more SRW radio platforms in a geographic area while also mitigating the spectral congestion issues. A reduced capability SRW would also require a less demanding radio and would reduce the cost of each purchased radio set.

Technical Point of Contact: Tim Leising, 443-395-7596, timothy.g.leising.civ@mail.mil

Requirement Number: PEOC3T19

Title: Tactical Quality of Service (QoS) Management Infrastructure

Military System or Acquisition Customer: PEO C3T

Description: Looking for a QoS management infrastructure network service that enables the Army Battlefield Applications and Lower Tactical Internet Radios to mark their own DiffServ Code Point (DSCP) network data packets exiting the Command Post via the WIN-T Inc 2 WAN according to phase of battle, reoccurring battlerhythm, network conditions, and/or Commander's direction. This should allow real time QoS changes without service downtime. There should be

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no requirement for tightly coupled integration, client-based installs, and does not mark packets itself.

Technical Point of Contact: Paul Tardy, 443.395.2606,
paul.f.tardy.civ@mail.mil

Requirement Number: PEOC3T20

Title: Widget Improvement over Tactical Army Networks (Army)

Military System or Acquisition Customer: PEO C3T, PEO IEW&S

Description: The Army is moving away from thick clients by transferring capabilities to Widgets in the Ozone Widget Framework. This is one of the efforts included in the Common Operating Environment (COE) Command Post Computing Environment (CP CE) larger task. In its current state, widgets are not operationally usable without a low latency and low packetloss network connection. In the tactical environment, it is expected that Battalion users will need to operate widgets that are locally hosted at the Brigade over a tactical network connection.

Technical Point of Contact: Jeremy Pilkington, 443-395-2630,
Jeremy.r.pilkington.civ@mail.mil

Requirement Number: PEOCSCSS01

Title: Field AVLB Hinge Inspection Device

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Fatigue to failure testing of the Armored Vehicle Launched Bridge (AVLB) at the bridging technology lab revealed that the failure point was in the center hinge. This failure is impossible to detect via visual inspection. This effort would be for the development of a field-deployable system, manufacturing of four systems, and training of key personnel.

Technical Point of Contact: Josh Peterson (TARDEC), 586-282-2398 or
joshua.s.peterson14.civ@mail.mil

Requirement Number: PEOCSCSS02

Title: Development of BSP Hydraulic Hose Capability

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: The Dry Support Bridge (DSB) hydraulic system uses British Standard Pipe (BSP) threads. This requires the user to order replacement hoses as opposed to using the Hydraulic System Test and Repair Unit (HSTRU) to create replacements. Effort would research the fittings required, develop a kit, create test hoses, and test the hoses on a current DSB.

Technical Point of Contact: Josh Peterson (TARDEC), 586-282-2398 or
joshua.s.peterson14.civ@mail.mil

Requirement Number: PEOCSCSS03

Title: BEB(L) Engine-to-waterjet Field Alignment Tool (FAT)

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Legacy-BEB driveshaft mis-alignment between its two end plates at the engine and at the waterjet can cause catastrophic damage in a short time. This affects the seals and internal parts in the BEB transmission, which is a sparse aged item. Implementing an improved, accurate engine alignment tool for field use would greatly reduce BEB transmission replacements, which costs \$1800 each.

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Technical Point of Contact: Josh Peterson (TARDEC), 586-282-2398 or joshua.s.peterson14.civ@mail.mil

Requirement Number: PEOCSCSS04

Title: The ABV Plow Tines improvement

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Feedback from the Army fielded units indicated that the current tines in the Assault Breacher Vehicle (ABV) Full Width Mine Plow (FWMP) are susceptible to bending and were reported to have experienced severe bending during the New Operator Training (NET) in Korea. Improving the reliability and reducing the amount of time required to replace the tines will improve the availability and readiness status of the fielded ABVs. Effort would analyze and optimize the tine design and test new tine tips proposals.

Technical Point of Contact: Josh Peterson (TARDEC), 586-282-2398 or joshua.s.peterson14.civ@mail.mil

Requirement Number: PEOCSCSS05

Title: Water Well Drilling Technologies

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Investigate and document alternative methods for freshwater drilling. This study will evaluate modular drilling systems, reduced capacity/size systems and alternative drilling methods (e.g. laser). Purpose of study is to identify shortcomings and recommend improvements to the Army's current fresh water drilling approach. Expected outcome is a reduced logistics footprint associated with respect to water resupply and improved well drilling efficiency.

Technical Point of Contact: Adam Puzzuoli (TARDEC), 586-282-5890 or adam.a.puzzuoli.civ@mail.mil

Requirement Number: PEOCSCSS06

Title: Water Quality Monitoring

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Technologies such as flow cytometry are now being used by water quality laboratories to measure for viable bacteria. Incorporating the newest technologies in ruggedization and signal processing into the design of this laboratory equipment can enable simplified, real-time, inline pathogen monitoring of product water from military mobile water treatment systems. This water monitoring will verify low pressure water treatment processes to enable the Army to accomplish two operational energy mission objectives: 1) allow easy scale down of water treatment systems for use in expeditionary water supply operations and 2) reduce the fuel required for water treatment of stable, fresh water sources (i.e. allow by-pass of the reverse osmosis treatment). High quality expertise in fluid mechanics, optics, microbiology, chemistry, signal processing and electronics is required for successful completion of this effort.

Technical Point of Contact: Lisa Neuendorff (TARDEC), 586-282-4161, lis.k.neuendorff.civ@mail.mil

Requirement Number: PEOCSCSS07

Title: Small Water Bagging System

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection, PdM PAWS

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Description: The Army requires a small, reliable, automated, water bagging system that will support operations at medium sized contingency bases. The system would significantly reduce the distribution footprint and eliminate the cost and casualties associated with line haul transportation of water to contingency bases. It also enhances force protection by assuring the quality and safety of the water.

Current water packaging concepts under development utilize hard, plastic water bottles which require the use of blow molding and bottle conveyance technologies. The blow molding technology is energy intensive, difficult to control and requires the shipment, storage and use of bulky bottle pre-forms. A water bagging system will use much less energy, be easier to operate and maintain in a field environment and reduce the cube and weight of the consumables required to support the process.

The program deliverable will be a water bagging demonstration system that will enable the packaging of water closer to the consuming organization.

Technical Point of Contact: Bob Shalewitz (TARDEC), 586-282-4128 or bobby.shalewitz.civ@mail.mil

Requirement Number: PEOCSCSS08

Title: Man Portable Water Purification

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection, PdM PAWS

Description: The Army requires a reliable, man-portable water system that can be operated by non-military occupational specialty (MOS) specific personnel that will supply a PLT/CO sized element at a small contingency base (FOB/COP). The MP WPS shall be a small, lightweight, easy-to-operate, reverse osmosis (RO) based water purification system capable of purifying fresh, brackish and salt water sources to field water quality standards.

To reduce risk in the development of a MP WPS, developmental efforts are required in the areas of pretreatment and energy recovery:

1 – Pretreatment - Develop an improved pretreatment system that provides the water quality (solids removal) of a microfiltration or ultrafiltration membrane system with the simplicity of a multimedia filtration/cartridge filtration based system.

2 – Energy Recovery - Develop a device to recover the energy contained in the reject water of an RO system. The goal is to reduce the energy consumption of the MP WPS to below 20 watt-hrs/gallon.

TARDEC FPT will then fabricate a MP WPS demonstrator incorporating the results of the improved pretreatment, and energy recovery studies, along with new, commercially available, low-energy reverse osmosis membranes.

Technical Point of Contact: Bob Shalewitz (TARDEC), 586-282-4128 or bobby.shalewitz.civ@mail.mil

Requirement Number: PEOCSCSS09

Title: MRAP Ballistic Protected Hood (Army)

Military System or Acquisition Customer: PEO CS&CSS

Description: APO MRAP has an interest in Technologies that will improve the survivability of key automotive functions and drive-train components to mitigate cheap mobility kills due to small arms fire or fragmentation. Specifically, APO MRAP is interested in working with TARDEC to develop a composite armored hood while leveraging previous experience and

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contracts with the University of Delaware. Proposed hood must meet classified ballistic requirements. Other considerations include weight, durability and mobility.

Four Courses of Action are proposed to conduct the analysis:

- 1-Baseline, replace current hood with appropriate thickness of High Hard Steel
- 2-Develop composite armor applied to include inner fender walls
- 3- COA 2 plus front coverage including ballistic grille
- 4- COA 3 plus hood top coverage

Technical Point of Contact: Kevin Ellis, (586) 282-2510, kevin.h.ellis.ctr@mail.mil

Requirement Number: PEOCSCSS10

Title: Lightweight/Low Cost Opaque Armor

Military System or Acquisition Customer: Joint Light Tactical Vehicle (JLTV), and other classes of Tactical Wheeled Vehicles, MRAPs, and Combat Engineer equipment; PEO CS&CSS

Description: Develop Opaque Armor that is significantly lighter or less costly, or both, than Metallic Composites and Ceramic Composites, that will defeat upper end Small Arms KE threats.

Technical Point of Contact: Brett Johnson, 586-239-2134, brett.r.johnson8.civ@mail.mil

Requirement Number: PEOCSCSS11

Title: Lightweight/Low Cost Transparent Armor

Military System or Acquisition Customer: Joint Light Tactical Vehicle (JLTV), and other classes of Tactical Wheeled Vehicles, MRAPs, and Combat Engineer equipment; PEO CS&CSS

Description: Develop Transparent Armor that is significantly lighter or less costly, or both, than Glass Composites and Ceramic Glass Composites, that will defeat upper end Small Arms KE threats.

Technical Point of Contact: Brett Johnson, 586-239-2134, brett.r.johnson8.civ@mail.mil

Requirement Number: PEOCSCSS12

Title: Lightweight/Low Cost Underbody Protection

Military System or Acquisition Customer: Joint Light Tactical Vehicle (JLTV); PEO CS&CSS

Description: Develop Underbody and floor structures for light tactical vehicles that are significantly lighter or less costly, or both, than traditional V-shaped or double V-shaped hulls, that protect from medium sized, common shell and mine types.

Technical Point of Contact: Brett Johnson, 586-239-2134, brett.r.johnson8.civ@mail.mil

Requirement Number: PEOCSCSS13

Title: Soldier-Center Survivability Technologies for inside vehicles

Military System or Acquisition Customer: Joint Light Tactical Vehicle (JLTV); PEO CS&CSS

Description: Develop Blast attenuation seats or systems that isolate and protect soldiers inside light tactical vehicles significantly better than current systems, at same or reduced cost and weight.

Technical Point of Contact: Brett Johnson, 586-239-2134, brett.r.johnson8.civ@mail.mil

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Requirement Number: PEOCSCSS14

Title: Power Management Systems for TWV Feasibility Study

Military System or Acquisition Customer: Tactical Wheeled Vehicles, PM Transportation Systems, PEO CS&CSS

Description: Feasibility study on a common Power Management System for trucks. The study should consider the current and projected future demands for electrical power (both hotel loads and C4ISR demands) and assess the feasibility of a common device for accessing vehicle power, prioritizing loads and load shedding as necessary. The intent is to optimize the allocation of existing vehicle power generation capacity.

Technical Point of Contact: Joe Keusch, 586-282-8660

Requirement Number: PEOCSCSS15

Title: Emerging TWV Technology Study

Military System or Acquisition Customer: Tactical Wheeled Vehicles, PM Transportation Systems, PEO CS&CSS

Description: Conduct a study of emerging vehicle technologies in the commercial marketplace that may have application to the Army truck fleet. The objective would be identify technologies that have the potential to fill stated capability gaps and to provide timeframes and ROM cost data to implement. The intent is to leverage commercial industry development efforts to inform Long-Range Investment Requirements Analysis (LIRA)/30-Year Plans and the requirements generation process.

Technical Point of Contact: Joe Keusch, 586-282-8660

Requirement Number: PEOCSCSS16

Title: Autonomous Construction Equipment

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Demonstrate the feasibility of integrating autonomous machine control on the Army's 120M motor grader. Project will integrate GPS machine control technology, GPS survey technology and a robotics appliqué kit to achieve autonomous control of road maintenance and construction site final grade development. Project will demonstrate a breakthrough technology for future military capability. Benefits are expected to include improved productivity, reduced fuel consumption and reduce soldier burden/demand.

Technical Point of Contact: Adam Puzzuoli (TARDEC), 586-282-5890 or adam.a.puzzuoli.civ@mail.mil

Requirement Number: PEOCSCSS17

Title: Automated Refueling Vehicle

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Develop an automated refueling mission payload to be integrated on the bed of the Unit to Unit Automated Resupply Vehicle (U2UARV) or similar autonomous resupply system. The objective of this effort would be to design, fabricate, assemble and test a mission payload for a resupply vehicle capable of autonomously navigating a Forward Operating Base (FOB) and refueling of generator sets, light sets, vehicles, etc.

Technical Point of Contact: Adam Puzzuoli (TARDEC), 586-282-5890 or adam.a.puzzuoli.civ@mail.mil

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Requirement Number: PEOCSCSS18

Title: Automated Refueling Supply Point

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection

Description: Develop an automated refueling supply point (stationary) based on the Modular Fuel System (MFS) pumping unit platform. The concept would be for the MFS to automatically refuel combat vehicles in a tactical environment. The robotic refueling would be capable of recognizing the vehicle type, locating the refueling port, connecting to the vehicle, dispensing the fuel in an environmentally safe manner, disengaging from the vehicle, and tracking and recording the transaction. Robotic refueling could eliminate the need to expose soldiers to risks in combat environments or NBC contaminated environments.

Technical Point of Contact: Adam Puzzuoli (TARDEC), 586-282-5890 or adam.a.puzzuoli.civ@mail.mil

Requirement Number: PEOIEWS01

Title: RF Interference Mitigation in a Blue Force EW Environment

Military System or Acquisition Customer: PEO IEW&S, PM EWI

Description: Provide operational forces with assured ability to communicate while simultaneously conducting Blue Force electronic warfare missions. Mutual electromagnetic interference between communications and electronic warfare systems can result in loss of communications and degraded electronic warfare effectiveness. Technologies that increase the ability of communications to operate in close physical and spectral proximity to Blue Force electronic warfare systems are necessary to meet requirements to conduct combat operations in a contested and congested Electromagnetic Operational Environment (EMOE).

Technical Focal Point: Mr. Yen-Chou, 443-395-4844, yen-chou.chou.civ@mail.mil

Requirement Number: PEOIEWS02

Title: EW Protocol and Networking Framework

Military System or Acquisition Program Customer: PdM CREW

Description: The upcoming Multifunction Electronic Warfare (MFEW) system will need to communicate and coordinate among EW platforms over the Tactical Internet for the purpose of managing networked MFEW assets, sharing EW relevant information and carrying out EW missions. MFEW systems will not have their own communication capabilities but instead will rely on underlying communications provided by the Tactical Internet. There have been multiple protocols and networking frameworks developed that are applicable for the MFEW communications and coordination. There is a need to take these protocols and frameworks develop them for MFEW and then test them in a relevant tactical environment.

Technical Point of Contact: Steve Abbott, 443-395-4856, steve.abbott@us.army.mil

Requirement Number: PEOIEWS03

Title: Enhanced Signals of Interest Support (Army)

Military System or Acquisition Program Customer: PEOs/PMs for SIGINT Systems, PM Prophet

Description: Commanders and National cryptanalysis missions need intelligence on a growing list of threat signals. The ability to augment signal of interest coverage beyond current receiver

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implementations is critical to ongoing mission success. There is a specific class of signals that is increasing in the level of threat presented. A technical implementation alternative is needed to provide coverage for these additional signals of interest to support Processing, Exploitation and Dissemination (PED).

Technical Point of Contact: Larry Bacon, 443-395-4827, laurence.w.bacon.civ@mail.mil

Requirement Number: PEOIEWS04

Title: Autonomy for the Tactical Payload Mission (Army)

Military System or Acquisition Customer: PEO IEW&S/PM SAI

Description: Seeking Technologies that will ease the burden for the tactical payload operator. Automated technologies such as command and control, cross cueing, and exploitation tools, machine learning, and context-based decision making that can reduce the overall workload of the tactical payload operator are of major interest to the Army.

Technical Point of Contact: George-Henri Simon, 443-861-1417,
George-Henri.n.Simon.civ@mail.mil

Requirement Number: PEOIEWS05

Title: Multi-INT Pre-Processor for DCGS-A (Army)

Military System or Acquisition Customer: PEO IEW&S/PM DCGS-A

Description: Current ISR sensor systems independently provide intelligence to locate and/or identify targets. The value of overall intelligence can be greatly enhanced if all of these sensors are tightly integrated in real time for synergistic 1) performances in target detections, positive identifications, accurate locations, real time tracking, and net work discovery, 2) operations in target development, pattern of life, and find-fix-finish. The primary Multi-INT sensors in this proposed effort are Prism/HBC COMINT, Nebula, VADER GMTI, TCS SIGINT, and EO/IR. The resulting Multi-INT system will be integrated into DCGS-A frame work as a real time preprocessor for the purpose of its tactical operations.

Technical Point of Contact: Chul H. Oh, (443) 861-0520, chul.h.oh.civ@mail.mil

Requirement Number: PEOIEWS06

Title: Airborne EW (Army)

Military System or Acquisition Program Customer: PEO IEWS, PM EW, PM MFEW

Description: The Army has future requirements for Airborne EW to include integrated ES and EA across a variety of platforms. The Army also has legacy and existing PoRs that are currently conducting Airborne ASE, ES, and SIGINT missions. Technologies and solutions are sought that can leverage existing Army Airborne PoRs for accomplishing the functionalities of: RF Detect, ID, Locate, Attack, Disseminate, etc.. The leveraging or modification of existing Army Airborne PoR technologies (I.E., HW, SW, architectures) is desired to achieve efficiencies across separate programs via: HW/SW reuse, reduced duplication, and increased commonality where possible. The purpose of this effort is to reduce risk, increase potential performance, and lower total ownership costs associated with the MFEW PoR. The end product should be a prototype suitable for flight demonstration that integrates with or leverages other Army PoR designs.

Technical Point of Contact: Steve Abbott, 443-395-4856, steve.abbott@us.army.mil

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Requirement Number: PEOIEWS07

Title: Improved Communications-EW Operations (Army)

Military System or Acquisition Program Customer: PEO IEW&S/PM EW

Description: Electronic Warfare systems have a growing and dynamic mission within the Army's tactical units. It is imperative that the Army has cohesive and coherent operations during EW missions. The purpose of this effort is to develop / demonstrate techniques and algorithms to assist in dynamic Jamming / Friendly Communications synchronization to maintain Army effectiveness. EW systems need to coordinate / synchronize operations with Off-Platform friendly COMM Networks to minimize disruption of Unit's ability to operate.

Technical Point of Contact: Donald Porter, Sr., 443-861-0762, donald.porter2.civ@mail.mil

Requirement Number: PEOIEWS08

Title: SIGINT Manpack Communications Tethering (Army)

Military System or Acquisition Program Customer: PEOs/PMs for SIGINT Systems, PM Prophet

Description: SIGINT missions employ Manpack devices for operations away from forward deployed vehicles. Currently the SIGINT information collected is not available for the Commander or for export to National cryptanalysts until the soldier returns to the vehicle. An implementation is needed to establish a communications link or tether between the vehicle and the SIGINT Manpack device that will enable real-time Processing, Exploitation and Dissemination (PED) of the SIGINT information. Additionally, the establishment of the communications link is foundational for setting up a mesh network that will enable integrated multi-platform Direction Finding (DF) operations to produce target geolocations as well as transporting Command and Control (C2) information.

Technical Point of Contact: Larry Bacon, 443-395-4827, laurence.w.bacon.civ@mail.mil

Requirement Number: PEOIEWS09

Title: EW Delivery of Cyber Effects (Army)

Military System or Acquisition Program Customer: PEO IEW&S/PM EW

Description: Current EW capabilities have the potential to execute intelligent EW operations to deliver cyber effects on target threat devices. The purpose of this effort will be to investigate / develop / demonstrate techniques to survey, uniquely identify and execute for the purpose of delivering cyber payloads via EW capabilities / systems. These additional capabilities can provide the Army with a cyber advantage over the adversary and also provide an enhanced Situational Awareness of the battle field. The technology could potentially be integrated into currently fielded systems or be provided as a capability drop for future efforts.

Technical Point of Contact: Sagor Hoque, 443-861-0527, sagor.e.hoque.civ@mail.mil

Requirement Number: PEOIEWS10

Title: Tactical SIGINT Inter-vehicle Communications (Army)

Military System or Acquisition Program Customer: PEOs/PMs for SIGINT Systems, PM Prophet

Description: There is a growing need to connect and more quickly leverage the capabilities of different sensor platforms. The ability to use information gathered by one sensor to alert, in real-time, another sensor platform with complementary capabilities will enhance the Intel process.

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This “tipping and cueing” process of using information from one vehicle’s capability set to another is an enabler of accelerating and advancing the impact of sensor platforms. An implementation is needed to provide tactical SIGINT inter-vehicle communications of data and low latency voice to support the “tipping and cueing” process.

Technical Point of Contact: Larry Bacon, 443-395-4827, laurence.w.bacon.civ@mail.mil

Requirement Number: PEOIEWS11

Title: Improved INTEL-EW Integration (Army)

Military System or Acquisition Program Customer: PEO IEW&S/PM EW

Description: Expansion of the utilization of the Electro-Magnetic Spectrum requires the Army to rapidly identify emitters during complex operations. Correlating and fusing INTEL and EW data to provide emitter ID and location is required. The purpose of this effort is to develop / demonstrate techniques utilizing INTEL & EW data to ID and locate emitters in the tactical environment.

Technical Point of Contact: Donald Porter, Sr., 443-861-0762, donald.porter2.civ@mail.mil

Requirement Number: PEOIEWS12

Title: Soldier Force Protection - Technology (Army)

Military System or Acquisition Customer: PEO IEW&S/PM EW

Description: To improve force protection system performance and reduce fratricide against non combatants, the US Army has an interest in Technologies / Processes / Products which assist in delineating and/or identifying hostile from non-hostile threats. The purpose of this effort is to a) determine what targets/threats can be differentiated as to hostile/non-hostile intent, b) exploit techniques and technologies required to establish hostile intent, and c) determine effectiveness of the resulting technologies.

Technical Point of Contact: Earl C. Moore, 443-861-0600, earl.c.moore.civ@mail.mil

Requirement Number: PEOIEWS13

Title: Soldier Force Protection – Modeling (Army)

Military System or Acquisition Customer: PEO IEW&S/PM EW

Description: To more fully address the Army’s Global mission, the US Army has an interest in Technologies / Processes / Products which address force protection associated with a global approach to threats and enemy TTPs. This global approach should encompass different kinds of threats, different kinds of environments in which these threats might be found, and different ways that an enemy might deploy or implement threat technologies. The purpose of this effort is to, a) study and evaluate potential threats associated with world-wide engagement zones, b) develop initial predictive models for current systems performance within these threat environments, c) test and validate the developed models .

Technical Point of Contact: Chris Voinier, 443-861-0596, christopher.l.voinier.civ@mail.mil

Requirement Number: PEOIEWS14

Title: Robust Positioning Navigation and Timing (PNT) System Electronic Warfare Systems (Army)

Military System or Acquisition Customer: PEO IEW&S/PM EW

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Description: Develop Electronic Warfare (EW) PNT solution(s) utilizing nontraditional frequencies to maintain accurate self geo-location and system timing within a highly contested radio frequency environment. These new technologies and techniques would be used to complement existing GPS navigation capabilities. The purpose of this effort is to a) study and investigate the accuracies required to use alternative means of derived position information, b) develop initial predictive models and algorithms to assess the use of these alternative self geo-location methods, and c) test and validate these models.

Technical Focal Point: Michael Zalewski, 443-861-0606, Michael.j.zalewski2.civ@mail.mil

Requirement Number: PEOIEWS15

Title: Improved Communications Interoperability (Army)

Military System or Acquisition Program Customer: PEO IEW&S/PM EW

Description: While communication interoperability issues are prevalent on the battlefield, very little has been done to quantify the interoperability requirements that exist between various systems. Prior efforts have focused about mitigating the problem, but no mitigation objective baselines have been established. The purpose of this effort is to a) establish those requirement baselines for communications interoperability, b) determine and/or document our current capabilities against that baseline, and c) to leverage and augment prior Software Defined Radio (SDR) interoperability mitigation efforts to achieve communications interoperability objectives.

Technical Point of Contact: Joseph Plishka, 443-861-2131, joseph.a.plishka.civ@mail.mil

Requirement Number: PEOMS01

Title: See-through-the-Sensor Meteorological Measurement for Ballistic Correction and Hazardous Weather Warning

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

Description: Extract meteorological measurements from Counter-fire Target Acquisition (CTA) radar echoes to provide the system with ballistic trajectory correction estimates and the crew with hazardous weather warnings. This capability is needed for when joint meteorological data from the US Air Force is not available due to downed communications, or when the US Air Force's radar coverage isn't available or isn't at the granularity or pedigree required to improve CTA radar performance and improve counter-fire locations. Conduct studies and implement algorithms to reduce target location error as a function of wind and refractivity measurement. Send wind estimate to Army Field Artillery Tactical Data System (AFATDS) for ballistic correction of indirect fires. Display hazardous weather conditions to the soldier including precipitation, wind, and thunderstorms. Distribute to consumers within the Brigade Combat Team (BCT) and Field Artillery (FA) Brigade meteorological data of weather effects that impact tactical warfighting functions. This includes but is not limited to ballistic meteorological data for indirect fires as stated above, real-time data for more accurate reporting and prediction of nuclear, biological and chemical agent conditions and downwind hazards, the employment of obscurants and non-lethal munitions, and real-time weather conditions for employing manned and unmanned aerial platforms in the brigade operational environment.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

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Requirement Number: PEOMS02

Title: Hardware improvements for counter-fire target acquisition radar for improved Electronic Protection (EP) capability

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

Description: Develop hardware solutions to improve the ability of counter-fire target acquisition radars mitigate multiple Electronic Attack (EA) threats simultaneously. Hardware improvements should consider Radio Frequency / Intermediate Frequency (RF/IF) hardware improvements in the radar receive chain, digital signal processing chain hardware improvements required to implement advanced EP techniques, and additional processing / computational hardware in radar processors to implement advanced EP techniques. Prototype hardware should be developed for Government testing. Hardware solutions should address a broad range of counter-fire and air surveillance EA threats.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

Requirement Number: PEOMS03

Title: Develop Non-Coherent Target Recognition (NCTR) Techniques for low frequency Radar.

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

Description: Develop NCTR techniques for radars between 1.0 and 3.5 GHz. Integrate techniques into counter-fire target acquisition radar tracking algorithms to improve classification, reduce target location error and reduce false locations.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

Requirement Number: PEOMS04

Title: Adaptive clutter cancellation techniques for counter-fire target acquisition radar.

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

Description: Develop adaptive clutter cancellation techniques (e.g. Gram-Schmidt processing of radar echoes) for counter-fire target acquisition radars. Adapt clutter filter notch to the real time estimate of the clutter spectrum. Improve sub-clutter visibility. Reduce probability of false location. Reduce clutter track load on processor.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

Requirement Number: PEOMS05

Title: Develop through-the-sensor communication link for counter-fire target acquisition radars.

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

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Description: Develop a directional data communication link through radar antennas for CTA radars. Employ electronic protection techniques to ensure secure communication. Provide the capability to relay messages to fuse tracks, cue tracks, relay messages to Army Field Artillery Tactical Data System (AFATDS) and relay messages to Forward Area Air Defense Command and Control (FAAD C2). Minimize impact to radar search and track performance.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

Requirement Number: PEOMS06

Title: Dual band radar

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PM Cruise Missile Defense Systems, PdM Radars (SFAE-MSLS-CMDS-R), AN/TPQ-50 Radar System, AN/TPQ-53 Radar System

Description: US Army has an interest in any Technologies / Processes / Logistics / Products and Procedures that leverage dual band radar approaches to optimize volume search, reaction time, precision track and non-coherent target recognition. Trade-off approaches against overall radar performance, total foot print, quantity of vehicles and crew size. Consider new systems and the integration of existing systems.

Technical Point of Contact: Jim Iverson, 443-861-2744, james.d.iverson.civ@mail.mil

Requirement Number: PEOMS07

Title: ATACMS Alternative Motor Case-Payload Anti-Separation Methods

Military System or Acquisition Program Customer: ATACMS

Description: Develop alternative technologies that could significantly reduce maintenance costs and increase product quality and reliability associated with current anti-separation method.

Currently ATACMS uses an Electron Beam Welding (EBW) process for anti-separation of the payload and rocket motor case. The 1980's EBW process is old technology requiring the ATACMS program to spend hundreds of thousands of dollars a year on maintenance of the equipment. Two processes currently in development could meet program requirements to replace the EBW process: Ceramic and Metallic Based Adhesives; and Laser Beam Welding.

Ceramic and Metallic Based Adhesives: Advances in adhesive technology have allowed manufacturers to use bonding processes for many structural applications. Benefits of this process are the limited degradation of material properties at low/high temperatures and chemical exposure, warhead skin and rocket motor maintain original material properties, allows joint stress to be spread over larger areas and lightweight material joining. Costs associated with this method are TBD but could be estimated around \$1-2M.

Laser Beam Welding (LBW): The LBW process uses a computer controlled laser beam as a concentrated heat source to provide narrow, deep welds at high travel speeds. Benefits of LBW would be high quality, robotically controlled welds, low distortion, low heat input, efficient welding process, laser beam can be transmitted through air rather than requiring a vacuum and is currently used for PAC-3 production, electronic housings and on engineering prototypes. Costs associated with this method are \$2-2.5M.

Technical Point of Contact: Jimmy Lawler, 256-842-4993, james.e.lawler6.civ@mail.mil

Requirement Number: PEOMS08

Title: 3D Manufacturing to offset Obsolescence risk

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Military System or Acquisition Customer: Avenger air defense weapon system

Description: Apply an innovative approach to mitigate parts obsolescence being experienced in the Avenger system through the use of 3D laser tracing to develop CAD drawings. These drawings would then be capable of building parts currently commercially unavailable through the use of 3D printing methods. Benefit to this is the extension of the Avenger system beyond its current part obsolescence timeframe.

Technical Point of Contact: Charles Marr, 256-876-8191, Charles.a.marr.civ@mail.mil

Requirement Number: PEOMS09

Title: Infrared Radio Frequency (IR/RF) Complementary Sensor for Counter-fire Target Acquisition (CTA) Radars

Military System or Acquisition Customer: ANTPQ-50 Lightweight Counter-Mortar Radar

Description: The addition of a complementary sensor allows for multi-sensor integration at a common platform which supports increased accuracy in a normal environment while potentially permitting continued operations when exposed to a counter-measure environment. Benefit is an increase in operational readiness in all environments.

Technical Point of Contact: Charles Marr, 256-876-8191, Charles.a.marr.civ@mail.mil

Requirement Number: PEOMS10

Title: Multi-Frequency Data Link

Military System or Acquisition Customer: Indirect Fire Protection Capability 2-Intercept (IFPC Inc 2-I) system

Description: Most data links are frequency specific. The introduction of a multi-frequency data link is enabling technology that would allow for the integration and operational use of multiple Joint Missiles in the IFPC Inc 2-I Multi-mission Launcher. Benefit is a reduction in missile specific launchers and total end items for the service.

Technical Point of Contact: Charles Marr, 256-876-8191, Charles.a.marr.civ@mail.mil

Requirement Number: PEOMS11

Title: Competitive Inertial Measurement Unit Development

Military System or Acquisition Program Customer: All users of Inertial Measurement Units (IMU), including Hellfire and Joint Air to Ground Missile (JAGM) Programs (PEO Missiles and Space).

Description: IMUs are a key part of precision missile systems and presently there is only one supplier to make products with the necessary performance. Funding to assist another manufacturer in completing development of an IMU with similar performance could allow competitive procurement of IMUs to reduce the overall IMU procurement cost to the Army.

Technical Point of Contact: Ross Layne, 256-955-0751, clay.r.layne.civ@mail.mil

Requirement Number: PEOMS12

Title: Reduced Cost Wall Penetrating Missile Warhead

Military System or Acquisition Program Customer: Hellfire, Joint Air to Ground Missile (JAGM), and other missile programs (PEO Missiles and Space)

Description: A recently fielded warhead with improved penetration of walls and structures is expensive and difficult to manufacture. A proposed design is available that would maintain

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performance while replacing some of the more expensive metal components with cheaper alternatives and that would also make the warhead more manufacturable.

Technical Point of Contact: LaShanda Felton, lashanda.d.felton.civ@mail.mil

Requirement Number: PEOMS13

Title: Lightly Cooled Midwave Infrared (MWIR) sensor

Military System or Acquisition Customer: Joint Air to Ground Missile (JAGM), Javelin Missile, and other FLIRS and night sights with cooled infrared sensors.

Description: Existing infrared sensors require compressed gas (nitrogen or argon) in bottles for cooling to reduce the intrinsic noise in the sensor. The requirement for cooling limits both the effective time the sensor can be used, increases the cost, and requires significant space within the sensor. A new technology for sensor focal plane arrays has been developed which doesn't require cooling to such low temperatures. These sensors can be cooled with thermo-electric coolers which are more cost effective. A prototype lightly cooled MWIR sensor for the JAGM program has the potential to provide equivalent performance at lower costs. As a new development JAGM is the ideal candidate to demonstrate this technology.

Technical Point of Contact: Jeff Lucas, 256-876-9190, Jeffery.c.lucas.civ@mail.mil

Requirement Number: PEOMS14

Title: Improved Solar Power Generation for Containerized Weapon System (CWS)

Military System or Acquisition Program Customer: PM Close Combat Weapon Systems (CCWS), SOCOM, Navy, XVIII ABN Corps and First to Fight Divisions

Description: Enhance the current Solar Power Generation system for CWS. Demonstrate longer run times between Generator runs to recharge the battery banks. Will reduce unit maintenance requirements for Generator and reduce exposure time.

Technical Point of Contact: John Dillon, (256) 876-1462, john.dillon@amrdec.army.mil

Requirement Number: PEOSOLD01

Title: Soldier Wearable Power Generation

Military System or Acquisition Customer: PEO-Soldier

Description: The Army is interested in innovative ideas for Soldier wearable power generation systems that use renewable energy sources (solar, kinetic, combustible, etc.) to generate power to augment Soldier battery mission life and to enable Soldier net zero power capability (self-sustained for a 72-hr mission). The minimum acceptable system shall weigh less than 1.0 lbs and have a net energy output of at least 3.5 Watt-Hrs. The objective system shall weigh less than 2 lbs with a net energy output of at least 10 Watt-Hrs. This system would be used with a separate existing scavenger system to charge the Soldier Conformal Wearable Battery (Reference MIL-PRF-32383/4). The system shall be integrated onto the Soldier and be rugged, lightweight, and suitable for outdoor use (rain, heat, cold, etc). The funding for this project will be critical to achieve the SUP Key Performance Parameter (KPP) for Soldier Power Generation.

Technical Point of Contact: Dave Schimmel, 703-704-1907 (work), john.d.schimmel.ctr@mail.mil

Requirement Number: PEOSOLD02

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Title: Helmet-Mounted Sensor Ring to Enhance a Soldier's Sound Localization Capability into In-the-Ear (ITE) and Over-The-Ear (OTE) Hearing Protection/Hearing Enhancement Devices (HPDs/HEDs) (Army)

Military System or Acquisition Customer: PEO-Soldier

Description: Provide to Soldier's a helmet-mounted sensor ring that captures surrounding impulse-type noises (e.g., gunfire/artillery fire) or high level steady-state type noises (e.g., a tank), and through available hardware/software capabilities, provide feedback to the Soldier, as to the direction of the respective type of noise (e.g., audio alert stating: 'Impulse Noise Detected at 10 o'clock') through the ITE/OTE HPDs/HEDs into the Soldier's ear. Tools are needed to have a minimum number of sensor rings needed to enhance the Soldier's ability to detect impulse-type sounds to within ± 5 degrees accuracy of the actual direction of the sound, and relate that information to the Soldier through their HPD/HED. Initial efforts deal with establishing a 'proof of principle', with follow-on effort in miniaturizing hardware into the HPDs/HEDs to the maximum extent practical. Results of this technology will be incorporated into the Army TCAPS Program for future acquisition efforts.

Technical Point of Contact: Collin C. Drennen, 703-704-2864 (work),
collin.c.drennen.civ@mail.mil

Requirement Number: PEOSOLD03

Title: Intra Soldier Wireless (ISW) Requirements Development (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing an Intra Soldier Wireless capability to reduce the Soldier load and on-body cables to connect electronic devices. The US Army is interested in consolidating ISW information to support development of supporting Joint Capabilities Integration and Development System (JCIDS) requirements document.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD04

Title: Intra Soldier Wireless (ISW) electronic warfare (EW) Hardening/Anti-Jam Enhancement (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in increasing the military suitability of commercial Ultra-Wide Bandwidth (UWB) with a focus on operations during electronic warfare with anti-jam capability.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD05

Title: Evaluation of Impulse Noise Amplitudes on the Retention Capability of In-the-Ear (ITE) and Over-The-Ear (OTE) Hearing Protection/Hearing Enhancement Devices (HPDs/HEDs) (Army)

Military System or Acquisition Customer: PEO-Soldier

Description: Testing of OTE HPDs/HEDs for the Tactical Communication and Protection System (TCAPS) Program have indicated that OTE solutions do not meet attenuations

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requirements for impulse-type noises, when testing without an Army Combat Helmet (ACH) connected to the Acoustical Test Fixture (ATF). This is in contrast to the field feedback where it is reported the Soldiers indicate they are not experiencing hearing loss/degradation due to using an OTE HPD/HED. An evaluation of Impulse Noise testing, using both pressure tubes and/or explosives to generate the Impulse Blast, the use/non-use of an ACH, and the use of a high-speed camera (to determine if separation of the HPD/HED from the ATF occurs), is needed to resolve this conflict. Results of this assessment will be analyzed by the TCAPS Program Office, in conjunction with MCoE, to determine if OTE HPDs/HEDs required the use of an ACH to provide the required attenuation to protect the Soldier from harmful impulse-type noises.

Technical Point of Contact: Collin C. Drennen, 703-704-2864 (work),
collin.c.drennen.civ@mail.mil

Requirement Number: PEOSOLD06

Title: Soldier System Baseline Modeling (Army)

Military System or Acquisition Customer: PEO Soldier

Description: Identify baselines for Dismounted Platoon variants, and Mounted and Air Configurations. Develop system baselines equipment models using SolidWorks to allow for visual and technical representation of Soldier Systems.

Technical Point of Contact: Mario Velez, 703-704-3853,
mario.e.velezvelez.civ@mail.mil

Requirement Number: PEOSOLD07

Title: Color Night Vision (Army, Navy, SOCOM)

Military System or Acquisition Customer: PEO Soldier

Description: Warfighters require binocular head and/or helmet mounted vision systems that provide enhanced mobility, threat detection and situational awareness by providing color capability at night. Solutions should provide the color capability without negatively impacting the lowest light level performance of the device and without increasing system size and weight.

Technical Point of Contact: Gary Keller, 703-704-1516,
gary.m.keller6.civ@mail.mil

Requirement Number: PEOSOLD08

Title: Advanced Laser Pointer and Detector (Army, SOCOM)

Military System or Acquisition Customer: PEO Soldier

Description: Soldiers require an ability to point at a target 24 hours a day and with a low probability that the action will be detected by enemy forces. The capability should enable individual pointers to be differentiated to enhance communication and target handoff and provide target range. Laser pointer and detector(s) should be modules that minimize size, weight, power and cost for integration in future weapon sights and other devices.

Technical Point of Contact: Gary Keller, 703-704-1516,
gary.m.keller6.civ@mail.mil

Requirement Number: PEOSOLD09

Title: Integrated Full Solution Day Optic Sighting System

Military System or Acquisition Customer: PEO Soldier

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Description: Demonstrate a fully integrated, full solution day optic sighting system that will increase P(h) as a function of range and reduce engagement time to enhance the performance of 7.62mm, and caliber .50 shoulder fired rifle systems out to 2000m. Desirable features: 4X-25X Magnification; LRF <3m Ranging Accuracy; Inclinometer; Atmospheric Sensors; Ballistic Computer; Real Time Ballistic Solution; Standard Batteries (Army Inventory); High Brightness Display;

Technical Point of Contact: Andrew Cline, 973-724-7457,
andrew.h.cline.civ@mail.mil

Requirement Number: PEOSOLD10

Title: Lightweight Tropical Uniform

Military System or Acquisition Program Customer: PEO Soldier

Description: US Army requires lightweight materials and or designs that enhance Soldier performance, comfort, and protection in a tropical environment. Material attributes include lightweight, air permeable, quick drying, high strength, durable, and cannot melt/drip. Material must be machine washable, offer vector protection, and meet shade, color fastness and spectral reflectance requirements if printed in a multi-color earth tone camouflage pattern.

Technical Point of Contact: Suzanne Horner, 703-806-5181,
suzanne.e.horner.civ@mail.mil

Requirement Number: PEOSOLD11

Title: Advanced Technologies for Lighter Weight and Better Performing Soldier

Protective Equipment

Military System or Acquisition Customer: PEO Soldier

Description: US Army requires advanced materials, processes, and integration technologies for lighter weight and improved ballistic performance of Soldier protective equipment including hard armor inserts, soft armor, and helmets. Technology is needed for improved hard armor inserts via improved ceramic or backing materials and integration methods. Unique and novel textile weaves or hybrid soft armor designs are needed which improve the ballistic protection, improve stab resistance, or increase armor flexibility of currently available materials. Technological advances in materials or processing are needed for combat helmets to improve ballistic performance and reduce weight. Solutions may include materials processing optimization, materials hybridization, or new fiber or material development. High performance energy absorbing materials are needed for helmet suspension systems. Advanced transparent materials with ultrafast transitioning from clear to sunlight are needed to improve ballistic eyewear.

Technical Point of Contact: Virginia Halls, 703-806-5176,
virginia.a.halls.civ@mail.mil

Requirement Number: PEOSOLD12

Title: Dosimeter/Exposure Alert Integration into In-the-Ear (ITE) and Over-The-Ear (OTE) Hearing Protection/Hearing Enhancement Devices (HPDs/HEDs) (Army)

Military System or Acquisition Customer: PEO-Soldier

Description: Provide to Soldier's the ability to receive an audio alert when their exposure to a high noise environment exceeds safe noise limit exposures (e.g., OSHA/DA standards) while

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wearing ITE (earplugs) and OTE (earmuffs) HPDs/HEDs. Currently, military HPDs/HEDs provide protection against high noise environments, as well as hearing enhancement capabilities, but do not provide the ability to monitor the actual sound level inside the Soldier's ear, and provide an alert to the Soldier if noise exposure is nearing potential hearing damage/degradation based on safe noise level/time duration levels. Tools are needed to capture the audio levels presented to the Soldier's Middle Ear, log the sound amplitude and time duration, then compare these against applicable hearing protection standards to notify the Soldier when safe noise limits have been exceeded (this will enable the Soldier to check with an Army Audiologist to assess potential hearing loss/damage). Initial efforts deal with establishing a 'proof of principle', with follow-on effort in miniaturizing hardware into the HPDs/HEDs. Results of this technology will be incorporated into the Army TCAPS Program for future acquisition efforts.

Technical Point of Contact: Collin C. Drennen, 703-704-2864 (work),
collin.c.drennen.civ@mail.mil

Requirement Number: PEOSOLD13

Title: Non-Wire Solution for Soldier-Worn Radios to In-the-Ear (ITE) and Over-The-Ear (OTE) Hearing Protection/Hearing Enhancement Devices (HPDs/HEDs) (Army)

Military System or Acquisition Customer: PEO-Soldier

Description: Provide to Soldier's a non-wired solution that connects a soldier-worn radio (e.g., AN/PRC-148/152/152A/154/154A) through first available commercial technologies (e.g., WLAN, Bluetooth), and then through technologies that support National Security Agency (NSA) certification, to Soldier-worn HPDs/HEDs. The Soldier will need to be able to conduct voice communications between the HPD/HED and the military radio without the use of any cables between the two items. Modifications to the existing radio hardware/software are not allowed, and attachment of wireless communication devices to the radio must be compatible with existing radio interfaces. Results of this technology will be assessed by the TCAPS Program Office to determine the feasibility/timeline of incorporation into future acquisition efforts.

Technical Point of Contact: Collin C. Drennen, 703-704-2864 (work),
collin.c.drennen.civ@mail.mil

Requirement Number: PEOSOLD14

Title: Intra Soldier Wireless (ISW) - Compressed Video over Ultra-Wide Bandwidth (UWB) (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing a solution for compression of 1080p video to a suitable bandwidth for transmission over UWB. UWB handles between 250 and 300 Mbps of user data under ideal conditions. To support less-than-ideal conditions, UWB prefers a user data rate of 100 Mbps. Raw 1080p 30 fps video requires nearly one Gbps throughput, which is more than UWB can support. Although UWB could be extended to support this data rate, the power required to transmit this much data would likely be more than then desired for the system. A compression solution is needed to support 1080p and higher, to include encoding and decoding implementations. The compression loss suffered by the rendered video should not be enough to detect or affect operation of a video device.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

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Requirement Number: PEOSOLD15

Title: Intra Soldier Wireless (ISW) - Wireless Universal Serial Bus (USB) Hubs (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing the capability to connect a smartphone to at least two USB hubs over a UWB link. The soldier carries on-body a smartphone and USB hubs. The USB hubs are used for connecting an assortment of devices that must be aggressively power-managed. US Army has interest in developing the capability for a smartphone to use a UWB connection to enumerate and communicate with multiple hubs and all devices downstream of the hubs, including support for hot-plug operation. The smartphone must be able to communicate with at least two hubs simultaneously to allow for conditions where the RF link to one hub may be blocked.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD16

Title: Advanced Multifunctional Fabrics for Soldier Protection

Military System or Acquisition Customer: PEO Soldier

Description: US Army needs advanced multifunctional fabrics that provide improved protection from various threats and environments including vector disease, flash flame, extreme weather, etc. at reduced weight that increase comfort, functionality, and utility. Technologies are needed to provide 1) improved flame resistant (FR) materials with improved durability, strength, and moisture vapor transport; 2) thermally protective lightweight materials/designs with improved strength and durability; 3) alternative special vector protection with increased knockdown and low toxicity; and 4) durable water resistant materials without the use of perfluorinated chemicals. Of particular interest are technologies and materials with multi-functional capabilities.

Technical Point of Contact: Suzanne Horner, 703-806-5181,
suzanne.e.horner.civ@mail.mil

Requirement Number: PEOSOLD17

Title: Novel High Mass Efficiency Ballistic Materials

Military System or Acquisition Customer: PEO Soldier

Description: US Army has a need for novel, high mass efficiency, biology inspired materials for armor and helmet applications that will realize protective equipment weight reduction. Advanced technology is needed for producing ultra hard ceramics such as B₆O or AlB₁₂, high mass efficiency ultra high molecular weight polyethylene tape or film, and genome engineered “Spider Silk”, which has the highest toughness of all commercially available materials.

Technical Point of Contact: Virginia Halls, 703-806-5176,
virginia.a.halls.civ@mail.mil

Requirement Number: PEOSOLD18

Title: Intra Soldier Wireless (ISW) - Multicast Mesh of Mixed Protocol Devices (Army)

Military System or Acquisition Customer: PEO Soldier

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Description: US Army has interest in developing a protocol that allows devices of different wire protocols and topologies to communicate over UWB in a mix-and-match fashion. The Intra Soldier Wireless body area network uses short-range UWB signals to connect various soldier devices. These devices include End User Devices (EUD) such as smartphones, devices that can typically connect to a EUD via a variety of physical busses, and devices that operate independently of a EUD but connect to other devices. EUDs can handle a USB-centric architecture very well using a star-hub approach. EUDs can also participate in peer-to-peer IP networks as an Ethernet network node. Devices that operate with the EUD typically connect as either an IP network device or a USB device. Devices that operate independently of the EUD use a range of connection technology that might be neither USB nor Ethernet, and may even be proprietary. The connection models for USB, IP networks, and “other” point-to-point “other” connections are quite different. US Army has interest in developing a new UWB transport protocol that allows mixed protocol devices to coexist inside the same wireless body area network. The transport protocol would support USB data carriage, IP data carriage, and protocol-agnostic data carriage, while maintaining a common base for interference detection and avoidance, power management, and security.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD19

Title: Intra Soldier Wireless (ISW) - Wireless Off-Body Position Reporting (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing a wireless positioning system that allows the soldier to collect positioning information from body worn devices through a short range wireless link and transport the information over another short range wireless link to an off-body radio for off-body transmission. The soldier carries on-body a smartphone, a GPS unit, a laser range finder (LRF), and an off-body radio. Under current conditions in the field, the soldier may connect the off-body radio to the smartphone to serve as a network access point for the off-body network. The soldier may also connect the GPS or LRF to the smartphone to collect readings. To connect simultaneously, the soldier requires a wired hub and potentially hands-on operation of the various devices. US Army has interest in developing a seamless, fully wireless UWB integration of these elements. The smartphone would utilize a UWB radio to simultaneously connect to the GPS, LRF, and off-body radio. The soldier uses a smartphone application to collect position information from the GPS and LRF and transmit it to a far-end receiver that displays or otherwise uses the position information.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD20

Title: Intra Soldier Wireless (ISW) - Wireless Off-Body Video Streaming (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing a wireless phone-to-phone video capability that allows a soldier to stream video from a EUD (smartphone) to another soldier’s EUD through an off-body radio network. The soldier carries on-body a smartphone and an off-body radio. Under current conditions in the field, the soldier may physically connect the off-body radio to the

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smartphone to serve as a network access point for the off-body network. The soldier may send data, including video files, to another node in the network. However, the soldier must make the physical connection, and has no means to send live video feeds. US Army has interest in developing a mechanism to connect the off-body radio to the EUD through a wireless UWB connection, and then stream live video from the EUD camera to a another EUD attached to the off-body network for near-real time display.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD21

Title: Intra Soldier Wireless (ISW) - Wireless Off-Body Data Streaming(Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing the means to broadcast real-time data from one smartphone to a set of suitable displays. Suitable displays may include actual display units or other phones. The soldier carries on-body a smartphone and may wish to share information with multiple other soldiers in real-time, video in particular. For example, a squad lead may wish to show live video to squad members for training or reconnaissance purposes. Currently, the soldier must send a completed video to other soldiers over slower network connections for later replay, or all recipients must huddle around the sender's phone. US Army has interest in developing the capability for a smartphone to broadcast streaming video or desktop information to an indefinite number of phones with minimal latency. Because broadcast data is unacknowledged, the receiving phones must be in close enough proximity to detect the majority of the wireless packets, and the encode/decode mechanism must allow for a significant percentage of lost packets without destroying or stopping the video rendering.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD22

Title: Intra Soldier Wireless (ISW) - Audio Connectivity over UWB (Army)

Military System or Acquisition Customer: PEO Soldier

Description: US Army has interest in developing the ability to connect protective headset to both tactical radio and End User Devices (EUD) for voice communication and audio cues. Additional capability will include language translation which requires high quality audio data with limited compression to ensure low loss between headset and EUD.

Technical Point of Contact: David Veney, 571-437-6527,
david.w.veney.ctr@mail.mil

Requirement Number: PEOSOLD23

Title: Soldier System Assessment and Performance Validation (Army)

Military System or Acquisition Customer: PEO Soldier

Description: Conduct a Soldier System baseline performance assessment using the new Load Effects Assessment Program-Army (LEAP-A). Use LEAP-A to validate cross-product integration at the system level. Determine relationship between Soldier load and Soldier performance in order to understand how weight, bulk and stiffness impacts on Soldier System mobility.

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Technical Point of Contact: Lester Smith, 703-704-1788,
lester.j.smith.mil@mail.mil

Requirement Number: AMRDEC01

Title: Miniaturized Laser for Fiber-Optic

Military System or Acquisition Program Customer: To be provided.

Description: Seeking a technology leap-ahead in the Size, Weight and Power (SWaP) of navigation-grade inertial sensors. The immediate objectives are to close Army capability gaps that exist with the Maneuver & Fires Centers of Excellence (MCoE & FCoE) in targeting, operations under GPS denial and operational overmatch (enhanced lethality and accuracy).

Technical Point of Contact: Dawn Gratz, dawn.m.gratz.civ@mail.mil, 256-842-8769

Requirement Number: AMRDEC02

Title: Gyro and Imaging Technologies for Improved Night Video Quality

Military System or Acquisition Program Customer: To be provided.

Description: Seeking a technology, process, logistic, product, or procedure that extends the target discrimination range more effectively than current infrared (IR) imaging systems used for small precision munitions (SPM) and small unmanned aircraft systems (SUAS). Technologies of interest include, but are not limited to: next generation uncooled long wave IR (smaller pixel pitch), near IR sensors (e.g. electron multiplied CCD, black silicon), short wave IR, polarization sensors, next generation cooled thermal imagers (microcryogenic coolers), and active illumination. Reduced size, weight, power, and cost are essential for SPM and SUAS applications. The goal of this effort is to flight test integrated sensor system enhancements to demonstrate increased target discrimination ranges and discrimination probabilities while providing increased target observation time to the operator. **Technical Point of Contact:** Dawn Gratz, dawn.m.gratz.civ@mail.mil, 256-842-8769

Requirement Number: AMRDEC03

Title: Aviation Technologies

Military System or Acquisition Program Customer: PEO Aviation.

Description: Improvements to aviation platforms to overcome the constraints of complex terrain, higher altitudes, extreme temperatures, and extended distances while performing operations throughout the Joint Operational Area. Increase service rate for aviation mission requests, reduced force structure, reduced coverage times, enhance force survivability, expand situational awareness, and reduce fuel consumption and logistics footprint, share common training, education and equipment across the Joint VTOL fleet. Create embedded diagnostics and prognostics technologies for engines and drive train, structures, rotors, and vehicle management systems. Aid the development of an integrated suite of decision aiding and autonomy technologies manned and unmanned aircraft systems that will increase the combat effectiveness.

Technical Point of Contact: Dawn Gratz, dawn.m.gratz.civ@mail.mil, 256-842-8769

Requirement Number: ARDEC01

Title: Preparing instructors to teach higher-order cognitive skills

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Military System or Acquisition Program Customer: PEOs/PMs for ammunition items and existing and future Standard Army Management Information Systems (GCSS-Army, LMP, SAAS, etc), material handling equipment, transportation assets, storage facility infrastructure and PM managed products that require packaging solutions.

Description: Mature and demonstrate an ammunition distribution management capability that provides the ability to monitor and anticipate consumption demand to optimize sustainment operations and transportation efficiency while reducing soldier exposure to risk. Mature and demonstrate lethality improvements in conventional munitions and/or tube/barrel based weapon systems (non-missile) that will reduce the logistics burden of delivering terminal effects on target. Demonstrate affordable lightweight, renewable/reusable/recyclable packaging and unitization designs for ammunition integrated with embedded sensors and sustainment data from emerging and legacy STAMIS to increase the reliability and effectiveness of the tactical supply chain. Solutions will reduce transportation requirements and waste throughout the supply chain while improving lethality and readiness.

Technical Point of Contact: Alan Santucci, ARDEC, (973)-724-4737,
alan.f.santucci.civ@mail.mil

Requirement Number: ARI01

Title: Preparing instructors to teach higher-order cognitive skills

Military System or Acquisition Program Customer: PEO-STRI; TRADOC G-3/5/7 and CAC-T

Description: Demonstrate advanced technologies that can be incorporated into programs that prepare instructors of Army leader development courses to teach higher-order cognitive skills, e.g., critical thinking, problem-solving, adaptability. The advanced technologies shall incorporate sound principles for skill development and instructor preparation. Technologies should be readily integrated into existing or emerging instructor development mechanisms, course content, and training environments. Demonstrate training impact of developed technologies in one or more Army leader development courses.

Technical Point of Contact: Dr. Scott Graham, ARI, (706) 545-2362,
scott.e.graham.civ@mail.mil

Requirement Number: ARL01

Title: Automatic Social Network Extraction and Entity Relationship Modeling

Military System or Acquisition Program Customer: Army Intelligence and Security Command (INSCOM) Futures Lab

Description: Demonstrate extraction of meaning in relationships between people, objects, and locations from a variety of text and multi-source datasets. Compute automated multi-modal network displays using frame-based semantic modeling software to build detailed network models from unstructured text. Model entities as complex systems of attributes, logical rules and inter-relationships. Perform automated inference to compute the entity relationships and attributes that are implied by the noisy and incomplete data. Visualize observations and inference of the social network. Software analytics and user interface displays were demonstrated in a relevant military environment with intelligence analysts at the C4ISR Network Modernization Event 2013, Ft. Dix, NJ, and are currently in use as a research platform in the ARL CISD Lab.

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Technical Point of Contact: Elizabeth K. Bowman, (410) 278-5924,
Elizabeth.k.bowman.civ@mail.mil

Requirement Number: CERDEC01

Title: Cost Effective C4ISR Technologies

Military System or Acquisition Program Customer: PEO IEWS, PEO Soldier, PEO C3T, PEO GCS, PEO Ammunition

Description: Cost effective, C4ISR technologies in the areas of Mission Command, Soldier and Mobile Power and Energy, Position, Navigation, and Timing, Cyber Operations (Protect, Exploitation, Attack), Intelligence and Surveillance, Reconnaissance, Target Acquisition, Targeting, Counter Threat Sensor Countermeasures and Counter-Countermeasures, Intelligence Fusion, Electronic Warfare (Air and Ground), IED, Mine and Minefield Detection, Neutralization and Defeat, Soldier Sensors, Tactical and Strategic Communications and Network Management

Technical Point of Contact: Richard Nabors, CERDEC, richard.a.nabors.civ@mail.mil

Requirement Number: DBFA01

Title: Enhanced or Novel Forensic Analysis Platforms

Military System or Acquisition Program Customer: Defense Forensics and Biometrics Agency (DFBA), Defense Forensic Science Center (DFSC), Biometrics Identify Management Activity, the Military Criminal Investigative Organizations, and the Intelligence Community

Description: Produce novel and useful tools, devices, software, or systems that have the potential for forensics application for criminal justice and intelligence purposes. Examples include improvements to the "front end" of the forensic analysis through the development of nondestructive or minimally destructive methods for evidentiary sample identification and/or collection; development of tools or methods that can separate the various components of a mixture; development of improved tools for examining aged, degraded, or otherwise compromised physical evidence; and development of novel approaches and/or enhance current approaches to interpret forensic data derived from physical evidence, including the significance of association. Priority consideration will be given to projects that demonstrate potential for increased quality of result and/or decreased time/cost related to the collection, screening, analysis, or interpretation of sexual assault forensic evidence.

Technical Point of Contact: Garold Warner, Office of the Chief Scientist, DFSC, Senior Analyst, (404) 469 7200, Garold.C.Warner.ctr@mail.mil

Requirement Number: ECBC01

Title: Integrated CBRN Respirator (CBD)

Military System or Acquisition Program Customer: JPEO/JPM for CBRN Defense

Description: CBRN respiratory protection systems (e.g. M50, C50, and M53) lack complete integration with the helmet and suit impacting total system protection and wearer operational effectiveness in a CBRN environment. Integrated, lightweight CBRN respiratory protection solutions utilizing nanotechnology materials and coatings are being sought for ground personnel to extend and improve operational performance in a CBRN environment. The technology will provide a near term integration conversion kit for CBRN masks to enhance capabilities of current applications. The solutions will demonstrate the ability to rapidly don the respirator without

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helmet removal and remove the hood from under the helmet while achieving complete headgear respiratory and percutaneous protection. The goal is to improve headgear and suit integration and increase protection and survivability of the system. The approach will include the development of prototypes and evaluate overall effectiveness through protection factor and operational performance assessments.

Technical Point of Contact: Corey Grove, ECBC, (410)-436-6651,
corey.m.grove.civ@mail.mil

Requirement Number: NSRDEC01

Title: Integrated self-sustaining shelter systems and expeditionary base camp technologies

Military System or Acquisition Program Customer: PEO Combat Support & Combat Service Support, and Product Manager Force Sustainment Systems

Description: Army base camps, especially those of smaller size, are commonly composed of a variety of standard and non-standard equipment. This results in inefficient power and water consumption, waste management, and construction while increasing operations and maintenance costs over time. The Army seeks the development and maturation of a transportable, innovative suite of technologies creating a fully integrated and holistic habitation platform. Capabilities to be considered include: plug and play components, subsystems designed for optimized manpower requirements, energy efficient and renewable energy technologies, water demand reduction or reuse technologies, waste disposal and/or treatment, energy and water efficient organizational systems, such as kitchens, latrines, showers, etc. that also reduce logistic burdens, increased survivability and durability, optimized habitation/quality of life, reduced logistics footprint, enhanced supportability, and reasonable cost.

Technical Point of Contact: Liz Swisher, NSRDEC, (508)233-5457,
elizabeth.d.swisher.civ@mail.mil

Requirement Number: TARDEC01

Title: Extreme Multi-Modal Mobility for Ground Vehicles

Military System or Acquisition Program Customer: TRADOC ARCIC - Will shape future requirements for “expeditionary” ground vehicle concepts

Description: Demonstrate the capability to provide novel, unconventional and multi-modal mobility on ground vehicles (manned, unmanned or optionally-manned) across a broad spectrum of complex cross-country and urban environments. Technologies with modular and universal/open architectures are desirable. These demonstrations will inform emerging “expeditionary” transportability and tactical mobility requirements to enable greater operational adaptability for future airborne infantry and reconnaissance teams.

Technical Point of Contact: Michael Rose, 586-282-4991, Michael.t.rose.civ@mail.mil

Requirement Number: COE1

Title: Force Protection Basing (Army)

Military System or Acquisition Program Customer: PEO/PMs for Integrated Base Defense, PEO/PM for Contingency Base Infrastructure

Description: Develop and demonstrate force protection solutions for Extra Small/Small Base Camps as well as other facilities requiring increased force protection. Protection technologies and products should help to reduce the manpower, specialized equipment, and time required to

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set-up and defend critical assets and bases. Solutions may include passive defense measures, threat assessment, and a capability to conduct planning and vulnerability-risk assessments based on site selection, base layout, and resource allocation prior to and after deployment.

Technical Focal Point: Pamela Kinnebrew, 601-634-3366,
Pamela.G.Kinnebrew@usace.army.mil

Requirement Number: COE2

Title: Improved Gradiometers for Improvised Explosive Device (IED) Detection (Army)

Military System or Acquisition Program Customer: PEO Ammunition – PM for Counter Explosive Hazard

Description: Hand-held, robot-mounted, and vehicle-mounted gradiometers have demonstrated usefulness in operational environments for detecting IEDs. There is a need to design a combined transmitter-sensor system that is more robust in its ability to detect a wider array of target sizes. The resulting design and prototypes must be operable in extreme and austere environments and require demonstration of both probability of detection and false alarm rate on a set of IED targets. Target detection locations and the boundaries of reliably scanned areas need to be output in a format compliant with the Army Common Operating Environment.

Technical Focal Point: Harley Cudney, 603-646-4821, harley.h.cudney@erdc.dren.mil

Requirement Number: COE3

Title: Socio-cultural Course of Action Assessment and Exploration (Army)

Military System or Acquisition Customer: PEO-STRI - PM CONSIM.

Description: U.S. Army has an interest in capabilities that allow planners to efficiently prepare culturally-appropriate models for evaluating Army, enemy and population courses of action. The envisioned capability includes preparation and use of baseline environment information that is geospatially explicit, includes estimation of network relationships amongst groups, physical environment and terrain, and other relevant operational variables and civil considerations. Data to prepare the models must be sufficiently available to allow transposing the capability within planning timelines. The capability must provide estimates of uncertainty and confidence, and be traceable to modeling assumptions and data. The model outputs should support planners in understanding and anticipating complex, adaptive behaviors in the environment.

Technical Focal Point: Timothy K. Perkins, 843-754-4652, timothy.k.perkins@us.army.mil

Requirement Number: COE4

Title: M&S for Robotics (Army)

Military System or Acquisition Program Customer: PEO/PMs for Unmanned Ground Vehicles

Description: Develop and demonstrate technology solutions to support modeling and simulation (M&S) of unmanned ground vehicles (UGV) with varied levels of autonomy, up to and including full autonomy. The UGV M&S products should enable plug-and-play, real-time, hardware in the loop (HITL) simulations for virtual evaluation of autonomy and perception algorithms used in various ground vehicle sensor systems. Solutions may include M&S products for UGV, sensor, and perception or autonomy system components, HITL simulator systems that account for vehicle dynamics, environment, and sensor effects on UGV performance, and field mobile products capable of enabling rapid, automated M&S scene generation from physical site

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characterization measurements. HITL M&S products based on the Robotic Operating System (ROS) are preferred, and scene generation products are sought that can automatically collect and translate geospecific M&S scene data into common digital modeling formats such as Digital Terrain Elevation Data (DTED) or mesh formats such as Wavefront obj, where the resulting data should be automatically colorized where applicable.

Technical Focal Point: Chris Goodin, 601-634-2925, Christopher.T.Goodin@usace.army.mil

Department of the Navy (DoN) Rapid Innovation Fund Annex

This annex expands and provides further clarification on selected paragraphs in the Department of Defense (DoD) BAA. Paragraph references below correspond to paragraphs in the main body of the BAA unless designated as “DoN Annex.”

1.0 Funds Available

DoN Funds available for award under this BAA are approximately \$40 million. This amount is an estimate only and is not a contractual obligation. All funding is subject to change due to Government discretion and availability.

2.0 Points of Contact

Business questions on the DoN Annex shall be directed to the Business Point of Contact (POC):

Tracie Simmons

Contracting Officer

Office of Naval Research

ONR Code: BD 254

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: tracie.simmons@navy.mil

Security questions on the DoN Annex shall be submitted to the Security POC:

Diana Pacheco

Industrial Security Specialist

Office of Naval Research

Security Department, Code 43

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: diana.pacheco@navy.mil

Technical questions on the DoN Annex may be directed to the Technical POC:

Bob Smith

DoN Rapid Innovation Fund Program Manager

Office of Naval Research

ONR Code: 03TTX

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: robert.l.smith6@navy.mil

Alternatively, questions of a technical nature on the DoN Annex may be directed to one of the

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Naval Systems Command (SYSCOM) Points of Contacts, as specified below. NOTE: Questions regarding specific DoN requirements (listed in DoN Annex Section 5 below) should be addressed to the Technical POC listed under the requirement.

Naval Facilities Engineering Command (NAVFAC)

Philip Vitale

Deputy Director, Ocean Facilities Program Naval Facilities Engineering Command

Address: 1322 Patterson Avenue SE Suite 1000, Washington, DC 20374

Email Address: philip.vitale@navy.mil

Naval Supply Systems Command (NAVSUP)

Mark Deebel

Program Manager

Address: 5450 Carlisle Pike, Building 309, Mechanicsburg, PA 17055

Email Address: mark.deebel@navy.mil

Marine Corps Systems Command (MCSC)

Nicholas Johnston

MCSC RIF Program Lead

Address: 2200 Lester St, Quantico, VA 22134

Email Address: nicholas.johnston@usmc.mil

Naval Sea Systems Command (NAVSEA)

Timothy Barnard

NAVSEA Assistant Chief Technology Officer

Address: SEA05T (NAVSEA West, 3215), 1333 Isaac Hull Ave. SE, Washington Navy Yard, 20376

Email Address: timothy.barnard@navy.mil

Naval Air Systems Command (NAVAIR)

Janet McGovern

NAVAIR Rapid Innovation Fund Program Lead

Address: 48150 Shaw Road, Unit 5, Patuxent River, MD 20670-1906

Email Address: NAECTO@navy.mil

Space and Naval Warfare Systems Command (SPAWAR)

Dr. Robert Parker

SPAWAR Deputy Chief Technology Officer (DCTO)

Address: 4301 Pacific Highway, San Diego, CA 92110

Email Address: robert.parker@navy.mil

Strategic Systems Programs (SSP)

Mark Hrbacek

Future Capabilities Manager (SP2024)

Address: 1250 10th Street SE Suite 3600, Washington Navy Yard, DC 20374-5127

Email Address: Mark.Hrbacek@ssp.navy.mil

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Bureau of Medicine and Surgery (BUMED)

David F. Neri, Ph.D.

Assistant Deputy Chief, Research and Development (M2B)

Address: 7700 Arlington Blvd. (Rm 2NW239), Falls Church, VA 22042-5113

Email Address: david.neri@med.navy.mil

Note: All communications shall be submitted UNCLASSIFIED via e-mail. All questions to a Technical Point of Contract shall be sent via e-mail with a copy to the designated Business POC.

3.0 White Paper Submission Instructions

DoN Offerors shall be prepared to submit these data elements on the cover sheet form in addition to those listed in BAA Section 4.3.1:

- Project Description/Executive Summary: Describe what you intend to do and the product(s) to be delivered at the end of your efforts (200 words or less)
- Has your accounting system been approved by the Defense Contracting Audit Agency (DCAA) within the last three years? (Yes/No)
 - DCAA Branch Office name:
 - Address:
 - Auditor name:
 - Auditor Email:
 - Auditor Phone:
- Will the effort require access to or generate any classified information? (Yes/No) If yes, provide:
 - Facility clearance level: (select one)
 - Top Secret
 - Secret
 - Confidential
 - Not Applicable
 - Ability to store classified information at the facility? (Yes/No)
- Choose one or more applicable goals:
 - Enhanced Military Capability;
 - Accelerated Military Development Capability
 - Reduces Costs
- Please select the primary applicable DoN RIF Requirement Number
- Choose a Naval Systems Command or Direct Reporting Program Manager (DRPM) aligned with the intended Program of Record and DoN RIF Requirement Number selected in the submission
 - Naval Air Systems Command (NAVAIR)
 - Marine Corps Systems Command (MCSC)
 - Space and Naval Warfare Systems Command (SPAWAR)
 - Naval Supply Systems Command (NAVSUP)

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- DRPM Strategic Systems Programs (SSP)
- Naval Sea Systems Command (NAVSEA)
- Naval Facilities Engineering Command (NAVFAC)
- Bureau of Medicine and Surgery (BUMED)
- Choose Program Executive Office (if known) (optional)
 - NAVAIR
 - PEO (T): Tactical Aircraft Programs
 - PEO (A): Air ASW, Assault & Special Mission Programs
 - PEO (U&W): Unmanned Aviation & Strike Weapons
 - PEO (JSF): Joint Strike Fighter
 - AIR 1.0
 - NAVSEA
 - PEO Aircraft Carriers
 - PEO Integrated Warfare Systems
 - PEO Littoral Combat Ship
 - PEO Ships
 - PEO Submarines
 - SPAWAR
 - PEO C4I
 - PEO EIS
 - PEO Space Systems
 - Fleet Readiness Directorate
 - SPAWAR HQ
 - MCSC
 - PEO Land Systems
 - MCSC

4.0 PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

4.1 *Proposal Format*

The full proposal will include four sections; Cover Sheet, Technical Proposal, Cost or Price Proposal, and Performance Work Statement (PWS). The Technical Proposal is limited to 25 pages. The Cover Sheet, Cost or Price Proposal, and PWS are not included in the technical section page limit. The Cover Sheet is limited to 1 page. The Cost or Price proposal does not have a page limit. The PWS is limited to 12 pages. There shall be no cost/price information in the technical proposal and no technical information in the Cost or Price Proposal. Pages submitted in excess of the technical proposal and/or PWS page limit will not be read or evaluated.

- Electronic format (PDF)
- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch (will include Header and Footer)
- Header- Times New Roman, 12 point
- Footer- Times New Roman, 12 point
- Spacing – single-spaced

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- Font – Times New Roman, 12 point

4.2 Proposal Content

Create a single file in PDF that includes the following four sections in the order described below: Cover Sheet, Technical Proposal, Cost or Price Proposal, and Performance Work Statement.

4.2.1 Cover Sheet (1 Page – (PDF File))

The cover sheet shall be labeled DoN Rapid Innovation Fund Full Proposal and shall include the BAA number, firm name, CAGE code, DUNS number, proposed project title, SBIR Topic number (if applicable), IR&D project identification (if applicable), amount of Rapid Innovation Fund funds requested, Offeror's business and technical points of contact (name/phone and fax numbers/email), SYSCOM and PEO that your project is targeted towards, FY14 DoN RIF Requirement Number, target ACAT I – IV program or other acquisition program, if known, and the names of and contact information for up to two DoN acquisition community personnel familiar with or supportive of this project.

4.2.2 Technical Proposal (25 Pages – (PDF file))

The technical proposal shall include the following sub-sections in the order given below:

4.2.2.1 **Contribution to the Requirement:** Provide a project overview and description of benefits, as described below:

4.2.2.1.1 **Project Overview:** Describe what you intend to do and the product(s) to be delivered at the end of your efforts

4.2.2.2.1 **Benefits:** Describe how, and to what degree, the technical approach is relevant to one or more requirement identified in this announcement, including:

- **Enhanced Military Capability** – Describe how your proposed project significantly increases or improves the military capabilities in relationship to requirements identified in BAA Section 9 (DoN Annex) and/or acquisition program needs.
- **Accelerated Military Development Capability** – Describe how your proposed project accelerates the development and ability to deploy military capabilities required for use by the Department of the Defense.
- **Reduces Costs** - Describe how your proposed project reduces the development, acquisition, sustainment, demilitarization, or total ownership costs of the identified fielded system or acquisition program.

4.2.2.2 **Technical Approach:** Describe how the proposed technical approach is innovative, feasible, achievable, complete, and supported by a technical team that has the expertise and experience to accomplish the proposed tasks.

4.2.2.2.1 **Objectives and Scope:** Describe the specific objectives of what the

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- project will achieve and any logical boundaries.
- 4.2.2.2.2 **Work Plan:** Provide an explicit, detailed description of tasks to be completed and deliverables.
- 4.2.2.2.3 **Key Personnel:** Describe the qualifications of the team and identify key personnel who will be involved in the effort including information directly related education and experience. Identify any foreign citizens you expect to be involved as a direct employee, subcontractor, or consultant. Key personnel resumes shall be provided in an attachment to the proposal and will not count toward the page limitations.
- 4.2.2.2.4 **Facilities/Equipment:** Describe available instrumentation and physical facilities necessary to carry out the proposed effort. If access to government facilities, Government Furnished Equipment (GFE), Government Furnished Information (GFI), or subject matter expertise is required, describe them and the contract mechanism (e.g., Cooperative Research and Development Agreement, Work for Private Party Agreement) that will be or could be used to access them. If such a contract mechanism is already in place, provide documentation. Note whether you anticipate using Rapid Innovation Funds to purchase a server.
- 4.2.2.2.5 **Partnerships:** Describe the roles that the DoN program manager, prime systems integrator, and/or other stakeholders, as applicable, will play in supporting the proposed project during the Rapid Innovation Fund effort and through transition. Include the names of the organization(s) and contact information for personnel involved in the transition process.
- 4.2.2.2.6 **Seminal Transition Event (STE):** Describe the STE that will constitute a definitive end point in the technology transition effort outlined in this project plan. The description should include:
- a) A description of and pass/fail criteria for the test, event, or certification (e.g., operational test including description of success criteria, engineering change request, ship alteration request, listing in GSA catalog, software certification) that is the necessary and sufficient condition for the acquisition PM and/or prime to decide to integrate and/or purchase the solution;
 - b) The title of the approval authority that decides whether the test or event was successful; and
 - c) The quarter and fiscal year of the planned STE (should occur within 24 months of contract award).
- 4.2.2.2.7 **Government Testing:** Note any other accreditations, tests, and/or certifications required to prove that the technology works and is acceptable to be transitioned into the operational Naval Forces, including requirements from agencies other than the DoN (e.g., National Security Agency certification, Defense Information

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Systems Agency Information Assurance Certification & Accreditation), if necessary and known.

4.2.2.2.8 **Subcontractor/Consultant Management Plan:** If using subcontractors or consultants describe your plan for managing their role in the project's success.

4.2.2.2.9 **Related Work:** Describe significant activities and/or previous work directly related to the proposed effort, including SBIR/STTR contracts and IR&D projects.

4.2.2.3 **Schedule:** Describe how the proposed schedule is achievable for the proposed technical approach. Technologies should transition to a military system or program within 24 months of contract award.

4.2.2.3.1 **Milestones & Deliverables:** Show major activities/milestones and deliverables anticipated by date, including research and development, testing, integration, transition, and/or acquisition elements, as applicable. Focus on the proposed Rapid Innovation Fund project, but include efforts required to fully transition the project into a DoN acquisition program or otherwise transition the technology into field use.

4.2.2.3.2 **Metrics/Measures of Success:** Discuss what measurement criteria will be established to measure progress against stated objectives.

4.2.2.3.3 **Risks:** Describe anticipated risks and risk mitigation plans.

4.2.3 Cost or Price Proposal (no page limit (PDF file))

The cost/price proposal shall include a detailed breakdown of all costs by category. If a proposal is selected for award, the Offeror shall be prepared to submit further documentation to the DoN RIF Contracting Officer to substantiate costs. For more information about cost proposals and accounting standards, see the DCAA publication called "Information for Contractors" available at www.dcaa.mil. The following cost areas shall be included, if applicable:

4.2.3.1 **Direct Labor:** Individual labor category or person, with associated labor hours and unburdened direct labor rates.

4.2.3.2 **Indirect Costs:** Fringe Benefits, Overhead, G&A, etc.

4.2.3.3 **Travel:** Destination, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.

4.2.3.4 **Subcontractor and Consultants:** All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Provide consultant agreement or other document that verifies the proposed daily/hourly rate.

4.2.3.5 **Other Direct Costs (ODCs):** ODCs shall be itemized with costs or estimated costs.

4.2.4 Performance Work Statement (12 Pages (PDF file))

Provide a PWS clearly detailing the scope and objectives of the effort, tasks to be

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completed, the technical approach, and deliverables. The proposed PWS may be incorporated as an attachment to any resultant award instrument. To this end, such proposals must include a PWS without any proprietary restrictions, which can be included in the award instrument.

4.3 Submission of Proposals

NOTE: 1) Do not send hardcopies of full proposal (including facsimiles) as only electronic submissions will be accepted and reviewed; 2) Do not attach .ZIP files.

Hard copies of white papers and full proposals WILL NOT BE CONSIDERED.

5.0 FY14 DoN RIF Requirements

The DoN's mission is to deter aggression and, if deterrence fails, win our Nation's wars. It employs the global reach and persistent presence of forward-stationed and rotational forces to secure the Nation from direct attack, assure Joint operational access and retain global freedom of action. With global partners, it protects the maritime freedom that is the basis for global prosperity¹. The DoN's 2014-2018 budget submission reflects its plans to increase the number of ships which are Forward Stationed or Forward Operating and increase the DoN's presence in the Asia-Pacific region². The Naval SYSCOMs list their requirements for supporting that mission below.

NAVAIR

Requirement #: FY14-DoN-RIF-NAVAIR-01

Requirement Title: NAVAIR: High Bandwidth, Beyond Line of Sight (BLOS)

Capabilities for Rotary Wing Aircraft

Military System or Acquisition Program Customer: PEOs/PMs for manned and unmanned rotary wing aircraft

Description: To fully realize the vision of automated collaboration at the machine-to-machine level, combat Rotary Wing platforms require high bandwidth (14-20 Mb/s), seamless, scalable, and interoperable communications that ensure secure and timely distribution of information for managing the efficient employment of sensors, platforms, weapons and relays. Common, flexible, reliable, and sustainable through-the-rotor BLOS technologies are needed that enable rotary wing platforms to communicate BLOS.

Technical POC: NAE Chief Technology Office, naecto@navy.mil

Requirement #: FY14-DoN-RIF-NAVAIR-02

Requirement Title: NAVAIR: Advanced Sensors for Naval Aircraft and Weapons

Military System or Acquisition Program Customer: PEOs/PMs for all naval aviation aircraft and weapons

¹ http://www.navy.mil/cno/cno_sailing_direction_final-lowres.pdf

² http://www.navy.mil/cno/130813_CNO_Navigation_Plan.pdf

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Description: Technologies are needed to conduct wide area search / surveillance; localize / fix; identify friendly / neutral / hostile targets at standoff ranges in all weather conditions. Small size, weight and power sense and avoid sensors to detect non-cooperative objects in challenging environmental conditions, suitable for group 3 and below unmanned air systems are desired. Software- definable and flexible sensors usable across multiple mission areas are also desired.

Technical POC: NAE Chief Technology Office, naecto@navy.mil

Requirement #: FY14-DoN-RIF-NAVAIR-03

Requirement Title: NAVAIR: Interoperability and Open Architecture

Military System or Acquisition Program Customer: PEOs/PMs for all naval aviation aircraft and weapons

Description: New capabilities and upgrades are costly and take too long to field. There are barriers to software portability and a lack of enforcement of established interoperability and open architecture (OA) requirements. Technologies are needed that will enable OA, Integrated Modular Avionics (IMA) and Modular Open Systems Approach (MOSA) which are portable, modular, partitioned, scalable, extendable, and secure.

Technical POC: NAE Chief Technology Office, naecto@navy.mil

Requirement #: FY14-DoN-RIF-NAVAIR-04

Requirement Title: NAVAIR: Advanced Training Systems for Aircraft Operators and Maintainers

Military System or Acquisition Program Customer: PMA-205 – Naval Aviation Training Systems Program Office

Description: As a result of increasing platform capabilities, the constrained size of training ranges, and general budgetary limitations, simulators are expected to play an increasing role in aviation training. To ensure that simulators adequately meet operational training needs, methods to objectively assess transfer of training from simulators to live platforms are needed.

Technical POC: NAE Chief Technology Office, naecto@navy.mil

MCSC

Requirement #: FY14-DoN-RIF-MCSC-01

Requirement Title: MCSC: Portable Intra-Cranial Pressure Monitoring System

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Combat Support Systems, Combat Support Equipment

Description: Combat Casualty Care for Marines is paramount and early detection of intra-cranial pressure changes is critical to the surgical team and the survival of the injured Marine. There is a need for low-cost, portable/hand-held devices to monitor intra-cranial pressure that are lightweight and capable of being used in all operational environments including aircraft.

Technical POC: David Keeler, David.Keeler@usmc.mil

Requirement #: FY14-DoN-RIF-MCSC-02

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Requirement Title: MCSC: Interactive Culturally Accurate Avatar

Military System or Acquisition Customer: Marine Corps Systems Command, PM Training Systems, Infantry Immersive Trainer, Deployable Virtual Training Environment and Squad Immersive Training Environments; Marine Expeditionary Rifle Squad Operational Environment Simulator.

Description: Develop and demonstrate virtual avatars that are representative of the indigenous populations found around the world. These avatars shall be capable of interacting with the trainee in a manner that is culturally accurate for the area and the societal role that the avatar personifies.

Technical POC: Bryan Freeman, bryan.freeman@usmc.mil

Requirement #: FY14-DoN-RIF-MCSC-03

Requirement Title: MCSC: Multi-band Phased Array Antenna

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM MAGTF Command Control and Communications (MC3), Networking On The Move (NOTM).

Description: NOTM is a communications system that extends network connectivity from a fixed location to units operating On-The-Move (OTM) and Over The Horizon (OTH). It will be fielded to all levels of the Marine Air-Ground Task Force (MAGTF) and is intended to deliver the capability of a self-forming, self-healing, ad-hoc mobile network. NOTM enables mobile forces to collaborate and access C2, Intelligence, Surveillance and Reconnaissance (ISR) applications, e-mail, chat, and collaboration tools for real-time exchange of voice, video, and data services to users throughout the MAGTF while OTM or at-the-halt (ATH). The current NOTM system is capable of using Ka, Ku and X-band. The Marine Corps desires an affordable multi-band Ka, Ku and X-Band Antenna that has a very low footprint and can be mounted on tactical vehicles.

Technical POC: Christopher Zaffram, christopher.zaffram@usmc.mil

Requirement #: FY14-DoN-RIF-MCSC-04

Requirement Title: MCSC: Repair and Recover Transparent Armor on Tactical Vehicles

Military System or Acquisition Customer: Marine Corps PEO Land Systems

Description: An issue that the USMC is facing across all vehicles in the fleet is the cost to replace Transparent Armor (TA) when it delaminates. As an example, in one year alone the DoD spent over \$10M replacing transparent armor on one wheeled tactical vehicle variant. Current TA is guaranteed for only 2 years. Some will last longer but over a 4-5 year period of time it is virtually certain that all TA will delaminate. Currently, that means 100% replacement as there is no repair process. The USMC has a requirement to re-laminate transparent armor (in place) which potentially could save millions of dollars versus the current replacement costs. This technology solution would apply across the entire USMC fleet of vehicles.

Technical POC: Craig T. Harvey, craig.t.harvey@usmc.mil

Requirement #: FY14-DoN-RIF-MCSC-05

Requirement Title: MCSC: Explosives or Explosive Precursor Component Detection

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Military System or Acquisition Customer: Marine Corps Systems Command, PM MAGTF Command Control and Communications (MC3), Force Protection.

Description: Provide the Marines with the ability to detect, identify and geo-locate explosives or explosive precursor components, particularly precursor chemicals associated with the manufacture of homemade explosives (HME), while keeping both the operator and detector positioned outside the serious injury/blast zone. For the dismounted Marine, the technology should be a handheld device. For mounted forces, the technology should seamlessly integrate into existing vehicles. Specific attention should be paid to minimizing size, weight and power (SWaP).

Technical POC: Christopher Zaffram, christopher.zaffram@usmc.mil

Requirement #: FY14-DoN-RIF-MCSC-06

Requirement Title: MCSC: A helmet system with quick reaction blast protection and/or weight reducing ballistic protection enhancements.

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Infantry Weapons Systems, Infantry Combat Equipment.

Description: US Marine Corps has an interest in any Technologies/ Processes/ Products that will protect the individual soldier from lethal and debilitating head injuries from blast and ballistic trauma. One objective is to eliminate the source of Traumatic Brain Injury (TBI) concussion to the area under the helmet, without impacting comfort from a thermal stand point. Another objective is to reduce the weight of the helmet while maintaining enhanced threat protection over selected areas of the helmet shell. The approach can be a combined single approach or individually as an incremental solution.

Technical POC: John O'Donnell, John.h.odonnell@usmc.mil

SPAWAR

Requirement #: FY14-DoN-RIF-SPAWAR-01

Requirement Title: SPAWAR: UHF SATCOM End-to-End Capabilities

Military System or Acquisition Customer: PEO Space Systems

Description: Provide technologies that extend Joint Information Environment (JIE) capabilities to deployed UHF SATCOM users. Technologies that enable integration of C4ISR and weapon systems are preferred.

Technical POC: Austin Mroczek, PEO SS APEO for S&T, austin.mroczek@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-02

Requirement Title: SPAWAR: Ocean Sensing Payloads for Small/Nano/CubeSats

Military System or Acquisition Customer: PEO Space Systems

Description: Provide Naval forces information about the ocean and littoral regions, and any vessels above, on or below the surface. Payloads could include environmental monitoring or Intelligence, Surveillance and Reconnaissance (ISR) sensors.

Technical POC: Austin Mroczek, PEO SS APEO for S&T, austin.mroczek@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-03

Requirement Title: SPAWAR: Information Transport & Infrastructure (ITI)

Military System or Acquisition Customer: ADNS, CANES, NMT, CDLS, AdvHDR, Link 16, TSw, DJC2, C2OIX, NC3 EAM, and NAVMACS (PEO C4I)

Description: Develop capabilities to move, manage, and maintain an increasingly large and diverse array of mission-critical data at the rapid pace needed to support effective tactical, operational, and strategic decision-making at sea and ashore. Technologies of interest include dynamic and agile routing capabilities; enterprise-level grid awareness and management; tactical network control; communications diversity and satellite communications resilience; and application services that support critical C2 infrastructure. Potential topics could be in the areas of assured connectivity and access in all operating environments, persistent network awareness and control, and bandwidth-efficient communication capabilities.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-04

Requirement Title: SPAWAR: Information Security and Information Assurance (ISA)

Military System or Acquisition Customer: CANES, CND, Crypto Modernization (PEO C4I)

Description: Develop capabilities and techniques to reduce vulnerability of operational networks and Information Technologies (IT), including risks due to the proliferation of dual-use, commercial solutions and supply chains. Technologies of interest include finding innovative and cost-effective ways to mitigate those vulnerabilities through such measures as Identity and Access Management (IDAM); Attribute-Based Access Controls (ABAC); Trusted Data Format (TDF) tagging; the use of real-time, automated information guards to manage the provision of access to tagged data across multiple security domains; and the employment of modernized cryptographic devices and algorithms to encrypt data at rest and data in motion. Potential topics could be in the areas of assured access and transparent identification and authentication across the network; nimble and proactive network defense posture against advanced persistent threats; detection, prevention and reporting of data exfiltration to counter the insider threat; resiliency under cyber-attack; improved information audit and forensics; and cloud computing security and assurance.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-05

Requirement Title: SPAWAR: Data Integration and Decision Support (DDS)

Military System or Acquisition Customer: NTCSS, MTC2, DCGS-N, NITES Next, Maritime Operations Center (MOC) (PEO C4I)

Description: Develop technologies to support effective decision-making and the ability to rapidly and confidently move from data to options to informed decisions. Develop improved capabilities to collect data from multiple sources, fuse it, and make it available to all relevant users in the right form, to enable better and faster decisions in any environment including in the presence of Anti-Access/Area Denial (A2AD) threats. Technologies of interest include universal data discovery and access, automated data fusion and integration, improved display and visualization, advanced analytics, user-centric designs, trend analysis, prediction tools, and targeting tools. Potential topics could be in the areas of enhanced data discovery and

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access, advanced analytics and tools, advanced data display and visualization, mission and operations architecture for improved decisions, and management of sensor overload.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-06

Requirement Title: SPAWAR: Electromagnetic Spectrum Operations (ESO)

Military System or Acquisition Customer: CCOP, SSEE Inc F, NITES Next, MTC2 (PEO C4I)

Description: Develop an exceptional awareness of the Electromagnetic Spectrum (EMS) to enable the means to aggressively maneuver through, visualize, protect and control the spectrum at any time or place. Technologies of interest include pervasive sensing, measuring, mapping, predictive modeling and visualization, and overall spectrum agility. Potential topics could be in the areas of acute spectrum sensing and awareness, increased survivability and maneuverability, and EMS synchronization.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-07

Requirement Title: SPAWAR: Non-Kinetic Fires (NKF)

Military System or Acquisition Customer: CCOP, SSEE Inc F (PEO C4I)

Description: Develop offensive measures that leverage the Electromagnetic Spectrum (EMS) and the “wired” network to deliver weapons, either in information content or sheer energy. Develop both covert and destructive weapons for offensive cyberspace operations (OCO) and jamming. Technologies of interest include electronic attack, RF-enabled cyber incursion, and the characterization of the military effects of each. Potential topics could be in the areas of non-kinetic targeting and engagement, NKF operational aids/modeling/planning, non-kinetic counter C4ISR, and non-kinetic electronic attack.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-08

Requirement Title: SPAWAR LEAD – JOINT with NAVAIR: Positioning, Navigation and Timing (PNT)

Military System or Acquisition Customer: GPNTS (PEO C4I)

Description: Develop Positioning, Navigation and Timing (PNT) capabilities to provide common and precise position and time references to surface, sub-surface, air and space-borne assets, enabling safety of navigation, communications, command and control, combat and weapon systems. Technologies of interest include hardening and modernizing existing GPS-dependent PNT capabilities, development of GPS-independent PNT solutions; and miniaturized and scalable PNT solutions. Potential topics could be in the areas of protected GPS-dependent PNT capabilities, GPS-independent PNT solutions, miniaturized and scalable PNT solutions, diverse sensor applications, and navigation decision aids.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-09

Requirement Title: SPAWAR: Environmental Battlespace Awareness (EBA)

Military System or Acquisition Customer: NITES Next, MTC2, DCGS-N (PEO C4I)

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Description: Develop Environmental Battlespace Awareness (EBA) capabilities to provide knowledge of the current and predictive physical environment and its impact on naval operations from the bottom of the oceans to space. Technologies of interest include efficient and effective collection of environmental data, improved numerical weather and ocean modeling, new and improved tactical decision aides that describe environmental impacts, and decision management tools that fuse operational information, intelligence and system performance information in a predicted environment to support optimal decision-making for asset allocation, weapons and sensor performance, route selection, and execution timelines to maximize warfighter advantage. Potential topics could be in the areas of in-situ environmental sensing capabilities, advanced numerical environmental prediction capabilities, sensor performance prediction capabilities, and decision management capabilities.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, robert.parker@navy.mil

Requirement #: FY14-DoN-RIF-SPAWAR-10

Requirement Title: SPAWAR: Electronic Procurement System (EPS)

Military System or Acquisition Customer: PEO EIS

Description: EPS, the Navy's Contract Writing solution of the future, requires the use of Enterprise Service Bus/mapping technology to send financial and other contracting related data to/from existing legacy systems to a commercial, off-the-shelf, contract writing software in a "system agnostic" methodology through the use of third party software. EPS also requires the use of business process mapping tools to map current contract writing related process to insure 100% of the functional user requirements can be met if not provided by the COTS product.

Technical POC: Dan DelGrosso, PEO EIS TD, dan.delgrosso@navy.mil

NAVSUP

Requirement #: FY14-DoN-RIF-NAVSUP-01

Requirement Title: NAVSUP: Clothing Protection for the War Fighter

Military System or Acquisition Customer: Naval Clothing Textile Research Facility (NCTRF) and the Warfighter

Description: Uniforms/protective clothing do not provide adequate protection for the Warfighter in the areas of 1) thermal/flame threats, 2) environmental (hot/cold weather, rain, etc.) protective footwear and 3) clothing and accessories that protect against physical hazards such as loud noise, vibration, and blunt force. A capability to assess commercial off-the-shelf (COTS) items, identify/develop laboratory test methods to determine applicability of COTS items and address quality assurance measures to allow upgrades to uniform/protective clothing capabilities in a cost effective manner. Enhanced capabilities are required in the areas of thermal/flame threats, protective footwear as well as environmental and physical protection. A capability to correlate current material technologies and manufacturing processes with potential advanced techniques is required to mitigate costly/antiquated uniforms and manufacturing costs, work uniform category specifically. A capability to accurately identify the US Navy fit and define the proper "concept of fit" is required to

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streamline the uniform issue process, allow the sailor to purchase an off the rack uniform without costly alternations and enhance uniform size forecasting; resulting in having the “needed” sizes in stock. Utilization of “virtual fit” processes will greatly improve the entire uniform management process (ordering, distribution and inventory management).

Technical POC: Mark Deebel, mark.deebel@navy.mil

Requirement #: FY14-DoN-RIF-NAVSUP-02

Requirement Title: NAVSUP: Logistics Data Access and Information Sharing

Military System or Acquisition Customer: OIS, FACTS & the Warfighter

Description: Numerous electronic information technology (IT) systems exist that contain logistics data and information. Very often that data/information can be difficult to: 1) access by individual users, and 2) share between other IT systems. The lack of access and sharing results in inefficient processes and manual work-arounds, which impede performance and increase overall cost. The capability to improve access and use of logistics data by both individual users and between IT systems is desired. Capability includes, but is not limited to, enhanced Graphical User Interfaces (GUI) and web-based data services, and other community-based software tools and technologies that can enable broader exposure and sharing of logistics data based on customer requirements for data representation, metadata, format and delivery.

Technical POC: Mark Deebel, mark.deebel@navy.mil

Requirement #: FY14-DoN-RIF-NAVSUP-03

Requirement Title: NAVSUP LEAD - JOINT with NAVSEA and NAVAIR: Leverage Additive Manufacturing (AM) to Facilitate Order Fulfillment for the Military System or Acquisition Customer

Military System or Acquisition Customer: NAVSUP PMs and the Joint Strike Fighter

Description: There is a distinct need within the DoN to enhance operational fleet readiness, reduce energy consumption, and reduce total ownership costs. Additive Manufacturing (AM) is a technology that is capable of helping the DoN achieve these goals through tighter integration of construction and maintenance processes. The term "additive manufacturing" describes processes that build three dimensional objects layer by layer from a variety of materials (including plastics and structural metals). The Navy seeks to establish the viability of AM technology to support mission needs through demonstrated application of AM technology in Construction and Sustainment of maritime and aviation platforms through procurement for new construction and Order Fulfillment for maintenance and repair. It is expected that timely insertion of AM technology into naval platforms and installations will enhance operational fleet readiness, reduce energy consumption, and enable parts on demand manufacturing creating Warfighter Payoff and enhancing naval capabilities.

Technical POC: Mark Deebel, mark.deebel@navy.mil

SSP

Requirement #: FY14-DoN-RIF-SSP-01

Requirement Title: SSP: Additive Manufacturing of Precision Cast Steel Components

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Military System or Acquisition Program Customer: Strategic Systems Programs

Description: Development of an affordable, additive manufacturing process to significantly reduce cost and lead times of existing, irregular shaped high-tolerance machined, pressure- and water-tight cast steel components. Seeking advancements in precision and rapid material deposition, advanced process controls; updated material property specifications; and non-destructive evaluation techniques for additive manufacturing.

Technical POC: Craig Hanson, craig.hanson@ssp.navy.mil

Requirement #: FY14-DoN-RIF-SSP-02

Requirement Title: SSP: Modeling and Simulation of TRIDENT II (D5) Rocket Motor, Storage, Transportation, Support Equipment and Disposal

Military System or Acquisition Program Customer: Strategic Systems Programs

Description: The TRIDENT II (D5) rocket motor logistics system is a complex and costly aggregation of facilities, transportation and equipment. Rocket motors are reaching the end of their safe service life, and explosive storage capacity is being stressed, due to the New START Treaty mandated missile offloads. Current tools available are inadequate to accurately portray and optimize an integrated system analysis, and provide flexibility to quickly evaluate program changes and “what if” scenarios.

Technical POC: Dr. Steve Bazow, steve.bazow@ssp.navy.mil

NAVSEA

Requirement #: FY14-DoN-RIF-NAVSEA-01

Requirement Title: NAVSEA: System Performance and Capability

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: NAVSEA seeks technologies and products that enhance the effectiveness of the warfighter by improving planning, mission capabilities and adaptability. Improvements are needed in the areas of safety, weapon system performance to meet evolving threats, situational awareness, signature reduction, communication, interoperability, and streamlined logistical support.

Technical POC: Timothy Barnard, timothy.barnard@navy.mil, or Douglas Marker, douglas.marker@navy.mil

Requirement #: FY14-DoN-RIF-NAVSEA-02

Requirement Title: NAVSEA: Unique and Special Capabilities

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: NAVSEA seeks technologies and products that improve its support of unique and advanced technology missions. These missions include the use of autonomous and remotely controlled assets for expeditionary and special operations missions in surface, underwater, and inshore environments in response to non-routine events, countering

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unmanned systems, Explosive Ordnance Disposal (EOD), Anti-Terrorism, and diver protection.

Technical POC: Timothy Barnard, timothy.barnard@navy.mil, or Douglas Marker, douglas.marker@navy.mil

Requirement #: FY14-DoN-RIF-NAVSEA-03

Requirement Title: NAVSEA: Specific Operational Needs

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: NAVSEA seeks technologies and products that provide enhanced capabilities in the following specific areas, which are not in priority order:

- Improved Thin Line Towed Arrays
- Submarine real-time covert ISR in inoperable water
- Surface ship torpedo self-defense (hard and soft kill solutions)
- Unmanned vehicles

Technical POC: Timothy Barnard, timothy.barnard@navy.mil, or Douglas Marker, douglas.marker@navy.mil **Requirement #:** FY14-DoN-RIF-NAVSEA-04

Requirement #: FY14-DoN-RIF-NAVSEA-04

Requirement Title: NAVSEA: Operations, Readiness, and Maintenance Costs

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, Special Warfare, and Naval (Public) Shipyards.

Description: NAVSEA seeks technologies and products that reduce the cost to operate and maintain the Navy's fleet and weapons systems while improving reliability and operational readiness. Goals include: reducing fleet workload, improving weapon system readiness, mitigating environmental effects, reducing obsolescence, improving energy efficiency, and reducing maintenance time and cost.

Technical POC: Timothy Barnard, timothy.barnard@navy.mil, or Douglas Marker, douglas.marker@navy.mil

Requirement #: FY14-DoN-RIF-NAVSEA-05

Requirement Title: NAVSEA: Development and Acquisition Costs

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, Special Warfare, and Naval (Public) Shipyards.

Description: NAVSEA seeks products, technologies, and processes that reduce the cost and time required to develop, produce and update Navy Systems while improving performance, reliability and service life. Areas of interest include realizing the benefits of modular and flexible infrastructure, shipbuilding technologies, improving weapons systems maintainability and adaptability, improving energy efficiency, and improving shipyard productivity.

Technical POC: Timothy Barnard, timothy.barnard@navy.mil, or Douglas Marker, douglas.marker@navy.mil

NAVFAC

Requirement #: FY14-DoN-RIF-NAVFAC-01

Requirement Title: NAVFAC: Improved Expeditionary Warfighter Self Sufficiency

Military System or Acquisition Program Customer: NAVFAC

Description: Joint and coalition expeditionary forces are dependent on water and energy. There is a need for advanced technologies to allow individual, squad and platoon-sized units to efficiently scavenge water (fresh, brackish, salt) and energy from resources in the expeditionary environment. Topics of interest include disinfection, filtration, desalination, maintenance reduction, waste-to-energy conversion, and reduced weight and cube.

Technical POC: Philip Vitale, philip.vitale@navy.mil

Requirement #: FY14-DoN-RIF-NAVFAC-02

Requirement Title: NAVFAC: Lighterage Data Recorder and Wave Measurement Systems

Military System or Acquisition Program Customer: NAVFAC

Description: (1) A system integral to existing lighterage support craft that can derive and report wave conditions (wave height, period, and direction) from craft motions is sought. The ideal system would be further capable of projecting near-shore wave data into surf zone conditions, given near shore bathymetry. (2) A system capable of monitoring, recording and displaying critical lighterage operating parameters and connector loads is sought to provide both real-time and historical data to operators and system support personnel. Required data include but are not limited to vessel location, speed, heading, platform motions in six degrees of freedom, and connector loads. The ideal system would incorporate data from the wave measurement system located on the lighter support craft.

Technical POC: Philip Vitale, philip.vitale@navy.mil

BUMED

Requirement #: FY14-DoN-RIF-BUMED-01

Requirement Title: Energy Efficient Patient Warming in support of Naval Expeditionary Health Services

Military System or Acquisition Program Customer: Naval Expeditionary Health Services Support & Advanced Medical Development Program Office.

Description: Combat casualty care in Expeditionary Operations is challenged by the requirement for contained self-sufficiency. The energy demand of combat casualty support for forward units is a major limiting factor in the delivery of cutting-edge medical/surgical care, intensive care, and acute care. This is particularly true for units charged with providing care and support in austere environments where the time and distance between levels of care can be substantial. There is a need for a low-power, energy-efficient patient warming capability that can be FDA approved. The overarching goals are reduced cube, weight and power consumption compared with current systems while maintaining patient warming equal

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to or greater than current systems. The proposed patient warming capability should be compatible with existing medical care systems, capable of being used in all operational environments, and usable in air, aquatic, and ground vehicles employed for patient movement.

Technical POC: W. K. Prusaczyk, keith.prusaczyk@med.navy.mil

All Naval Programs

Requirement #: FY14-DoN-RIF-ANP-01

Requirement Title: Reduced Naval Total Ownership Cost (TOC)

Military System or Acquisition Customer: All Naval Programs

Description: The DoN seeks technologies and products to reduce TOC through reductions in procurement and sustainment costs. Technologies are sought that improve reliability and operational readiness; that reduce or mitigate system or component obsolescence; that reduce maintenance, manpower and training costs; or that extend service life. In addition, technologies are required that provide scalable energy solutions for diverse environments and reduce energy consumption through greater efficiency and power management.

Technical POC: Bob Smith, Robert.l.smith6@navy.mil

Department of the Air Force Rapid Innovation Fund Annex

To access hyperlinks from this electronic solicitation – hit CTRL and click on the hyperlink.

This Air Force annex expands and provides further clarification on selected paragraphs in the DoD BAA. Paragraph references below correspond to paragraphs in the main body of the DoD BAA.

Technical questions on the Air Force Annex should be addressed to: *Mr. Dwaine Young, AFLCMC/XZI, Air Force RIF Program Manager, 937-656-5152, Dwaine.young@us.af.mil*

Contracting questions pertaining to the Air Force Annex should be addressed to: *Mr Tyler Printz, AFLCMC/PZIT, Air Force RIF Contracting Specialist, 937-656-5839, William.printz@us.af.mil*

Questions regarding specific Air Force topic areas should be addressed to the technical POC listed under each topic.

Additional Air Force guidance on DoD BAA, by paragraph.

1.9 Research Opportunity Description

1.9.6 Research Opportunity Description

The Air Force is targeting technology that has matured to Technology Readiness Level (TRL) 7 for purposes of white paper/proposal submission. Technology presented should be able to mature to TRL 8 or 9 within 24 months. In circumstances of exceptional technical merit, white paper/proposals submissions with a lower TRL rating than 7 will be considered for award, as determined by the Source Selection Authority.

2.4 Award Value

The Air Force expects to receive \$40M for this effort. This funding is an estimate only and not a contractual obligation, as all funding is subject to change due to Government discretion and availability. Target award value for contracts is \$3M or less. Contract award for greater than \$3M requires OSD AT&L waiver. The Air Force expects to make approximately 15 awards.

2.5 Period of Performance

Technical approach must be completed within 24 months of contract award, including 21 months technical effort and 3 months for preparation/submission of the final technical report. Technology should be capable of fielding within 36 months of contract award. However, efforts beyond the 24 month period of performance will not be funded through

the Air Force RIF Program.

5.1 Proposal Preparation Instructions

5.1.1 Proposal Overview

Proposal packages consist of four volumes: Volume One – Cover Sheet; Volume Two - Technical Proposal; Volume Three - Cost/Business Section; and Volume Four - Statement of Work (SOW). Volumes Two, Three and Four shall be submitted in separate searchable PDF files, and must be valid for 180 days.

5.1.2 Format of Proposals

5.1.2.1 Number of Pagers

- (a) The following describes the page limitations on the proposal submittal: Pages shall be numbered starting with the cover page as Page 1, generated by the submission system. The page limitation covers all information including indices, photographs, tables, charts, appendices, attachments, statements of capability, including experience and requisite skills, for key personnel, if desired, etc.
- (b) Technical proposals (Volume Two) shall be limited to 25 pages, prepared in Word format and submitted as a PDF file in the DoD RIF Submission Website.
- (c) Cost/Business section (Volume Three) has no page limitations. However, offerors are requested to keep to 40 pages or less as a goal. Document shall be prepared in Word format and submitted as a PDF file in the DoD RIF Submission Website.
- (d) SOW (Volume Four) shall be limited to 12 pages, prepared in Word format and submitted as a PDF file in the DoD RIF Submission Website.

Due to continuing attempts by numerous offerors to obtain an unfair advantage by failing to conform to the formatting rules above, the Government will check the technical proposal and SOW for conformance to the stated requirements. Any pages in excess of the stated page limitation after the format check will not be considered. In addition, if the technical proposal or SOW does not conform to the above requirements, a notification will be sent to the offeror's company management to advise of the nonconformance.

5.1.2.2 Text & Font Format

The following describes the text and font format on the proposal submittal:

- (a) Font shall be standard 10-point business font Times New Roman.
- (b) Character spacing must be "normal," not condensed in any manner.
- (c) Pages shall be single-spaced, single-sided, 8.5 X 11 inches, with at least one-inch margins on sides, top, and bottom. Lines between text lines must also be 10-point.
- (d) All text, including text in tables and charts, must adhere to all font size and line spacing requirements listed herein. Graphical presentations, including tables, while not subject to the same font size and spacing requirements shall be easily readable.

This exception shall not be used to circumvent formatting requirements and page count limitations by including lengthy narratives in such items.

5.1.3 Proposal Package Structure

5.1.3.1 Volume One – Cover Sheet

The cover sheet shall be prepared on the DoD RIF submission website. Once the cover sheet is saved, the system will assign you a unique proposal number. The cover sheet must be prepared before Volume Two, Volume Three, and Volume Four can be uploaded. Offerors shall complete all information required on the online cover sheet form.

5.1.3.2 Volume Two – Technical Proposal

The proposal shall include a discussion of the nature and scope of the specific product/technology and its proposed capabilities, as well as metrics to determine the effectiveness of the actual technical approach versus stated goals. Additional information on prior work in this area, descriptions of available equipment, data and facilities and, if desired, statements of capability, including experience and requisite skills, for key personnel participating in this effort shall also be included as attachments to the technical proposal. If Government Furnished Property is requested, submit the following information:

- (a) A list or description of all Government property the offeror or its subcontractors proposes to use on a rent-free basis. The list shall identify the accountable contract under which the property is held and the authorization for its use (from the Contracting Officer having cognizance of the property);
- (b) The dates during which the property will be available for use and, for any property to be used concurrently in performing two or more contracts, the amounts of the respective uses in sufficient detail to support prorating the rent;
- (c) The amount of rent to otherwise be charged IAW FAR 52.245-9, Use and Charges; and;
- (d) Voluntary consensus standard/industry leading practices/ standards to be used to manage Government property, or existing property management plans or procedures to account for property.

5.1.3.3 Volume Three – Cost/Business Section

- (a) Separate the volume into a business section and cost section. The business section shall contain all business aspects of the proposed instrument, e.g., type of contractual instrument and information not technically related such as certifications and representations, data rights, subcontracting plans (see below), identification of pass-through charges, subcontract analysis IAW FAR 15.404-3(b), etc. The proposal shall be furnished with supporting schedules and contain a person hour breakdown per task. If selected for award, offerors should be prepared, upon requested, to provide formulas used to accomplish spreadsheets submitted as part of the cost proposal to contracting personnel. Offerors with valid, current Forward Pricing Rate Agreements

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(FPRAs) or Forward Pricing Rate Recommendations (FPRRs) shall submit a copy with the proposal or provide a link where it can be found. Offerors claiming DoD-reimbursed IR&D efforts shall provide verification in the form of DCMA documentation.

- (b) Subcontracting plans, for efforts anticipated to exceed \$650,000, shall be submitted with the technical and cost proposals. Reference FAR 19.704, DFARS 219.704, and AFFARS 5319.704(a)(1) for subcontracting plan requirements. Small business concerns are exempt from this requirement.

5.1.3.4 Volume Four – Statement of Work

This volume shall include a SOW detailing the technical tasks to be accomplished under the proposed effort. The SOW should clearly detail the scope and objectives of the effort, tasks to be completed, technical approach, and deliverables. It is anticipated the proposed SOW will be incorporated as an attachment to the resulting award, if selected. Therefore, **do not include any proprietary information in the SOW.**

5.2 Proposal Submission for Contracts

Offerors receiving an invitation to submit a proposal shall use the same DoD RIF Submission Website (www.AFRapidInnovationFund.com) used for the DoD RIF white paper submission. Proposals sent by any other means, e.g., hand-carried, postal service mail, commercial carrier, fax, email, etc., will not be considered. The cover sheet (Volume One) *is automatically generated by the submission system*; the technical proposal (Volume Two), cost proposal (Volume Three), and SOW (Volume Four) shall be submitted electronically through the site. Volumes Two-Four shall be prepared outside the site, then uploaded. Upon completion of the cover sheet, the offeror will be instructed to upload PDF documents for these volumes. If multiple proposals are submitted by the same offeror, a separate cover sheet must be generated for each. Offerors are responsible for ensuring compliant and final submission of proposals. Any additional submission instructions will be provided in the proposal request invitation.

Proposals will be considered “works in progress” and will not be evaluated until the offeror submits the final proposal package for consideration. The DoD RIF Submission Website will provide offerors a printable confirmation of successful proposal submission upon upload completion. Proposals may be uploaded as often as necessary, each time overwriting the file previously submitted. Once a file is overwritten, the previous version is NOT retrievable. Offerors electing to modify proposals in any way must allow enough time to upload a complete updated proposal. Failure to provide a complete modification by the proposal closing date and time will render the offeror’s proposal “late” regardless of whether the offeror had previously submitted a proposal.

Proposal submissions will be protected from unauthorized disclosure in accordance with applicable law and DoD regulations. Offerors are to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a

Statement of Work (SOW), which contains only unclassified information and does not include any proprietary restrictions.

6.1 White Paper Package Evaluations

6.1.1 Evaluation Criteria

In addition to criteria listed in the DoD BAA, the Air Force will also consider the following:

- **Factor #1 – Contribution to the Requirement**

The degree to which the technical approach is relevant to an Air Force topic area, including the degree to which the project:

- (a) Accelerates or enhances an Air Force capability and/or,
- (b) Reduces development, acquisition, sustainment, or lifecycle costs of acquisition programs or fielded systems and/or,
- (c) Reduces technical risk and/or,
- (d) Improves timeliness and thoroughness of test and evaluation (T&E) outcomes.

- **Factor #2 – Technical Approach/Qualifications**

The degree to which a clear transition path has been defined for this effort into a current Air Force program or to a component being supplied to a current or emerging Air Force program; the current and projected TRL for the effort; the degree to which this is considered “game changing” technology which should be pursued regardless of current TRL.

6.2 Proposal Evaluations / Negotiations

6.2.1 Evaluation Criteria

In addition to criteria listed in the DoD BAA, the Air Force will also consider the following:

- **Factor #1 – Contribution to the Requirement**

The degree to which the technical approach is relevant to an Air Force topic area, including the degree to which the project:

- (a) Accelerates or enhances an Air Force capability and/or,
- (b) Reduces development, acquisition, sustainment, or lifecycle costs of acquisition programs or fielded systems and/or,
- (c) Reduces technical risk and/or,
- (d) Improves timeliness and thoroughness of test and evaluation (T&E) outcomes.

- **Factor #2 – Technical Approach/Qualifications**

The Air Force will also evaluate the technical portion based on the following criteria, listed in descending order of importance:

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- (a) Overall Technical Merit – The degree to which the technical approach is innovative, feasible, achievable, complete, supported by a technical team with the expertise and experience to accomplish the proposed tasks, and likely to successfully transition to the Air Force.
- (b) Technology Readiness Level (TRL) – Feasibility includes TRL for technologies/processes of 7 (system/subsystem model or prototype demonstration in a relevant environment) at project inception and 8 or 9 (qualified through testing and ready for production) by project completion or Subject Matter Expert (SME) statement technology is unique and noteworthy in benefitting the Warfighting capability of the Air Force.
- (c) Transition Plan – Potential for transition of deliverables to future Government needs, including any restrictions on Government use, release, or disclosure of technical data or computer software presenting transition difficulty and/or increased risk/cost to the Government. The degree to which the proposed solution will not preclude/hinder other component/module developers' interface with, or otherwise developing/replacing/upgrading other parts of the military system/program. The potential for inclusion of SBIR data rights is recognized. SBIR data rights clauses are non-negotiable; award will not be made conditional to forfeiture of data rights.
- (d) Metrics – The effectiveness of proposed methods for measurement of progress versus stated goals, e.g., interoperability against an industry standard, opportunity for unit/system/life cycle savings, etc.
- (e) Personnel – Availability of qualified technical personnel and their experience with the applicable technologies.
- (f) Resources – Availability, from any source, of necessary research, test, laboratory, or shop facilities.

6.4 Selection Preference

In accordance with Small Business Administration (SBA) direction and applicable statute, SBIR applicants will be given preference over non-SBIR applicants in the same priority area attaining an equal evaluation outcome.

6.5 Selection

The Air Force reserves the right to select for award any, all, part, or none of the proposals received.

8.3 Export Control

Information involved in these efforts will be subject to export control (International Traffic in Arms Regulations (ITAR) 22 CFR 120-131, or Export Administration Regulations (EAR) 15 CFR 710-774). A certified DD2345, Militarily Critical Technical Data Agreement, must be submitted with the proposal, if invited. Information on the DD2345 can be found at <http://www.dlis.dla.mil/JCP/#>. The estimated timeframe to obtain a Certified DD2345 is approximately 2-3 weeks. Note: a certified DD2345 may also be required to access additional information on thrust areas.

Export Controlled Items

As prescribed by DFARS 204.7303, DFARS 252.204-7008, Export Controlled Item (Apr 2010), is contained in this solicitation, as shown below. This clause shall be contained in all resulting contracts.

DFARS 252.204-7008, Export-Controlled Items (APR 2010)

(a) *Definition.* “Export-controlled items,” as used in this clause, means items subject to the Export Administration Regulations (EAR) (15 CFR Parts 730-774) or the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130). The term includes:

(1) “Defense items,” defined in the Arms Export Control Act, 22 U.S.C. 2778(j)(4)(A), as defense articles, defense services, and related technical data, and further defined in the ITAR, 22 CFR Part 120.

(2) “Items,” defined in the EAR as “commodities”, “software”, and “technology,” terms that are also defined in the EAR, 15 CFR 772.1.

(b) The Contractor shall comply with all applicable laws and regulations regarding export-controlled items, including, but not limited to, the requirement for contractors to register with the Department of State in accordance with the ITAR. The Contractor shall consult with the Department of State regarding any questions relating to compliance with the ITAR and shall consult with the Department of Commerce regarding any questions relating to compliance with the EAR.

(c) The Contractor's responsibility to comply with all applicable laws and regulations regarding export-controlled items exists independent of, and is not established or limited by, the information provided by this clause.

(d) Nothing in the terms of this contract adds, changes, supersedes, or waives any of the requirements of applicable Federal laws, Executive orders, and regulations, including but not limited to—

(1) The Export Administration Act of 1979, as amended (50 U.S.C. App.2401, *et seq.*);

(2) The Arms Export Control Act (22 U.S.C. 2751, *et seq.*);

(3) The International Emergency Economic Powers Act (50 U.S.C. 1701, *et seq.*);

(4) The Export Administration Regulations (15 CFR Parts 730-774);

(5) The International Traffic in Arms Regulations (22 CFR Parts 120-130); and

(6) Executive Order 13222, as extended;

(e) The Contractor shall include the substance of this clause, including this paragraph (e), in all subcontracts.

(End of clause)

8.7 Essentially Equivalent Work

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If the point of paragraph 8.7 does not apply, state in the proposal “No prior, current, or pending support for proposed work.”

Additionally, offerors are also instructed to note any other RIF proposals submitted to the Air Force or any other DoD Component.

8.17 Data Rights Desired

Data Items

Technical data to be delivered will include, but is not limited to:

- (a) Scientific and Technical Reports, Final Report – DI-MISC-80711A/
- (b) Funds and Man-hour Expenditure Report – DI-FNCL-80331A/T
- (c) Contract Funds Status Report (CFSR) – DI-MGMT-81468/T (cost-type contracts)
- (d) Status Report – DI-MGMT-80368A/T
- (e) Presentation Material – DI-ADMN-81373/T

Software

As proposed, to be delivered on either CD-R or CD-ROM.

Hardware

As proposed.

Additional Air Force Guidance

Cost Sharing or Matching

Cost share is encouraged but not required. Provision of cost share will not be used as evaluation criteria. Fee is not allowed on the cost share portion of contracts.

Item Identification and Valuation

Any contract award resulting from this solicitation may contain the clause at DFARS 252.211-7003, Item Identification and Valuation (Aug 2008), which requires unique item identification and valuation of any deliverable item for which the Government’s unit acquisition cost is \$5,000 or more; subassemblies, components, and parts embedded within an item valued at \$5,000 or more; or items for which the Government’s unit acquisition cost is less than \$5,000; when determined necessary by the requiring activity for serially managed, mission essential, or controlled inventory. Also included are any DoD serially managed subassembly, component, or part embedded within a delivered item and the parent item that contains the embedded subassembly, component, or part. Per DFARS 211.274-3, Policy for Valuation, it is DoD policy contractors shall be required to identify the Government’s unit acquisition cost for all items delivered, even if none of the criteria for placing a unique item identification mark applies. Therefore, proposals must clearly break out the unit acquisition cost for any deliverable items. Per

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DFARS 211.274-3, “The Government’s unit acquisition cost is the Contractor’s estimated fully burdened unit cost at time of delivery to the Government for cost type or undefinitized line, subline, or exhibit line items” Per DoD, “fully burdened unit costs” to the Government would include all direct, indirect, G&A costs, and an appropriate portion of fee. If you have questions regarding the Unique Item Identification requirements, please contact the Contracting POC. For more information, see the following website: <http://www.acq.osd.mil/dpap/pdi/uid/index.html>.

Limitations on Pass through Charges

As prescribed in FAR 52.408(n)(1) and (2), the provisions 52.215-22, “Limitations on Pass Through Charges – Identification of Subcontract Effort (Oct 2009),” and 52.215-23, “Limitations on Pass Through Charges (Oct 2009),” are contained in this solicitation. Any contract value greater than the threshold for cost or pricing data, except fixed price contracts awarded on the basis of adequate price competition, resulting from this solicitation, shall contain the clause at FAR 52.215-23 (or Alt I).

52.215-22 – Limitations on Pass-Through Charges—Identification of Subcontract Effort (Oct 2009)

- (a) Definitions. “Added value, excessive pass-through charge, subcontract, and subcontractor,” as used in this provision, are defined in the clause of this solicitation entitled “Limitations on Pass-Through Charges” (FAR 52.215-23).
- (b) General. The offeror’s proposal shall exclude excessive pass-through charges.
- (c) Performance of work by the Contractor of a subcontractor
 - (1) The offeror shall identify in its proposal the total cost of the work to be performed by the offeror, and the total cost of the work to be performed by each subcontractor, under the contract, task order, or delivery order.
 - (2) If the offeror intends to subcontract more than 70 percent of the total cost of work to be performed under the contract, task order, or delivery order, the offeror shall identify in its proposal—
 - (i) The amount of the offeror’s indirect costs and profit/fee applicable to the work to be performed by the subcontractor(s); and
 - (ii) A description of the added value provided by the offeror as related to the work to be performed by the subcontractor(s).
 - (3) If any subcontractor proposed under the contract, task order, or delivery order intends to subcontract to a lower-tier subcontractor more than 70 percent of the total cost of work to be performed under its subcontract, the offeror shall identify in its proposal—
 - (i) The amount of the subcontractor’s indirect costs and profit/fee applicable to the work to be performed by the lower-tier subcontractor(s); and
 - (ii) A description of the added value provided by the subcontractor as related to the work to be performed by the lower-tier subcontractor(s).

(End of Provision)

52.215-23 – Limitations on Pass-Through Charges (Oct 2009)

(a) *Definitions.* As used in this clause--

“Added value” means that the Contractor performs subcontract management functions that the Contracting Officer determines are a benefit to the Government (e.g., processing orders of parts or services, maintaining inventory, reducing delivery lead times, managing multiple sources for contract requirements, coordinating deliveries, performing quality assurance functions).

“Excessive pass-through charge,” with respect to a Contractor or subcontractor that adds no or negligible value to a contract or subcontract, means a charge to the Government by the Contractor or subcontractor that is for indirect costs or profit/fee on work performed by a subcontractor (other than charges for the costs of managing subcontracts and any applicable indirect costs and associated profit/fee based on such costs).

“No or negligible value” means the Contractor or subcontractor cannot demonstrate to the Contracting Officer that its effort added value to the contract or subcontract in accomplishing the work performed under the contract (including task or delivery orders).

“Subcontract” means any contract, as defined in FAR 2.101, entered into by a subcontractor to furnish supplies or services for performance of the contract or a subcontract. It includes but is not limited to purchase orders, and changes and modifications to purchase orders.

“Subcontractor,” as defined in FAR 44.101, means any supplier, distributor, vendor, or firm that furnishes supplies or services to or for a prime Contractor or another subcontractor.

(b) *General.* The Government will not pay excessive pass-through charges. The Contracting Officer shall determine if excessive pass-through charges exist.

(c) *Reporting.* Required reporting of performance of work by the Contractor or a subcontractor. The Contractor shall notify the Contracting Officer in writing if—

(1) The Contractor changes the amount of subcontract effort after award such that it exceeds 70 percent of the total cost of work to be performed under the contract, task order, or delivery order. The notification shall identify the revised cost of the subcontract effort and shall include verification that the Contractor will provide added value; or

(2) Any subcontractor changes the amount of lower-tier subcontractor effort after award such that it exceeds 70 percent of the total cost of the work to be performed under its subcontract. The notification shall identify the revised cost of the subcontract effort and shall include verification that the subcontractor will provide added value as related to the work to be performed by the lower-tier subcontractor(s).

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(d) *Recovery of excessive pass-through charges.* If the Contracting Officer determines that excessive pass-through charges exist;

- (1) For other than fixed-price contracts, the excessive pass-through charges are unallowable in accordance with the provisions in FAR subpart 31.2; and
- (2) For applicable DoD fixed-price contracts, as identified in 15.408(n)(2)(i)(B), the Government shall be entitled to a price reduction for the amount of excessive pass-through charges included in the contract price.

(e) *Access to records.*

- (1) The Contracting Officer, or authorized representative, shall have the right to examine and audit all the Contractor's records (as defined at FAR 52.215-2(a)) necessary to determine whether the Contractor proposed, billed, or claimed excessive pass-through charges.
- (2) For those subcontracts to which paragraph (f) of this clause applies, the Contracting Officer, or authorized representative, shall have the right to examine and audit all the subcontractor's records (as defined at FAR 52.215-2(a)) necessary to determine whether the subcontractor proposed, billed, or claimed excessive pass-through charges.

(f) *Flowdown.* The Contractor shall insert the substance of this clause, including this paragraph (f), in all cost-reimbursement subcontracts under this contract that exceed the simplified acquisition threshold, except if the contract is with DoD, then insert in all cost-reimbursement subcontracts and fixed-price subcontracts, except those identified in 15.408(n)(2)(i)(B)(2), that exceed the threshold for obtaining cost or pricing data in accordance with FAR 15.403-4.

(End of clause)

Alternate I (OCT 2009). As prescribed in 15.408(n)(2)(iii), substitute the following paragraph (b) for paragraph (b) of the basic clause:

(b) *General.* The Government will not pay excessive pass-through charges. The Contracting Officer has determined that there will be no excessive pass-through charges, provided the Contractor performs the disclosed value-added functions.

Ombudsman

AFFARS clause 5352.201-9101, Ombudsman (Aug 2005), will be contained in any contracts or agreements resulting from this BAA. The AFLCMC Ombudsman is Ms. Jill Willingham, Chief, Program Management Division, AFLCMC/AQP, (937) 255-5472, jill.willingham@wpafb.af.mil.

Post-Award Small Business Program Representation

As prescribed in FAR 19.308, FAR Clause 52.219-28, "Post-Award Small Business Program Rerepresentation (Apr 2012)," is incorporated by reference in this solicitation. This clause will be contained in any contracts resulting from this solicitation. This clause requires a contractor to rerepresent its size status when certain conditions apply. The clause provides

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detail on when the rerepresentation must be complete and what the contractor must do when a rerepresentation is required.

Updates of Publicly Available Information Regarding Responsibility Matters

Any contract or assistance award exceeding \$500,000.00 for which an offeror checked “has” in paragraph (b) of the provision 52.209-7 shall contain the clause/article, “Updates of Publicly Available Information Regarding Responsibility Matters (Jan 2011)”.

Contractor Business Systems

DFARS 252.242-7005, Contractor Business Systems, is hereby incorporated by reference.

Nuclear Weapons Related Material (NWRM)

Proposed efforts may require management, delivery, or use of Nuclear Weapons Related Material (NWRM). Therefore, AFFARS clause 5352.223-9003, Enhanced Security of Products, is hereby incorporated by reference. If the effort proposed requires NWRM, the offeror will include the appropriate security information as provided by the vendor(s).

FY14 Air Force RIF Requirements

1) AIR FORCE TEST CENTER

1.a. **Aerodynamic Test Facility Health and Flow Monitoring (Arnold Engineering and Development Center)**

Seeking technologies that lead to improved industrial equipment health diagnostics and airflow characterization in wind tunnel and engine test facilities.

The test facilities at AEDC, many of which are over fifty years old, are required to perform developmental and sustainment testing for current and future flight airframe and propulsion systems that enter the US inventory. Programs such as the upcoming Long Range Bomber, Next Gen Air Dominance, and other next generation military aircraft will gather hundreds of hours of test data in these facilities as part of their development. Therefore, the facility subsystems must be kept modern in order to provide the increasingly refined tolerances and data rates required by the new programs.

Candidate technologies may include, but are not limited to, those which assess compressor vibration and performance, static and dynamic airloads, power consumption, and flow uniformity. Improved data acquisition system hardware and sensors must be able to communicate high frequency data efficiently over distances typical of modern wind tunnels.

Technical POC: Mr. Chris Leone (christopher.leone.2@us.af.mil, 931-454-6112)

1.b. **Developing Advanced Materials (Edwards Air Force Base)**

Development of structured pore anodic aluminum oxide (AAO) as weight reduction measure for aluminum structural parts while increasing the strength of the resulting part requiring less material and increasing durability. The use in capillary-based storage devices would be more effective due to the high pressure tolerance of the nano-capillaries as well as the fact that only a portion of the total contained gas is stored in each capillary: thus rupture of the container would not result in a highly energetic release of all of the gas with burst pressures exceeding 100,000 psi.

Technical POC: Mr. James Zott (james.zott.1@us.af.mil, 402-232-3032)

1.c. **Energy-Efficient On-Site Waste Remediation (Edwards Air Force Base)**

The enormous amount of solid waste generated by deployed forces is typically disposed of by burning in open burn pits or burn boxes. This practice exposes troops to potentially harmful particulate matter and air toxics. Backhauling of waste exposes drivers in the convoys to the potential threat of ambush. Novel methods of waste disposal are needed for forward operating bases where the waste can be processed on-site. Further, this process needs to be self-sustaining from an energy standpoint where the energy needed to operate the system is extracted from the waste material. This solicitation calls for solutions to dispose of waste efficiently, most preferably with the simultaneous conversion of the waste to useful fuels or chemicals."

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Technical POC: Mr. James Zott (james.zott.1@us.af.mil, 402-232-3032)

2) AIR FORCE LIFE CYCLE MANAGEMENT CENTER

2.a. **Flight Program Interoperability**

Demonstrate a novel hardware in the loop capability to test avionics units running operational flight programs to guarantee interoperability. Approach can consider using any equipment at AFRL or LCMC (e.g. SIMAF).

Technical POC: Mr. Tim Menke (timothy.menke@us.af.mil, 937-938-3772)

2.b. **Validation Process for Avionics Open Architecture Standards**

Demonstrate a novel approach for a Validation process for avionics open architecture standards (HW & SW) to ensure adopting programs will be at a low risk, and a Verification process to determination compliance to the standards for adopting implementations.

Technical POC: Mr. Tim Menke (timothy.menke@us.af.mil, 937-938-3772)

2.c. **Analytical Process for Air Force Core Function Master Plans**

Implement an analytical process that cuts across Air Force Core Function Master Plans to provide credible and operationally relevant cost/capability decision trade space in a mission context for decision makers.

Technical POC: Mr. Tim Menke (timothy.menke@us.af.mil, 937-938-3772)

3) AIR FORCE PROPULSION DIRECTORATE

3.a. **Fuel burn reduction for legacy aircraft turbine engines via component modifications**

The need is for improved versions of individual engine components which could be implemented as preferred spares. This topic does not include modifications to air platform components.

Technical POC: Mr. Fred Engle (fred.Engle@us.af.mil, DSN 785-7670)

3.b. **Laser based material removal capability**

The need is to remove CMAS type material from aircraft turbine engine components, as well as erosion and thermal barrier coating materials.

Technical POC: Mr. Michael Thomas (michael.thomas.11@us.af.mil, DSN 339-7816)

3.c. **Plasma Spray process optimization for thermal barrier coatings**

Plasma Spray process optimization for thermal barrier coatings used in aircraft turbine engines, especially sensor integration with closed loop control.

Technical POC: Mr. Phillip Noble (Philip.noble@us.af.mil, DSN 336-9999)

3.d. Reduced cost aircraft turbine engine component manufacturing, repair, and lifting methodologies

Technical POC: Mr. Michael Thomas (michael.thomas.11@us.af.mil), DSN 339-7816)

4) AIR FORCE SUSTAINMENT CENTER

4.a. 100% Process control

Achieve both cognizance and control of all the technical processes that are planned, conducted, and executed throughout the depots. Includes such technologies as utilizing on-demand technical information and process metrics via advanced Business Process Management (BPM) tools in a lean/six sigma environment; analysis and statistical process control (SPC) of backshop processes, e.g. plating, NDI, and machining operations.

Technical POC: Mr. Doug Ball (douglas.ball.1@us.af.mil), 801-777-5263)

4.b. 100% parts availability

Get all of the correct parts, where needed, on time, delivered at a "fair" cost, regardless of source (procurement, repair, local manufacture, reclamation, surplus sources, commercial suppliers, etc.) - to depot level maintenance. Achieve 100% visibility of all inventories and agility in the rapid certification of sources/local manufacture, and maintain quality and parts integrity/configuration management. Includes such technologies as fraudulent/counterfeit electronic parts detection; and additive manufacturing technologies for tooling/fixtures and plastics applications.

Technical POC: Mr. Doug Ball (douglas.ball.1@us.af.mil), 801-777-5263)

4.c. Safe, green workplace

Eliminate unsafe working conditions and costs resulting from continued use of hazardous materials during depot maintenance operations, and reduce the amount and cost of process energy consumed during the continued use of energy-intensive equipment during depot maintenance operations. Includes cost-efficient coating/plating application and removal technologies that are environmentally friendly; portable containment technologies to abate noise and mitigate hazardous materials exposure during on-aircraft maintenance; also technologies to improve energy efficiency, enhance energy resiliency, and reduce dependence on fossil fuels, commercial electrical grids, and traditional compressed air and steam systems through alternative energy storage, power systems, renewable energy production and more energy efficient equipment use, and energy loss monitoring and management system.

Technical POC: Mr. Doug Ball (douglas.ball.1@us.af.mil), 801-777-5263)

4.d. Efficient depot

Improve the operations within the MRO environment to safely return a consistently high quality asset (weapon system, engine, commodity) to the war-fighter at the best possible time and cost. Enhance depot manufacturing and/or repair productivity through reduced machine and/or process downtime. Key aspects of the efficient depot include 1) factory/depot Command, Control & Communications (C3) - ability to

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report, view and control all factory operations and resources across Air Logistics Complexes (ALCs), 2) flexible, reconfigurable, and responsive depot infrastructure and support equipment, 3) comprehensive one-pass on-condition assessment of the weapon system, 4) operations precisely tailored to the on-condition maintenance requirement and scripted to optimize the repair and return to the customer, 5) instantaneous real-time collaboration with Subject Matter Expert (SME) community, 6) advanced automation - flexible and reconfigurable automation systems working in close proximity with, and augmenting the human workforce, 7) effective exploitation of emerging processes - rapid adoption, certification, and transition of game changing processes, and 8) enhanced on-time delivery.

Technical POC: Mr. Doug Ball (douglas.ball.1@us.af.mil, 801-777-5263)

4.e. Rapid-cure Rain Erosion Coating

Seeking rapid-curing, erosion-resistant coating that meets or exceeds critical performance properties specified in SAE AMS-C-83231A and is isocyanate-free, with low-to-no volatile organic compounds (VOCs) or Hazardous Air Pollutants (HAPs). Current specialized protective coatings contain isocyanates and high levels of HAPs such as xylene, toluene and methylisobutylketone (MIBK). Also, due to the relatively high coating thickness required to ensure adequate performance, multiple spray passes are required to achieve the final dry film thickness, taking up to 12 hours to properly apply and 5 to 7 days to cure completely. Under less than ideal conditions, such as low humidity or temperatures, these cure times can increase significantly.

Technical POC: Mr. Randall Straw (randall.straw.ctr@us.af.mil, 937-255-5598)

4.f. Low Temperature Curing Powder Coating

Seeking low temperature cure, corrosion inhibiting powder coating for use on DoD weapon system components in a depot production environment that is free of volatile organic compounds (VOCs) and Hazardous air Pollutants (HAPs). Temperature sensitive components and substrates made of aluminum and magnesium are used extensively on weapon systems and ground support equipment due to their durability and light weight. These aluminum and magnesium substrates cannot withstand the high temperature cure (up to 400°F) needed for traditional powder coatings, requiring traditional solvent-based chrome primers and topcoats to be used.

Technical POC: Ms. Natalia Voevodin (natalia.voevodin.ctr@us.af.mil, 937-255-7709)

4.g. Coating removal

Develop aircraft coating removal process that does not expose the workforce or the environment to harmful waste streams. Any new process, such as laser de-painting, should also reduce the amount of depot maintenance time to improve aircraft availability.

Technical POC: Mr. Douglas Ball (douglas.ball.1@us.af.mil, 801-777-5263)

4.h. NDE without disassembly

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Make advancements in Non-Destructive Evaluation (NDE) that will allow for the evaluation of item inside the weapon system without removal of panels or coatings. Advanced techniques will enable rapid aircraft return to service while ensuring structure integrity is sound.

Technical POC: Mr. Douglas Ball (douglas.ball.1@us.af.mil, 801-777-5263)

4.i. Reduced Cadmium and Chromium use during depot overhaul of engines and aircraft

OSHA abatement costs at the AF overhaul depots currently exceed \$70M/year. Substitute materials and processes are sought to minimize the use of Cd and Cr and associated exposure to health hazards. Substitute materials would be equal or better in terms of corrosion resistance and wear properties.

Technical POC: Mr. Douglas Ball (douglas.ball.1@us.af.mil, 801-777-5263)

4.j. New alternative fuel use in AF aircraft

Alternative fuels made from coal, natural gas, or bio-sources are known to burn cooler than traditional fossil based fuels due to less soot production. Analysis shows less engine distress and longer life for components. Qatar produces sufficient alternative fuel for the largest user of fuel in the AF, Al-Udeid AFB. Analysis tools to predict AF sustainment cost benefits are needed.

Technical POC: Mr. Omar Mendoza (omar.mendoza@us.af.mil, 937-904-0064)

4.k. Modeling and Simulation for logistics wargaming

Develop wargaming and modeling & simulation approach to assess material strategies to project and sustain power in a specified geographical region. Explore the challenges of cost, industrial base and depot output as well aircraft availability and reliability for sustained and successful long-term combat operations in future military operating environments to assist in developing material strategies to drive sustainment investments.

Technical POC: Mr. Omar Mendoza (omar.mendoza@us.af.mil, 937-904-0064)

5) PEO AGILE COMBAT SUPPORT

5.a. Automatic Test Systems Thrust Area

Seeking to reduce DoD automatic test system total ownership cost and improve inter-operability through integration of emerging technology aligned with the DoD Automatic Test Systems (ATS) Framework. This will create a flexible and extensible ATS hardware and software inter-operability schema that supports preservation of test program set investment for all weapons requiring automatic test support.

Technical POC: Mr. Michael Beasley (michael.beasley@us.af.mil, 478-222-3747)

5.b. Electronic Warfare and Avionics Division

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Sustaining electronic warfare capabilities. Seeking technologies to improve performance of legacy electronic warfare systems. Specific areas of interest include the following: a) improved digital receiver capabilities especially analog to digital and digital to analog conversion; b) improved digital RF memory (DRFM) capabilities with higher bandwidth and faster sampling rates; and c) improved solid state transmitters to replace high power traveling wave tubes.

Technical POC: Ms. Karen Brigance (karen.brigance@us.af.mil, 478-222-4210)

6) **PEO BATTLE MANAGEMENT**

6.a. **Integrated Multi-mode Sensor Payload for Detection of IEDs**

Specific information regarding this topic area will only be provided to interested vendors pending submission and approval of a certified DD2345 MILITARILY CRITICAL TECHNICAL DATA AGREEMENT.

Contact the Defense Logistics Services Center, 74 Washington Avenue N., Battle Creek, Michigan 40917-3084 (1-800-352-3572) for further information on the DD2345 process. Reference <http://www.dlis.dla.mil/JCP/#>

Please allow up to 3 weeks for the certification processing time in your response back to this topic area.

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If unable to email the DD2345 number, you may send a copy of the certified DD2345, along with a POC and mailing address, to:

Ms. Mindy Skinner
Deputy Acquisition Program Manager for Air Force RIF
HQ AFMC/XZIS
2530 C Street
Bldg 7
Wright-Patterson AFB, OH 45433-7607

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6.b. **Actionable Weather Information Production and Dissemination**

Seeking technologies and development to produce and disseminate actionable weather information for safe and effective military operations. Commanders do not want individual weather parameters, but rather tailored, actionable information on how the weather will affect missions and assets, as well as those of our adversaries. Emerging technologies, such as Intelligent Data Services (IDS), offer the potential to present

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globally forecaster-tailored data sets that can be delivered as highly-consumable, rapid-response machine-to-machine interfaces for planning and C2 applications and seamlessly integrated with other operational decision information. These emerging services offer the ability to package collections of specific, mission-tailored weather product data requests, which minimizes large weather data transfers, while delivering relevant and actionable weather information. This capability is absolutely critical for delivering timely, actionable weather into areas with low bandwidth issues, such as currently in CENTCOM. Techniques to optimize weather production assets into cloud architectures, the predictive pre-generation of anticipated weather products, and methods for extending content distribution services (CDS) for dynamic, highly perishable weather data are also desirable for enhancing the performance and resilience of weather data delivery.

Technical POC: Ms. Teresa O'Donnell (teresa.odonnell.3@us.af.mil, 781-225-3481).

6.c. Mission Data Exchange

Seeking technologies for mission-based on-demand routing, network, and information management for air and ground platforms, with focus on technologies enabling C2 interoperability with coalition capabilities through integrated multi-level security enabled networks.

Technical POCs: Mr James Walsh (james.walsh.19@us.af.mil, 781-225-9431)

6.d. Stand-off Vehicle-Borne Improvised Explosive Device (VBIED) detection

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6.e. Information Processing

Seeking technologies to improve data processing speed, fusion, correlation, and advanced analytics, which result in improved situational awareness, combat identification, warfighter usability, and warfighter access to data. Any technology should be developed and fielded with an open architecture approach, allowing for system upgrade, scalability, and portability of designs to a wide array of sensor and system employments. Specific technologies include, but are not limited to: Data analytic techniques for high volume data analysis; fusion of multiple intelligence data sources; pattern recognition analytics, disparate sensor correlation and fusion, operator assisted data mining/scanning applications, advanced radar modes; and data management techniques.

Technical POC: Mr. Matthew Best (matthew.best@us.af.mil, 781-225-5366)

6.f. Stand-off Hand-Held detection of concealed on-body threats such as Improvised Explosive Devices (IEDs) and weapons

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6.g. E-8C Transportable Mission Support System (TMSS)

Seeking modernization of the E-8C Transportable Mission Support System (TMSS) to reduce its weight and number of components making the TMSS more transportable and supportable. This will reduce the cost of operating the E-8C in current and future operations. The deployment of a minimum subset of the TMSS is required to be less than 800lbs but is currently at 1216lbs. The full TMSS capability weighs in at 3024lbs. The TMSS weighs more than allowable limits for a two man lift and increases the logistical chain to support the E-8Cs in theatre.

Technical POC: Mr. Robert L. David (Robert.David.1@us.af.mil, 478-222-3615)

6.h. Dynamic Asset Status Reporting For Near-Real-Time Planning and Execution

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6.i. ISR Automated Capabilities

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7) **PEO C3I & NETWORK**

7.a. Enterprise Level Security (ELS)

Seeking technologies and solutions for Enterprise Level Security (ELS). ELS is a cross-platform security architecture that expands on existing USAF/DISA capabilities to provide high assurance for end-to-end secure encrypted communications as well as Identity and Access Management. ELS relies on DoD PKI for endpoint authentication at both the transport layer – through TLS 1.2 Mutual Authentication – and at the message layer through SAML 2.0 tokens. Authorization is accomplished through verifiable claims made on the requestor's identity contained within the SAML Token. SAML tokens are issued by a Secure Token Service (STS) that obtains identity claims from an Enterprise Attribute Store (EAS). The EAS is a trusted sub-system responsible for obtaining and aggregating identity attributes from one or more Authoritative Content Stores (ACS's).

Technical POC: Mr. Mark Gill (mark.gill@us.af.mil, 781-225-3460)

7.b. Range Extension of Commercial Wireless Communication Protocols /Technologies

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Seeking innovations to extend commercial wireless communication protocols (including 2G+, 3G, 4G, LTE, 802.11 and 802.16) to support long stand-off ranges found in a military environment. These protocols are designed to limit communication link distances for compliance with commercial standards, limiting utility of commercial networks/products in wartime.

Technical POC: Ms. Annette Benging (annette.bening@us.af.mil, 210-395-9670)

7.c. Protected Execution in Cloud Environments

Seeking technologies and solutions for a protected execution system to assure integrity of systems, software, and data by preventing unintended or unauthorized leakage through compromised third-party cloud infrastructures.

Technical POC: Mr. Mark Gill (mark.gill@us.af.mil, 781-225-3460)

7.d. Operate the AF Network

The Air Force is seeking to ensure the domain is available and secure for Air Force core missions. The Air Force seeks support in migrating to cloud based services, cyber situational awareness, intrusion detection/prevention, Big Data (sensors, transfer, application, visualization, storage), and other cyber functions which support the operation of the Air Force portion of the Global Information Grid

Technical POC: Ms. Annette Benging (annette.bening@us.af.mil, 210-395-9670)

7.e. Common Crypto Modularity

This effort focuses on protecting data at-rest and/or in-transit via standardized, modular families of crypto devices which could more easily be integrated into multiple systems across the space, air, and terrestrial domains. These families should seek to optimize size, weight, power and affordability, to include the consideration for a software crypto solution, where feasible. When compared to today's largely system-unique crypto solutions, this approach has the potential to reduce both development/integration costs to host programs as well as follow-on product support costs resulting from a more streamlined Communications Security COMSEC inventory.

Technical POC: Mr. Ramiro Gamboa (ramiro.gamboa@us.af.mil, 210-925-2747)

7.f. Cost Effective Tactical SATCOM Terminals

Providing Jam Resistant and LPI/LPD Capabilities. Today, the only communications systems offering the tactical War Fighter survivability and, in some cases, electronic stealth (i.e. LPI/LPD) within contested areas are associated with terminals designed to operate and thrive within a nuclear environment. Today's tactical War Fighter does not need the full nuclear survivable capabilities of today's strategic terminals. Instead, they need a sub-set of these capabilities that could be provided at a lower cost with less complexity. This need should focus on the development of non-nuclear, tactical, airborne terminals that can provide a subset of the nuclear AEHF waveform and terminal capabilities tailored to meet the needs of the tactical user having missions requiring them to operate within the airspace of adversaries.

Technical POC: Lt Col Nathan Elliott (Nathan.elliott@us.af.mil, 781-225-6780)

8) **PEO FIGHTER/BOMBER**

8.a. Trusted Foundations

Seeking a product to validate critical software applications within a designated desktop environment to ensure a trusted foundation and warn the user if critical applications are altered to prevent malicious applications from executing and compromising the aircraft platform.

Technical POC: Mr. Robert Clements (Robert.Clements.Ctr@us.af.mil, 937-713-7578)

8.b. Data Transfer Device (DTD) Obsolescence

Seeking a solution that will universally apply to all aircraft without requiring hardware modifications on the aircraft. This solution would take existing technology that has been developed as a result of an existing Defense Micro Electronics Agency on PCMCIA DTD technology and transition it to legacy such as the F-15, F-16, and A-10 aircraft (currently it cannot be transitioned to these aircraft).

Technical POC: Mr. Bradley Jankowiak (Bradley.Jankowiak@us.af.mil, 937-713-6299)

8.c. 5th Generation Data Link Antenna

Seeking innovations to improve technologies related to Intra-Flight Data Link (IFDL) and Multifunction Advanced Data Link (MADL) antennas (independent or dual-band). Current options require a large footprint and a protrusion from the skin of the aircraft. Conformal/flush mounting and maximal/full line-of-sight coverage are desired qualities.

Technical POC: Mr. Bradley Jankowiak (Bradley.Jankowiak@us.af.mil, 937-713-6299)

8.d. Improvements in LO maintainability

Materials with improved durability, adhesion and/or higher temperature resistance. Better repair processes and electromagnetic verification equipment to quantify the quality of repairs. The ability to prioritize maintenance and improved diagnostic tools are desired as well.

Technical POC: Mr. Brandon Black (Brandon.Black.2@us.af.mil, 937-255-5429)

8.e. Expand the data transfer rates within legacy aircraft without adding wires

Seeking ways to provide the capability to expand missions by enabling the intercommunications within legacy aircraft to grow to least 100Mbps without having to add any wires or cables. Current legacy aircraft are limited in the ability to transfer data between positions on the vehicle. Current missions have not caused the internal

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transfer rates to be exceeded. But future missions (such as Advanced Tactical Data Links) are highly likely to exceed the transfer rate limits. Many aircraft will be impacted. Flight testing in military aircraft is recommended.

Technical POC: Mr. Bradley Jankowiak (Bradley.Jankowiak@us.af.mil, 937-713-6299)

8.f. Improved coatings to eliminate canopy water pooling

Seeking innovations to mitigate canopy water pooling for the F-16 and other fighter platforms caused by use of traditional coating materials. Current coatings are allowing water to accumulate around the canopy, which occurs during critical phases of flight (i.e. landing) which inhibits pilots' ability to observe external visible queues.

Technical POC: Mr. Timothy Lucas (timothy.lucas.3@us.af.mil, 801-775-4528)

8.g. Alternative aircraft structural component repair methods

Seeking advanced technologies for aircraft structural component repair, such as Cold Spray Technology methods, for improving efficiency to provide a repair alternative in the field or for depot maintainers to recover damaged secondary structure metal (aluminum) components. Technology must demonstrate sufficient bearing and shear stress capability along with capability to achieve repairs on materials of varying thickness.

Technical POC: Mr. William Raphael (william.raaphael@us.af.mil, 405-736-3266)

8.h. Improved materials for wing attachment bolts and associated testing

Advances in corrosion resistant and high strength steel as well as other materials provide an opportunity to significantly reduce the cost of maintenance in the F-16 by eliminating the need to periodically remove and replace wing attachment bolts.

Development of materials should be made based on both environmental and load requirements. Testing will be required by the contractor to make sure the suggested bolts meet all requirements.

Technical POC: Mr. Jesse Holdaway (jesse.holdaway@us.af.mil, 801-775-2911)

8.i. Test and demonstrate airborne internet network

Seeking test protocol and realistic demonstration of its application using military radios for a surrogate airborne network, with characteristics similar to those contained in "the Air Force Vision For Aerial Layer Networking 2024" (6 Jul 2010). The demonstration shall be in both a permissive environment and a contested environment (e.g., one with occasional spoofing and intermittent jamming).

Technical POC: Mr. Kenneth Bauman (Kenneth.Bauman.Ctr@us.af.mil, 937-713-7586)

8.j. Enhanced capabilities of Active Electronically Scanned Array Radar in Legacy Bombers.

Seeking mature technologies that address one or more of the following capabilities to integrate into B-1 and B-52 aircraft fleets: Improved nuclear hardening, Easier interoperability by eliminating interface with other equipment, Greater processing (e.g. higher volume of data) in platform computer resources, More efficient power and

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cooling, Greater field of view (+-120 degrees), Maritime capability, Circular polarization, Early Warning Receive Transmit
Technical POC: Mr. Lee Gray (lee.gray@us.af.mil, 937-713-7563)

8.k. Structural Maintenance Data Analytics

Seeking data management technologies to improve structural repair processes and enable risk based induction. Vendors should propose a scalable and extensible tool to collect, organize, and analyze aircraft structural inspection and repair data. The tool must be capable of merging inspection and repair data with design and analysis models. In addition the tool must have the ability to aggregate and visualize data across the fleet. Solutions that provide a 3D environment to analyze this merged data are preferred.

Technical POC: Mr. Greg Ferrell (Gregory.Ferrell@us.af.mil, 801-586-3275)

8.l. Integrated Circuit Die Extraction and Reassembly

Seeking technology to perform integrated circuit die extraction and reassembly, and then testing of selected functionality at the chip level in accordance with MIL-STD-883 and at the line replaceable unit level for an airborne inhabited environment in accordance with MIL-STD-810.

Technical POC: Mr. Jeffery Sillart (jeffrey.sillart@us.af.mil, 937-255-5144)

8.m. Conformal Phased Array Antenna

Seeking on-aircraft demonstration of conformal phased array antenna that will allow USAF heavy aircraft to communicate with satellites using Ku and/or Ka band(s). Demonstration on bomber, tanker, or large transport aircraft is desired, but test on suitable surrogate aircraft will be considered.

Technical POC: Mr. Andre Leone (andre.leone@us.af.mil, 405-736-5990)

8.n. Transponder ADS-B Squitter Transmission

Seeking near term cost-saving technology solution for the FAA Mandate that requires all aircraft flying in the National Airspace to have transponder ADS-B squitter transmission capability (31 Dec 2019 deadline). The transmitted data is geo-position, heading, altitude, velocity, etc. (vector data). Just adding an additional GPS transponder box to each aircraft is not affordable. Desire ability for technology to transition into a multi-platform solution with only one non-recurring engineering effort.

Technical POC: Mr. James Patterson (James.patterson.7@us.af.mil, 937-713-6280)

9) PEO ISR & SOF

9.a. Airborne Sensor Data Processing

Seeking innovative on-board Data to Decisions (D2) applications that will reduce the time and manpower associated with the analysis of large data and leading to actionable data. Focus is on advanced airborne on-board processing and standard architecture technologies to support high output and multiple sensor processing prior to data

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downlinking. Areas of interest include on-board processing, data fusion/correlation, compression and data storage solutions for sensors that generate tremendous volumes of data

Technical POC: Mr. Ed Huling (edward.huling@us.af.mil, 937-255-4694)

9.b. Portable Link 16

Seeking a way to miniaturize Link 16 for use by dismounted Battlefield Airmen operators. Looking for a portable, small form factor, that could be easily man-carried.

Technical POCs: Mr. Paul J. Hrosch, paul.hrosch@us.af.mil, 937-656-8216, or Mr. Michael Longstreath, michael.longstreath.ctr@us.af.mil, 937-656-8104

9.c. Modular Open Systems Architecture Payloads

Seeking innovative architecture designs that will support an ISR sensor payload multi-INT open system that is aircraft agnostic and scalable to support various high and medium altitude ISR missions. Architecture will support features such as tipping, cueing, simultaneous fusion and plug-n-play of various sensor heads while using standard ICDs and common services (e.g. central computer, storage, comm links, etc.). Will serve as an ISR backbone for future systems.

Technical POC: Mr. Gibbs Dickson (gibbs.dickson@us.af.mil, 937-255-0397)

9.d. Radio Frequency Distribution (RFD)

Seeking advances in RFD design with a focus on photonic technology hardware that will greatly improve SWAP (i.e., significantly reduce weight over standard coax cabling), RF collection capability, frequency range and performance of switching and frequency conversion of analog signals onboard airborne platforms.

Technical POC: Mr. Tim Spaeth (timothy.spaeth.ctr@us.af.mil, 937-255-2312)

9.e. Breakthrough Video Communication Display Capability

Seeking innovative technologies to integrate a three-dimensional visual display with streaming video and metadata by utilizing holograms for dismounted operators. This capability will improve situational awareness and command and control thus improving ground reconnaissance and target identification essential to close air support, personnel recovery, and attack missions. Current visual interfaces are limited when displaying video and also have latency issues.

Technical POCs: Mr. Paul J. Hrosch, paul.hrosch@us.af.mil, 937-656-8216 or 2Lt John W. Denny, john.denny.8@us.af.mil, 937-656-8118

9.f. Increased Flight Endurance for Small Unmanned Aircraft Systems (SUAS)

Seeking innovative technologies to increase the endurance of Group I SUAS, specifically in: alternate energy generation and storage systems like solar energy and/or Lithium sulfur batteries; increasing the efficiency of fuel cells that power SUAS (i.e., better fuel and power management, etc.); smaller fuel cells; and lighter fuel storage systems. The objective is to enable at least 10-hour flight endurance. The Lithium-ion batteries that power current SUAS systems do not meet mission requirements for flight endurance. Solutions should be compatible with currently

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fielded systems as well as next-generation SUAS and should significantly increase flight endurance vs. the lithium ion battery baseline.

Technical POCs: Mr. Luis Ballester (luis.ballester.ctr@us.af.mil, 937-656-8466)

9.g. Airborne Radar Processing

Seeking software/algorithms to detect, characterize, mitigate, geolocate and report on artifacts in Synthetic Aperture Radar (SAR) imagery. The process may be airborne or ground based and use SAR imagery from a variety of airborne radar systems to include RQ-4 Global Hawk, U-2 Dragon Lady and MQ-9 Reaper SAR imagery products.

Technical POC: Mr. William Powers (williams.powers@us.af.mil, 937-255-4047)

9.h. Anti-Icing for UAS

Seeking retrofittable anti-icing technologies for medium altitude unmanned aircraft systems (UAS). Icing conditions cause our UAS missions to be grounded.

Specifically looking for affordable solutions that offer a low power, light weight alternative to other anti-icing methods for moderate icing environments.

Technical POC: Surinder Dhaliwal (surinder.dhaliwal@us.af.mil, 937-255-7970)

10) PEO JOINT STRIKE FIGHTER

10.a. Improved System Acquisition Affordability

Improvements that drive down Unit Recurring Flyaway (URF) cost, production span time, or improve production quality of Air Force acquisition programs.

Technical POC: Ms. Amanda Gentry (amanda.gentry@jsf.mil)

10.b. Improved Life Cycle Cost Improvements

Improvements that drive down sustainment/life cycle costs by improving reliability or availability of components, reducing cost of spares, improving maintenance man hour requirements, reducing logistics footprint, and other methods of life cycle cost reduction.

Technical POC: Ms. Amanda Gentry (amanda.gentry@jsf.mil)

11) PEO SPACE

Sustaining National Security Space Capabilities. Seeking technologies to maintain and enhance the strategic and tactical national security advantages afforded to the US by space; and energize the space industrial base supporting US national security.

Technical POC: Ms. Amanda Cordes (amanda.cordes.1@us.af.mil)

11.a. Improved Data Fusion Algorithms for Space-Based Missile Warning, Missile Defense, and Battle Space Awareness.

- 11.b. Improved Automated Analytic Techniques for Characterization and Discrimination.**
- 11.c. Increased Persistence of Space-Based Intelligence, Surveillance and Reconnaissance (ISR).**
- 11.d. Enhanced Space Situational Awareness (SSA), including: Data Processing, Cross-Cueing, Debris Detection & Conjunction Prediction.**
- 11.e. Improved Detection and Monitoring of Potential Space-Based Threats.**
- 11.f. Technologies to Increase Resiliency of Space Infrastructure.**
- 11.g. Technologies to Increase Cross-Domain Capabilities to Enhance Resilience.**
- 11.h. Increased Autonomy for Command and Control (C2) Systems to Increase Resiliency and Reduce Manning.**
- 11.i. Technologies Enabling Highly Efficient On-Orbit Maneuvers and Longer On-Orbit Life.**
- 11.j. Enable Multiple Simultaneous Contacts to Reduce Logistics Tail of Satellite and Ground Operations.**
- 11.k. Standardized and Miniaturized Components and Interfaces for Satellite Buses and Payloads.**
- 11.l. Improved Tools for Design and Testing of Components and Systems.**
- 11.m. User-Friendly Interfaces Providing Space Capabilities for Theater Commands.**
- 11.n. Technologies to Reduce Costs and Improve Performance of Satellite Buses, Payloads, and Components.**
- 11.o. Advanced Photonics, Quantum and Carbon Electronics, and Improved Key Building Blocks for Future Responsive Space Systems.**
- 11.p. Space Situational Awareness (SSA) – Detect, Track & Identify.**
Developing alternative active and passive sensor technologies to detect and track space objects in a way which significantly lowers cost of operations and sustainment. If, for example, passive technologies could be fielded to deliver the same or better level of detection and track as active sensors, then system maintenance and energy costs (i.e. no emitter) would be reduced. Developing intelligent sensor network technologies for optimizing real-time sensor performance by better utilizing combinations of sensors and data to accomplish what individual sensors cannot. This

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capability must be rapid (within the space object's risk timeline) and selective (matching sensor capabilities, geography and availability to the mission need).

11.q. Space Situational Awareness (SSA) – Characterization.

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11.r. Space Situational Awareness (SSA) – Data Integration and Exploitation.

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11.s. Space Situational Awareness (SSA) – Threat Warning and Assessment.

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Bldg 7
Wright-Patterson AFB, OH 45433-7607

Upon receipt and verification of the certified/approved DD2345, a written description of the specific information regarding this topic area will be sent to the vendor's POC at the identified address via certified mail.

12) PEO SPACE LAUNCH

12.a. Oxygen Rich Staged Combustion (ORSC) Cycle Liquid Rocket Engines

Seeking technologies to enable the domestic design, development, and production of ORSC propulsion systems. This technology area would include:

- Advancements in Oxygen compatible coatings & materials
- Physics-based design tools
- Combustion stability modeling & scalability
- Other related technologies that would reduce technology risk associated with a potential ORSC booster engine development program.
- These capabilities would enhance the government's ability to reduce reliance on Russian supplied engines.

Technical POC: Maj William Britton (William.britton@us.af.mil, 310-653-0611)

12.b. Additive Manufacturing Technology to Take Advantage of Advancements in Manufacturing Capability

Development of additive manufacturing technologies that could significantly reduce the cost of launch systems and low-rate production units.

- Advancements in Selective Laser Manufacturing (SLM)
- Electron Beam Melting (EBM),
- Advanced Process controls
- Updated material property specifications
- Component design updates
- Non-Destructive Evaluation (NDE) techniques for Additive Manufacturing

Technical POC: Maj William Britton (William.britton@us.af.mil, 310-653-0611)

13) PEO STRATEGIC SYSTEMS

13.a. EMP Barrier Material

Integrate new advanced materials sought for use as rugged lightweight EMP shielding and also for use as structures and enclosures exhibiting the following properties:

- Lightweight (compared to equivalent metal enclosure) composite EM barrier material
- EM shielding incorporated directly into the material matrix
- Avoid wear-and-tear and age-induced vulnerabilities caused by elimination or layer separation
- Ability to shield COTS avionics / electronics with minimal circuit and design modification
- Capable of incorporating ionizing radiation protection directly into the material matrix when required

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This material would provide greater confidence in system survivability against EM threats throughout the lifecycle, reduce shielding inspection and surveillance requirements, and more easily retrofit to COTS electronics than traditional enclosures, reducing acquisition and sustainment costs.

Technical POC: Ms. Angelica I. Rubio (angelica.rubio@us.af.mil, 505-853-1042)

13.b. Improved Minuteman III Intercontinental Ballistic Missile (ICBM) Flight Controls

Seeking technologies to reduce lifecycle maintenance costs, improve reliability and performance, and reduce weight of Minuteman III flight controls, i.e., D-5 flight controls. Technologies could include improved cyber security, assessment tools, Supply Chain Management, and the identification of cost drivers to enable reduced cost. Flight Control technology insertion has the potential to reduce overhaul costs by 80%, double the mean time between failures, and perform the same function with smaller and lighter units. The MM III is mandated to be maintained through 2030 and beyond, and this technology will also be used in the replacement Ground Based Strategic Deterrent (GBSD) weapon system.

Technical POC: Capt Bradley Diedrick (bradley.diedrick.2@us.af.mil, 801-777-8596)

13.c. Portable cadmium replacement process

Seeking to insert technologies for a portable cadmium replacement process for the ICBM Weapon System. Cadmium plating is used in the Launch Facility (LF) and Missile Alert Facility (MAF) Motor Generators. Motor Generator parts are coated with cadmium to inhibit corrosion, ensure a low electrical signature (bonding and grounding) and aide in the ability to withstand a nuclear environment. Cadmium is one of the EPA-17 chemicals selected for reduction. Executive directive 13148 and FAR part 23.703 call for reduction in use and/or replacement of cadmium plating whenever possible. Zinidal (Zn-Ni) product has been selected as the cadmium replacement. In order to fully incorporate the replacement, the complete implementation of Dalistick Zn-Ni for cadmium Type I & II is needed at the Depot for motor generator repairs and in the field for other plating repairs. This program consists of two proposal parts, which are outlined, below.

- i) Part I: Finalize and qualify Motor- Generator (M-G) depot repair using Dalistick station with Zn-Ni thereby eliminating the use of Cadmium Type I & II repair, Subscale testing, full scale M-G Nuclear Hardness testing and aging tests using Zn-Ni, preparing manuals, training, TO updates and specification for yearly operator certification.
- ii) Part II: Establish a Minuteman III field repair kit capability for system sustainability of field silos. The portable unit must be designed to meet field environmental requirements such as transportation shock/vibe, and amperage requirement for equipment, ESD and spark. The kit must be in compliance with MIL-STD-464 and MIL-STD-461 for use near sensitive electrically initiated ordnance, kit waste management during transportation and silo use generated during Cd plating and stripping activities, silo process criteria for

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heated tanks and power requirements. The kit should provide a prototype deliverable for sample preparation and field tryouts. Funding for Air Force Research Laboratory (AFRL), Portsmouth Naval Base, Rivet MILE and Little Mountain Hardness Testing Gov't facilities/personnel to support testing, depot and corrosion repair field teams will be executable as part of this project.

These costs should be estimated as part of this proposal.

Technical POC: Mr. Stanley Davis (stanley.davis.2@us.af.mil, 801-777-6043)

13.d. Secure Command and Control Systems

Seeking technologies to maintain robust, secure, unjammable technology for Command & Control systems through sustainment integration, increased band-width by multiplexing in a contested or uncontested environment, and assured survivability by insertion of emerging technologies.

Technical POC: Mr. Vincent McFadden (vincent.mcfadden.1@us.af.mil, 505-853-7187)

14) PEO WEAPONS

14.a. Denied Area Technologies

Seeking innovative technologies to improve operational system performance including but not limited to: Enhance position, navigation, and timing (PNT) accuracies (high performance Anti-Jam GPS, Non/GPS/alternate navigation approaches such as celestial navigation). Improve precision targeting/delivery, in GPS-contested environments (such as IMU and timing sources). Prevent exploitation of systems lost in denied areas. Extend the effective range of weapons (including propulsion efficiency, aerodynamic improvements, weight reduction, etc...).

Technical POCs: Mr. Russ Klug (Russell.klug@us.af.mil, 850-883-2137), or Mr. Greg Barnette (gregory.barnette@us.af.mil, 850-883-5908)

14.b. Improved Target Prosecution Technologies

Seeking technologies that will enhance target recognition (sensor sensitivity, sensor fusion, target identification/ATR). Broaden the target set (reduced collateral damage, enhanced lethality, enhanced access and penetration for non-kinetic solutions). Improve fuze capabilities/producibility and cost reduction (survivability, height-of-burst (HOB) performance, fuzing location/target vulnerability detection, universal digital interface). Real-time data link execution and planning, and other associated innovations. Improve weaponeering tools to improve fidelity and or reduce workload. Enable replacement of cluster bombs while maintaining an area attack capability.

Technical POCs: Mr. Russ Klug (Russell.klug@us.af.mil, 850-883-2137), or Mr. Greg Barnette (gregory.barnette@us.af.mil, 850-883-5908)

14.c. Improved Weapon Performance and Effectiveness

Seeking technologies that will enhance energetic/explosives including structural energetic, increase energy density. Enhance weapons effects including increased fragmentation and control, novel payloads/kill mechanisms. Penetration

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improvement technologies. Adjustable warhead effects to optimize lethality and control collateral damage.

Technical POCs: Mr. Russ Klug (Russell.klug@us.af.mil, 850-883-2137), or Mr. Greg Barnette (gregory.barnette@us.af.mil, 850-883-5908)

Office of the Secretary of Defense (OSD) / Defense Agency Rapid Innovation Fund Annex

This annex expands and provides further clarification on selected paragraphs in the Department of Defense (DoD) Broad Agency Announcement (BAA). Paragraph references below correspond to paragraphs in the main body of the BAA.

The OSD proposal submission instructions are intended to clarify the instructions as they apply to OSD Defense Agency requirements:

The following is an illustrative outline for Full Proposal format and content. **The OSD Defense Agency Component Contracting Officer requesting the proposal has the right to deviate from the proposal format and content described below.** Deviations from the information provided in this announcement will be detailed in the respective OSD Defense Agency Component Contracting Office Full Proposal invitation letter.

1.0 Format of Proposals

- 1.1. **Number of Pages:** The technical proposal is limited to 25 pages. The cover sheet, cost/price proposal, and Performance Work Statement (PWS) are not included in the technical proposal page limit. The PWS is limited to 12 pages. The cost or price proposal does not have a page limit. There shall be no cost/price information in the technical proposal and no technical information in the cost/price proposal. Pages submitted in excess of the technical proposal or PWS page limit will not be read or evaluated.
- 1.2. **Number of Copies & Format:** One electronic copy of the technical proposal, in Portable Document Format (PDF), shall be uploaded to the /OSD RIF submission website. The cost or price proposal and PWS shall also be uploaded in PDF format.
- 1.3. **Text & Font Format:** Text shall be at least single-spaced, on 8½ x 11 inch paper, with a minimum of one-inch margin all around. Pages shall be numbered consecutively. Font size shall be of minimum 10-point font and preferably Times New Roman. Bolding, underlining, and italics may be used to identify topic demarcations or points of emphasis. Graphic presentations, including tables, while not subject to the same font size and spacing requirements, shall have spacing and text that is easily readable.
- 1.4. **Headers:** The Offeror's name, requirement number, and proposal number shall be included in the header of each page of the technical proposal. The header may be included in the one-inch margins.

2.0 Proposal Structure

A complete proposal submission will consist of four volumes. The cover sheet is Volume One, the technical proposal is Volume Two, the cost/price proposal is Volume Three, and the PWS is Volume Four.

2.1. Volume One – Cover Sheet (Online Form)

The cover sheet shall be prepared on the OSD RIF submission website. Once the

cover sheet is saved, the system will assign a unique proposal number. The cover sheet must be prepared before Volumes Two, Three, and Four can be uploaded.

2.2. Volume Two – Technical Proposal (25-page PDF file upload)

The technical proposal shall be prepared outside of the OSD RIF submission website and then uploaded as a PDF attachment. The technical proposal shall include the following sections in the order given below:

2.2.1. **Contribution to the Requirement:** Provide a project overview and description of benefits, as described below:

2.2.1.1. **Project Overview:** A brief statement describing the specific technology and/or product being proposed and how the technology and/or product will work.

2.2.1.2. **Benefits:** Describe how, and to what degree, the technical approach is relevant to one or more requirement identified in this announcement, including how the approach:

- Accelerates or enhances a military capability, or
- Reduces the development, acquisition, sustainment, or lifecycle costs of defense acquisition programs or fielded systems, or
- Reduces technical risk, or
- Improves the timeliness and thoroughness of test and evaluation outcomes.

1.3 Transition Strategy: Describe how the technology and/or product will transition to the Services, including a demonstration path into military systems or defense acquisition programs. Describe evidence to support stated TRL.

2.2.2. **Technical Approach:** Describe how the proposed technical approach is innovative, feasible, achievable, complete and supported by a technical team that has the expertise and experience to accomplish the proposed tasks.

2.2.2.1. **Objectives and Scope:** Describe the specific objectives of what the project will achieve and any logical boundaries.

2.2.2.2. **Work Plan:** Provide an explicit, detailed description of tasks to be completed and deliverables.

2.2.2.3. **Key Personnel:** Describe the qualifications of the team and identify key personnel who will be involved in the effort including information directly related education and experience. Identify any foreign citizens you expect to be involved as a direct employee, subcontractor, or consultant. Key personnel resumes shall be provided in an attachment to the proposal and will not count toward the page limitations.

2.2.2.4. **Facilities/Equipment:** Describe available instrumentation and physical facilities necessary to carry out the proposed effort.

2.2.2.5. **Related Work:** Describe significant activities and/or previous work directly related to the proposed effort, including SBIR/STTR contracts and IR&D projects.

2.2.3. **Schedule:** Describe how the proposed schedule is achievable for the proposed technical approach. Technologies should transition to a military system or program within 24 months of contract award.

2.2.3.1. **Milestones & Deliverables:** Show major activities/milestones and deliverables anticipated by date, including research and development, testing, integration, transition, and/or acquisition elements, as applicable.

2.2.3.2. **Metrics/Measures of Success:** Discuss what measurement criteria will be established to measure progress against stated objectives.

2.2.3.3. **Risks:** Describe anticipated risks and risk mitigation plans.

2.3. Volume Three – Cost or Price Proposal (PDF file upload)

The cost or price proposal shall be prepared outside of the OSD RIF submission website and then uploaded as a PDF attachment. The cost/price proposal shall include a detailed breakdown of all costs by category. If a proposal is selected for award, the Offeror shall be prepared to submit further documentation to its specific OSD Defense Agency Component Contracting Officer to substantiate costs. For more information about cost proposals and accounting standards, see the DCAA publication called “Information for Contractors” available at www.dcaa.mil. The following cost areas shall be included, if applicable:

2.3.1. **Direct Labor:** Individual labor category or person, with associated labor hours and unburdened direct labor rates.

2.3.2. **Indirect Costs:** Fringe Benefits, Overhead, G&A, etc.

2.3.3. **Travel:** Destination, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.

2.3.4. **Subcontractor and Consultants:** All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Provide consultant agreement or other document that verifies the proposed daily/hourly rate.

2.3.5. **Other Direct Costs (ODCs):** ODCs shall be itemized with costs or estimated costs.

Volume Four – Performance Work Statement (12-page PDF file upload)

Provide a PWS clearly detailing the scope and objectives of the effort; tasks to be completed; the technical approach; and deliverables. The proposed PWS may be incorporated as an attachment to any resultant award instrument. To this end, such proposals must include a PWS without any proprietary restrictions, which can be included in the award instrument.

3.0 Submission of Proposals

Unless otherwise notified by the component contracting office, Offerors that receive an invitation to submit a Full Proposal shall use the same OSD RIF submission website (<http://www.dodrif.com/>) that was used for the OSD RIF White Paper package

submission. The cover sheet, technical proposal, cost or price proposal, and PWS shall be submitted electronically through the RIF submission website. Proposals sent by any other means (e.g. hand-carried, postal service mail, commercial carrier, fax or e-mail) will not be considered.

If multiple proposals are being submitted by the same Offeror, a separate cover sheet must be generated for each proposal package. Upon completion of the cover sheet, the Offeror will be instructed to upload the PDF technical proposal, cost or price proposal, and PWS, and then submit the proposal package (Volumes 1 – 4). Offerors are responsible for ensuring compliant and final submission of their proposals. Any additional submission instructions will be provided in the invitation requesting the proposal.

4.0 Notification of Proposal Receipt

Proposals will be considered “works in progress” until the Offeror submits the final proposal package. The OSD RIF submission website will provide Offerors a printable confirmation of successful proposal submission upon submission completion. Proposals in the system after the due date that have not been finalized will not be evaluated.

5.0 Validity of Proposals

The Offeror agrees to hold prices, terms and conditions of their offer firm for 180 days from the date of submission.

6.0 Marking of Proposals for Classified/Proprietary Information

Proposal submissions will be protected from unauthorized disclosure in accordance with applicable law and DoD regulations. Offerors are to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a Performance Work Statement, which contains only unclassified information and does not include any proprietary restrictions.

FY14 OSD / Defense Agency RIF Requirements

Questions regarding specific OSD / Defense Agencies requirement areas should be addressed to the technical POC listed under the requirement.

OSD Defense Agency Requirements Index

Requirement Number	Requirement Title
Joint Science and Technology Office for Chemical and Biological Defense (CBD)	
CBD-14-BAA-RIF-0001	Personal Climate Control System (PCCS)
CBD-14-BAA-RIF-0002	Permanent Anti-Fog Coatings for Protective Masks
Chief Information Officer/Defense Information Systems Agency (CIO/DISA)	
CIO_DISA-14-BAA-RIF-0001	Reconstitution and reimaging of servers and endpoints
CIO_DISA-14-BAA-RIF-0002	Network mapping, scaled visualization, and mission mapping
CIO_DISA-14-BAA-RIF-0003	Defensive Cyber Maneuver
Combating Terrorism Technical Support Office (CTTSO)	
CTTSO-14-BAA-RIF-0001	Global Multilingual Social Media Analytical Tool
CTTSO-14-BAA-RIF-0002	Rapid DNA Analysis of Wire Twists
CTTSO-14-BAA-RIF-0003	Rapid DNA Analysis for Touch Trace and Forensic Samples
Defense Health Program (DHP)	
DHP-14-BAA-RIF-0001	Medical Simulation-Based Systems for Trauma Skills Training
DHP-14-BAA-RIF-0002	Brain training and rehabilitation using serious games
DHP-14-BAA-RIF-0003	Remote PTSD monitoring and diagnosis using an automated system
Defense Intelligence Agency (DIA)	
DIA-14-BAA-RIF-0001	Enhancement of Network Defense Analysis through Behavior Analysis
DIA-14-BAA-RIF-0002	Turbo-Acquisition
DIA-14-BAA-RIF-0003	Self Service IT
Defense Logistics Agency (DLA)	
DLA-14-BAA-RIF-0001	Finding new sources for legacy weapon system parts via E-Commerce
DLA-14-BAA-RIF-0002	Perpetual Inventory for Pharmaceutical Supplies
DLA-14-BAA-RIF-0003	Cast Forging Preforms with Job Specific Performance Properties
Defense Threat Reduction Agency (DTRA)	
DTRA-14-BAA-RIF-0001	Development of FRM to Evaluate Shock Wave Propagation

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DTRA-14-BAA-RIF-0002	And Detailed Thermal Environments Of Thermobaric And Other Warheads For Agent Defeat Predictive methods for determining susceptibility of critical electronic systems and subsystems to electromagnetic (EM) insults
DTRA-14-BAA-RIF-0003	Enhanced Monitoring for Weapons of Mass Destruction (WMD) Proliferation Activity
Missile Defense Agency (MDA)	
MDA-14-BAA-RIF-0001	Exo-atmospheric Kill Vehicle, Common Kill Vehicle (DV)
Office of the Deputy Assistant Secretary of Defense for Manufacturing & Industrial Base Policy (ODASD MIBP)	
MIBP-14-BAA-RIF-0001	FPGA Design Authentication: Develop Design Verification/ Authentication Technology for Multiple Critical Designs Requirement (All Components) Military Systems
MIBP-14-BAA-RIF-0002	Improved advanced manufacturing and acquisitions performance through manufacturing data assurance capability for the defense industrial base
MIBP-14-BAA-RIF-0003	Advanced Manufacturing for Medical Devices and Prosthetics
North American Aerospace Defense Command / US Northern Command (NORAD / USNORTHCOM)	
NORTHCOM-14-BAA-RIF-0001	Energy Generation Suitable To Arctic Conditions
NORTHCOM-14-BAA-RIF-0002	Mobile Deployable Acoustic Detection Capability (Navy)
NORTHCOM-14-BAA-RIF-0003	Defense Information Systems Agency (DISA) (established capability gap of Information Volume and Velocity JCTD)
National Geospatial-Intelligence Agency (NGA)	
NGA-14-BAA-RIF-0001	Hybrid Relational-NoSpatial Query Language (NoSQL) Multi-Security Domain Database Solution for SOM (Structured Observation Management)
NGA-14-BAA-RIF-0002	Improve the Discovery, and Retrieval of Relevant Intelligence Products
NGA-14-BAA-RIF-0003	Dynamically Store, Discover and Access Geospatial Data (imagery from airborne and commercial satellite sources, and vector data) in a Cloud Environment
National Reconnaissance Office (NRO)	
NRO-14-BAA-RIF-0001	Scalable electric propulsion system module for Cubesat and larger space vehicle missions
NRO-14-BAA-RIF-0002	Advanced Onboard Signal Processing to Support Electronically Steerable Array and Very high through-put Processing Applications

U.S. Pacific Command (USPACOM)

PACOM-14-BAA-RIF-0001	Infrared Kestrel Eye (USPACOM)
PACOM-14-BAA-RIF-0002	Broad-spectrum Halogen-free Individual Water Purification Agent (USPACOM)
PACOM-14-BAA-RIF-0003	Long Range Payload Delivery Unmanned Underwater/Surface Vehicle (LR-UUSV)

Office of the Deputy Assistant Secretary of Defense for Emerging Capabilities and Prototyping (Rapid Reaction Technology Office (RRTO))

RRTO-14-BAA-RIF-0001	Land/Ground sensors to enhance early warning/denial capabilities through Detection, Identification, and Geo-Location
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U.S. Special Operations Command (USSOCOM)

SOCOM-14-BAA-RIF-0001	Joint Mission Network/Ground Forces Platform/System Interoperability (USSOCOM)
SOCOM-14-BAA-RIF-0002	Small Lightweight Geo-locating Device (USSOCOM)
SOCOM-14-BAA-RIF-0003	Mission Driven Data Management (USSOCOM)

U.S. Transportation Command (USTRANSCOM)

USTRAN-14-BAA-RIF-0001	Cyber Security
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Joint Science and Technology Office for Chemical and Biological Defense (CBD)

CBD-14-BAA-RIF-0001

Requirement Title: Personal Climate Control System (PCCS)

Military System or Acquisition Program Customer: JPEO CBD/Joint Program Manager (JPM) for Protection

Requirement Description: Extreme heat, highly insulative personal protective equipment, and significant physiological exertion can create a significant risk of a heat related injury for personnel wearing Level A and Level B protective clothing. An integrated personal cooling technology is required to mitigate physiological heat strain to improve users' physical and cognitive performance. A Personal Climate Control System (PCCS) must remove a minimum of 120 watts of metabolic heat in a 125°F environment. The PCCS includes the heat transfer garment/system and power source (if applicable); it must meet the following additional requirements to be considered for development and fielding:

- Weight: not more than 7.5 pounds
- Volume: not more than 105 in³ (excluding heat transfer garment)
- Noise: not to exceed 60 dBA when measured at one meter from the PCCS
- Duration: minimum of 120 minutes before replacement of a consumable (e.g. battery, heat storage medium)
- Biofeedback system control (e.g., skin temperature feedback)
- PCCS must be MOLLE (**MO**dular **L**ightweight **L**oad-carrying **E**quipment) compatible to facilitate integration with Level A and Level B protective clothing
- PCCS performance must be insensitive to its orientation

Through human factors evaluation(s), the offeror must work with stakeholders to optimize the PCCS integration approach to minimize snag hazards, ensure compatibility with current clothing and individual equipment, and integrate on users representing the range of body sizes that comprise the military population (5th percentile female through 95th percentile male design critical dimensions).

The offeror shall deliver five fully functional prototype systems to facilitate user assessments. A maintenance/operator manual, monthly progress reports, and a final report validating the above requirements (including test data) shall also be delivered.

Technical Point of Contact: Mr. Sal Clementi, DTRA J9/RD-CBT (703) 767-6970; Salvatore.Clementi@dtra.mil; Dr. Charles Bass, DTRA J9/RD-CBT (703) 767-3371, Charles.Bass@dtra.mil

CBD-14-BAA-RIF-0002

Requirement Title: Permanent Anti-Fog Coatings for Protective Masks

Military System or Acquisition Program Customer: JPEO CBD/Joint Program Manager (JPM) for Protection

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Requirement Description: Respiratory protection systems (e.g. Joint Service Air Mask (JSAM), M50, C50, and M53) that address chemical, biological, radiological and nuclear (CBRN) environments are prone to lens fogging which can severely impacting mission performance. Commercial off-the-shelf (COTS) approaches have not proven to be sufficiently robust and often fail under challenging conditions (cold environment at a high work-rate) or quickly deteriorate with time or multiple cleanings, and do not perform well enough to support novel non-ventilated eye lens designs. Recent research and development in nanomaterial coatings has shown the potential to address these issues. Permanent nanotechnology-based, anti-fog coating technologies are being sought that are resistant to abrasion and cleaning solutions. The goal is to develop a robust coating that will not compromise optical specifications in order to enhance capability and sustainability on the battlefield. The approach will include development of system prototypes and demonstrate overall durability and anti-fog effectiveness through simulated operational performance and environmental assessments to -20 °C under high work-rate conditions. The performer will develop and mature the coating formulation and application process, and demonstrate consistency of performance. The performer will also develop and demonstrate a near term “drop-in” lens accessory approach for CBRN masks to enhance current capabilities. The performer will coat/apply treatment to twelve (12) M50 eye lenses and twelve (12) JSAM eye lens sets provided by the Government. These coated eye lenses will be independently tested by the Government.

Technical Point of Contact: Mr. Sal Clementi, DTRA J9/RD-CBT, (703) 767-6970; Salvatore.Clementi@dtra.mil; Dr. Tracee Whitfield, DTRA J9/RD-CBT, (703) 767-3371, Tracee.Whitfield@dtra.mil

Chief Information Officer/Defense Information Systems Agency (CIO/DISA)

CIO_DISA-14-BAA-RIF-0001

Requirement Title: Reconstitution and reimaging of servers and endpoints

Military System or Acquisition Program Customer: Defense Information Systems Agency; Cyber Security

Requirement Description: As the DoD transitions to virtual endpoints, provide a solution for automated reimaging/reconstitution of current physical servers and endpoints to refresh system health, reconstitute compromised machines after attacks, combat persistent threats, and as a tailored response option in anticipation of increased threats or vulnerabilities. The technical solution must demonstrate a reliable, automated, and secure reconstitution mechanism that maintains an acceptable user experience.

Technical Point of Contact: DoD CIO: John Mills @john.r.mills28.civ@mail.mil; DISA POC: Doug Gardner @ douglas.d.gardner.civ@mail.mil

CIO_DISA-14-BAA-RIF-0002

Requirement Title: Network mapping, scaled visualization, and mission mapping

Military System or Acquisition Program Customer: Defense Information Systems Agency; Cyber Security

Requirement Description: Provide an integrated solution addressing as many of the following three areas as possible: comprehensive network mapping based on flow data, network telemetry data, packet capture, etc.; network visualization scaled to the complexity and size of the Department of Defense; and automated detection of mission dependencies based on network-based data collection and analytics. The technical solution must demonstrate scalable automation, reliable analytics, and an intuitive user interface.

Technical Point of Contact: DoD CIO: John Mills @john.r.mills28.civ@mail.mil; DISA POC: Doug Gardner @ douglas.d.gardner.civ@mail.mil

CIO_DISA-14-BAA-RIF-0003

Requirement Title: Defensive Cyber Maneuver

Military System or Acquisition Program Customer: Defense Information Systems Agency; Cyber Security

Requirement Description: Provide a solution to identify and implement defensive countermeasures intended to make adversary attempts to operate on DoD networks more expensive, in terms of time, money, or effort. This effort allows for a wide array of both specific and general approaches, but all must be able to be managed at scale, cost-efficient, and effective at addressing a particular adversary reconnaissance method, attack vector, or exploitation technique.

Technical Point of Contact: DoD CIO: John Mills @john.r.mills28.civ@mail.mil; DISA POC: Doug Gardner @ douglas.d.gardner.civ@mail.mil

Combating Terrorism Technical Support Office (CTTSO)

CTTSO-14-BAA-RIF-0001

Requirement Title: Global Multilingual Social Media Analytical Tool

Military System or Acquisition Program Customer: SOCOM J24 Analytics/Intel & IO/ Open Source Analysis

Requirement Description: Develop capability for DoD forces to analyze all forms of communications on social media outlets from areas or groups of interest. Capability is needed to enhance decision making from the tactical to strategic level. Garnish information, trends, and sentiments in near real time providing worldwide situational awareness. Analyze any information source with priority on social media outlets. Translate from key foreign languages including Arabic [dialects] (threshold), French [Sahel] (objective), Arabizi (objective), Russian (objective), and Farsi (objective) to English. Use the most advanced data mining processing, with time saving, user friendly analytical front ends. Portray information through selected filters, with links, standard geospatial maps or temporally. Solution should be hardened and suitable for non attributional use.

Technical Point of Contact: Dr. Kathleen Egan, Kathleen.Egan@cttso.gov; Ms. Clare O’Keeffe, Clare.OKeeffe.ctr@cttso.gov

CTTSO-14-BAA-RIF-0002

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Requirement Title: Rapid DNA Analysis of Wire Twists

Military System or Acquisition Program Customer: USSOCOM (Program Executive Office – Special Operations Warrior Forces; Program Executive Office – Special Operations Forces Support Activity) DFSC, DIA

Requirement Description: Develop a methodology and system for rapid DNA analysis of wire twists collected from IEDs and weapons caches. Analysis should provide a DNA profile based on at least 5 STR loci but ideally perform detection of the CODIS core loci. Prospective user(s) looks to increase their biometric capabilities shifting towards a more non-permissive area of operations mindset. As collecting wire twists is a field practice, a field expedient method for obtaining DNA profiles from these substrates would greatly increase operational intelligence.

Technical Point of Contact: Mr. Terry Hess, Terry.Hess@cttso.gov

CTTSO-14-BAA-RIF-0003

Requirement Title: Rapid DNA Analysis for Touch Trace and Forensic Samples

Military System or Acquisition Program Customer: USSOCOM (Program Executive Office – Special Operations Warrior Forces; Program Executive Office – Special Operations Forces Support Activity) DFSC, DIA

Requirement Description: Develop a methodology and system for rapid DNA analysis of touch trace and forensic samples. The current capabilities of producing rapid DNA profiles with these sample types are limited. As operating forces shift toward more non-permissive areas of operation, there is a need to expand from buccal swab sampling seen in current rapid DNA systems. Profiles generated would be based on at least 5 STR loci, but preferably have the resolution to detect all of the CODIS core loci. An important aspect of this requirement is the methodology used for analysis of these samples would not render operators unable to send sample downstream for further testing.

Technical Point of Contact: Mr. Terry Hess, Terry.Hess@cttso.gov

Defense Health Program (DHP)

DHP-14-BAA-RIF-0001

Requirement Title: Medical Simulation-Based Systems for Trauma Skills Training

Military System or Acquisition Program Customer: Military Health System, through PEOSTRI PROJECT Office for Medical Modeling & Simulation (MM&S), interim toward PEOSTRI PROGRAM Office for MM&S

Description: Training platforms and skill identification systems are lacking, thus leading to the inability to adequately monitor, evaluate, triage and treat life threatening injuries. Provide a simulation based training system to improve the cognitive and psychomotor critical trauma skills for deployable military physicians. Training system provides hands-on, realistic, high fidelity physical models supporting critical trauma procedures to reduce cost and reliance on live tissue. System includes goal directed curriculum and objective metrics to evaluate performance; easily transportable, and ruggedized to support multiple uses during pre-deployment as well as training within a combat environment.

Technical Point of Contact: Tony L. Story, Tony.Story@TATRC.org, 301-619-7033

DHP-14-BAA-RIF-0002

Requirement Title: Brain training and rehabilitation using serious games

Military System or Acquisition Customer: Military Health System

Description: Provide a video games to mitigate sequelae of blast related neurotrauma via timely and effective assessment and intervention. The application includes robust data collection and interpretation tools. The game uses a motivating and familiar video-game like activity, is evidence based and an open platform. The game can be deployed before, during and after deployment to measure baseline, performance change and rehabilitation in preparation for return to duty.

Technical Point of Contact: Ashley Fisher, Ashley.g.fisher.civ@mail.mil, 301-619-3146

DHP-14-BAA-RIF-0003

Requirement Title: Remote PTSD monitoring and diagnosis using an automated system

Military System or Acquisition Customer: Military Health System

Description: Continue development and validation of a voice-based automated Tele-PTSD Monitor (TPM), which can remotely screen, monitor, and provide assistance to clinicians in diagnosing a PTSD patient's mental healthiness and readiness. Phase II accomplishments were as follows: 1) the architecture of the TPM has been designed and voice-based PTSD assessment modality has been implemented. 2) successfully developed an infrastructure that is suitable for collecting different types of data that is useful for assisting clinicians in PTSD evaluation, including a self-report (PTSD checklist, PCL), responses to CAPS interview questions and Continuous Performance Test (CPT), and a cognitive test that has been investigated by psychiatrists for PTSD assessment. 3) the acoustic features from voice signals were studied and they successfully identified three categories of acoustic features that are related to PTSD, including prosodic, vocal tract and long term spectral-temporal features. 4) a PTSD assessment Engine (ListEn) has been developed and implemented. The performance of these algorithms has been evaluated with our collected publically available PTSD/non-PTSD dataset and a set of CAPS interview dataset provided by University Hospitals CASE Medical Center (UHCMC) that was collected in their Ohio Army National Guard Mental Health Initiative (OHANG MHI) program from 2009 to 2012. The overall accuracy for these two datasets are 96.2 (25 out of 26 subjects were correctly identified) and 76.9% (20 out of 26 subjects), respectively.

Technical Point of Contact: Ashley Fisher, Ashley.g.fisher.civ@mail.mil, 301-619-3146

Defense Intelligence Agency (DIA)

DIA-14-BAA-RIF-0001

Requirement Title: Enhancement of Network Defense Analysis through Behavior Analysis

Military System or Acquisition Program Customer: Defense Intelligence Agency (DIA)
Computer Network Defense Center

Description: Improve Computer Network Defense Analysis by providing Behavior Analysis by eliminating the need for execution, costly virtual machines and sandboxing. Provide software assurance and eliminate the costly code reviewing and the need of vender source code. The need for an automated static code analysis tool that can determine if a software product is vulnerable or malicious based on software behavior semantics. The goal is to provide a new technique to the computer network defense community that can allow for high fidelity code analysis that will eliminate partial stories of how malware behaves and allow software assurance of applications without the need for a time-consuming source code review.

- Behavior analysis with no VM, sandbox or code execution.
- Software assurance (code review) with no source code needed

Technical Point of Contact: Jeremiah Osburn, jeremiah.osburn2@dodis.mil, 202-231-5377

DIA-14-BAA-RIF-0002

Requirement Title: Turbo-Acquisition

Military System or Acquisition Program Customer: Defense Intelligence Agency (DIA)

Description: To keep pace with a rapidly changing technology horizon, the Defense Intelligence Agency (DIS) is pursuing mechanisms to streamline acquisition and contracting through models that maximize agility, transparency, oversight, and auditability. Early models, such as DIA Needipedia and the Open Innovation Gateway, have shown that systematic reform can save millions and dramatically increase agility. DIA seeks to extend these models through workflow automation improving scalability and traceability with an ambitious goal of 50 days from mission need statement to contract. Turbo Acquisition proposals receiving the most consideration will provide straightforward user interfaces to guide novice users through the steps in the acquisition and contracting process, while automatically generating the required documents and validation routing.

Technical Point of Contact: Dan Doney (George.doney@dodis.mil)

DIA-14-BAA-RIF-0003

Requirement Title: Self Service IT

Military System or Acquisition Program Customer: Defense Intelligence Agency (DIA)

Description: To fully realize the agility offered by cloud environments, the Defense Intelligence Agency requires new Enterprise IT asset management methodologies to enhance IT delivery speed, drive down IT management costs, improve security posture. The rapidly growing demand for Data Science, requires a rethinking of IT delivery models removing the separation between end users and technologists. To support, DIA seeks new provisioning and monitoring solutions to that enable end user agility through instant provisioning of IT resources on production networks while ensuring that unauthorized communications, malware, and/or high risk configurations are detected and mitigated in real time. Proposals receiving most consideration must interoperate with JIE and ICITE infrastructure, scale to handle massive monitoring data in real time, and include robust, decentralized "Trust but Verify" security models.

Technical Point of Contact: Mr. Dan Doney (George.doney@dodis.mil)

DLA-14-BAA-RIF-0001

Requirement Title: Finding new sources for legacy weapon system parts via E-Commerce
Military System or Acquisition Customer: All currently employed and developmental weapon systems

Description: Identify parts with an applicable dual-use in DoD weapon systems and the commercial marketplace. Establish a collaborative effort with DoD's engineering and maintenance communities to validate part equivalency. Develop the means to locate these parts on commercial websites providing an expanded vendor base, reduced costs, shorter lead-times, and greater competition.

Technical Point of Contact: Natalie Seiling; 804-279-5120; natalie.seiling@dla.mil

DLA-14-BAA-RIF-0002

Requirement Title: Perpetual Inventory for Pharmaceutical Supplies

Military System or Acquisition Customer: Military Treatment Facilities (MTFs) and their customers. Medical planners, Clinicians, Logisticians, Materiel Developers

Description: Transform operations at DOD pharmacies for more efficiency and improved product tracking through adaptive implementation of commercially available technology. Includes capability to track and manage pharmaceutical inventory through automation and potential data provisioning to existing system. Increases accuracy and optimizes inventory; streamlines operations; reduces product diversion; improves customer support.

Technical Point of Contact: Emily Baigis; 215-737-5781; emily.baigis@dla.mil

DLA-14-BAA-RIF-0003

Requirement Title: Cast Forging Preforms with Job Specific Performance Properties

Military System or Acquisition Customer: Any weapon system with forged parts

Description: Forged parts for legacy weapons systems have long lead times and high costs because the stock is unavailable or poorly shaped to produce the final forging.

Using a cast preform, the tailored cast shape provides the desired combination of final shape and forging properties. A cast preform positions the material to maximize forging shape and properties efficiently. Cast preforms reduce the steps in forging, providing the ability to produce increasingly complex shapes, improve component performance, reduce micro-porosity, and segregation, resulting in the reduced cost of a forged part.

Technical Point of Contact: Dean Hutchins; 804-279-5033; dean.hutchins@dla.mil

Defense Threat Reduction Agency (DTRA)

DTRA-14-BAA-RIF-0001

Requirement Title: Development of FRM to Evaluate Shock Wave Propagation And Detailed Thermal Environments Of Thermobaric And Other Warheads For Agent Defeat
Military System or Acquisition Customer: DoD Mission Planners

Description:

Description: Shock waves associated with conventional explosives typically have durations on the order of milliseconds. For many situations involving hardened structural components, the time to peak response exceeds that of the duration of a conventional weapon's shock wave. Thus, while the component may be destroyed, the ability for the shock wave to propagate beyond the component is limited and any accrued damage is generally localized in the vicinity of the component.

In some targeting situations, a structural component or a configuration of structural components is installed such that a shock wave deriving from a conventional weapon is unable to penetrate beyond this component in sufficient magnitude and duration to destroy the target of interest. Because of their characteristic long durations, shock waves deriving from thermobaric explosives have been used to defeat such targets. This long duration and associated high temperatures also are useful in defeating chemical and biological agents. Additionally, other payloads with higher durations or temperatures may prove even more beneficial for Agent Defeat missions.

At the present time there are no loading prediction tools that can be deployed quickly to calculate the shock wave propagation and thermal environments associated with thermobaric explosives with sufficient fidelity to predict chemical reactions and neutralization of dispersed agents. High Fidelity computational fluid dynamics (CFD) models can be used to answer these questions, but they can only be used when long runtimes and high costs are appropriate.

The purpose of this topic is to generate a fast running model (FRM) capable of calculating the shock wave propagation and thermal environments of different explosives, thermobaric explosives, and incendiaries, with sufficient fidelity for Agent Defeat planning. The FRM should consider the effects on various solid structural components and characterize both shock waves and thermal environments beyond such components. It is anticipated that an extensive database of CFD/ computational structural dynamics (CSD) results will need to be created and critical variables identified to develop this FRM. "Fast" is a relative term, but in this effort models that can run in less than an hour will be considered if justified by fidelity improvement over faster answers. Finally, the FRM should allow for the inclusion of target specific properties that will affect the thermodynamics of the system and will enable the user to determine if the harmful agents (i.e., chemical or biological) associated with the target are defeated, contained, or dispersed.

Technical Point of Contact: Seung Lee, Seung.Lee@dtra.mil, 703-767-2903

DTRA-14-BAA-RIF-0002

Requirement Title: Predictive methods for determining susceptibility of critical electronic systems and subsystems to electromagnetic (EM) insults.

Military System or Acquisition Customer: Geosynchronous Space Situational Awareness Program (AFSPC)

Description: The susceptibility of critical electronic systems and components to incident electromagnetic insults (EMI) from weaponized high power microwave (HPM) sources or high altitude EMP is well recognized. Testing hardening measures to protect critical electronic assets from such EMI can be prohibitive both in terms of costs and logistical resources. This cost is

realized in both the design phase of system development and whenever newer technology is inserted into legacy systems. A predictive capability is thus required that can identify the causality of EMI-induced upset in electronic systems and components. These predictive models should be based on physics-based analytic formalisms for electronic systems and components to address the continual evolution of these electronic systems in scale, complexity and sophistication. Currently, much of the test and evaluation methodology for EM insults associated with high intensity transients concentrates mainly on the effect of the incident EM energy. A better understanding of EM failure in electronics from the component level would result in less costly and more efficiently designed hardened systems.

Technical Point of Contact: Dr. Lisa Andivahis, 703-767-4028, lisa.andivahis@dtra.mil

DTRA-14-BAA-RIF-0003

Requirement Title: Enhanced Monitoring for Weapons of Mass Destruction (WMD)

Proliferation Activity

Military System or Acquisition Customer: WMD Sensors Program

Description: Diagnosis of activity associated with the nuclear fuel cycle or nuclear weapons development challenges current methods and instrumentation, particularly in the context of broad area, persistent surveillance and under certain operational conditions of interest to the DOD. Commonly-used “crude sampling” techniques are not sufficiently refined to determine timing and quantity of effluent release or to reliably detect specific constituents uniquely associated with processes of interest. The combination of variable biotic and abiotic conditions in a given environment further confounds adequate characterization. Similar factors affect detection scenarios for WMD (chemical and biological signatures) that are not related to nuclear weapons production. Development of novel detection systems will facilitate analysis of proliferation activities not readily discernible by current methods of monitoring or provide orthogonal surveillance tools to aid intelligence analysis and identify sites where illicit activities are occurring.

Biologically-based detection systems provide a promising alternative to conventional techniques due to their exceptional specificities and sensitivities. The public and private sectors have designed, fabricated, and deployed sensor systems using biologically-based recognition elements including aptamers, peptides, and enzymes. However, large scale production and purification of biomaterials are currently costly and time-consuming, and such materials often degrade in military operational environments. By contrast, microbes (e.g., bacteria, yeast, microalgae) can be produced in large quantities using established culturing methods, are easy to manipulate, and exhibit better stability in harsh environs. Whole-cell biosensors that incorporate microbial species as interfacial materials demonstrate utility for a number of applications ranging from environmental monitoring to public health, and several are already in commercial use. Single point/single analyte, as well as arrayed sensors which incorporate two or more microbial species, are developed. Genetic engineering yields production of microbial biosensors with superior ability to selectively concentrate desired analytes while excluding interferents, thus increasing signal-to-noise ratios and reducing both false positives and false negatives. Moreover, compatibility of microbial systems with commonly-used sensor platforms is established. The present topic seeks development of a sensor based upon an arrayed electrochemical platform that addresses the above-mentioned design elements, whereby microorganisms serve as the

recognition elements for radioactive- and/or non-radioactive (e.g., industrial solvents, heavy metals) residues indicative of nuclear proliferation processes. Ideally the detection system will operate in more than one medium (aqueous, soil, air). Systems that obviate the need for external energy input and bulky emplacement architectures are desirable.

Technical Point of Contact: Heather Meeks, (703) 767-3059, heather.meeks@dtra.mil

Missile Defense Agency (MDA)

MDA-14-BAA-RIF-0001

Requirement Title: High Performance Divert and Attitude Control System Components (Missile Defense Agency)

Military System or Acquisition Customer: Exo-atmospheric Kill Vehicle, Common Kill Vehicle (DV)

Description: In order for current solid propellant propulsion systems to be viable candidates for future missile interceptors, they should be capable of longer operation times, increased performance, and reduced size, weight, and power (SWaP). The Missile Defense Agency (MDA) has a particular interest in developing and maturing robust, high performance Divert and Attitude Control System (DACS) technologies. Areas of particular interest include (1) proportionally controlled actuators capable of enduring higher temperatures while reducing SWaP, (2) warm gas pressure regulators that are capable of being exposed to particulates in the gas, (3) multi-pulse/multi-ignition gas generator technologies capable of multiple discrete events, and (4) light weight structural insulators with low thermal conductivity that can survive high heating rates and long operating times >300 seconds.

Technical Point of Contact: Robert Haack, 256-450-2829, robert.haack@mda.mil

Office of the Deputy Assistant Secretary of Defense for Manufacturing & Industrial Base Policy (ODASD MIBP)

MIBP-14-BAA-RIF-0001

Requirement Title: FPGA Design Authentication: Develop Design Verification/ Authentication Technology for Multiple Critical Designs Requirement (All Components) Military Systems

Military System or Acquisition Customer: Numerous Army, Navy and Air Force acquisition programs / systems

Description: Develop and demonstrate an authentication technology that is able to automatically analyze critical FPGA application designs which may be at risk of malicious functionality insertion. The authentication technology should be affordable and effective across multiple FPGA platforms. Establish an automated methodology to extract the functionality of FPGA design bitstreams to netlists. This will greatly reduce the cost and time required to authenticate design functionality and thereby enhance ability to detect malicious functionality insertions.

OSD / Defense Agency RIF BAA Annex

Technical Point of Contact: Greg Harris, gregory.a.harris81.CIV@mail.mil, Digital Manufacturing & Design Innovation Institute

MIBP-14-BAA-RIF-0002

Requirement Title: Improved advanced manufacturing and acquisitions performance through manufacturing data assurance capability for the defense industrial base

Military System or Acquisition Customer: Advanced Manufacturing Institutes (NAMII, DMDI & LM3I)

Description: Maintaining a strong national defense posture requires a robust defense industrial base that is able to operate effectively across a multi-level supply chain, without losing sensitive information through cyber security vulnerabilities. The defense industrial base includes many small to medium enterprises (SME) that are critical to the success of the supply chain yet have relatively little expertise in cyber security. There is need for technologies, beyond simple encryption, that extend state-of-the-art operational cyber security capabilities to the SME's and enable secure collaboration activities without imposing prohibitive financial and personnel burdens.

Technical Point of Contact: Greg Harris, gregory.a.harris81.CIV@mail.mil, Digital Manufacturing & Design Innovation Institute

MIBP-14-BAA-RIF-0003

Requirement Title: Advanced Manufacturing for Medical Devices and Prosthetics

Military System or Acquisition Customer: DoD and VA Medical Centers

Description: Innovative and advanced manufacturing that enhances medical device and prosthetics capability and reduce life cycle costs. Wounded warriors facing the loss of limb require prosthetic systems which return them to the highest possible functional levels over the maximum possible environmental conditions. To support this requirement, develop and demonstrate systems which improve function, reduce weight and cost, provide patient specific designs and prevent overheating of the residual limb and the generation of sweat. Current prosthetic have limited performance and lead to tissue breakdown, infection, and loss of mobility. Specific elements of interest include advanced manufacturing processes, and robust systems insensitive to ambient conditions, which are simple to use and provide sufficient cooling to completely eliminate sweating within the prosthetic system.

Technical Point of Contact: John Carney, ONR, Navy ManTech, john.u.carney@navy.mil and Troy Turner, USARMY MEDCOM TATRC, mailto:troy.a.turner10.civ@mail.mil

National Geospatial-Intelligence Agency (NGA)

NGA-14-BAA-RIF-0001

Requirement Title: Hybrid Relational-NoSpatial Query Language (NoSQL) Multi-Security Domain Database Solution for SOM (Structured Observation Management)

Military System or Acquisition Customer: National Geospatial-Intelligence Agency

Description: (U) NGA needs the capability comparable to the Oracle CCDSE (Cross Domain Security Express) that also handles non-relational (NoSQL) databases. The current Structured Observation Management effort approaches are targeting multiple NoSQL technologies, including Graph Stores and schema-less Document stores. Included in these Cross Domain requirements are cell-level security that supports both compartmented and Commonwealth partner access. NGA will need a cross Domain Data environment that includes both Relational and non-Relational database models.

Technical Focal Point: Ms. Polly Shaffer, 571-557-2629, polly.b.shaffer@nga.mil

NGA-14-BAA-RIF-0002

Requirement Title: Improve the Discovery, and Retrieval of Relevant Intelligence Products

Military System or Acquisition Customer: National Geospatial-Intelligence Agency

Description: (U) A persistent problem for the GEOINT community is discovering and retrieving intelligence products once they have been created and filed. The current discovery and retrieval approach depends on the author(s) to tag the product with identifying metadata. While some metadata tags, such as time, and location can be objectively assigned, the topic and information content of the product is more subjective. An analyst will necessarily tag the information content relative to his or her perspective at the time of creation – the intelligence question they are concerned with at the moment –or they will often use overly generic or overly specific tags. All of these conditions make it difficult for a product with relevant, important, or even critical content to be discovered later by an analyst with a different perspective or problem than the original author. This is a request for a project to investigate the application of natural language processing, semantic signatures and other techniques, as opposed to metadata tagging, to improve the discovery, and retrieval of relevant intelligence products.

Technical Focal Point: Ms. Polly Shaffer, 571-557-2629, polly.b.shaffer@nga.mil

NGA-14-BAA-RIF-0003

Requirement Title: Dynamically Store, Discover and Access Geospatial Data (imagery from airborne and commercial satellite sources, and vector data) in a Cloud Environment

Military System or Acquisition Customer: National Geospatial-Intelligence Agency

Description: (U) Develop and demonstrate the capability to dynamically store, discover and access geospatial data (imagery from airborne and commercial satellite sources, and vector data) in a cloud environment. Dynamic updates to imagery must include ortho-rectification, colorization, and mosaicking (including feathering of mosaicked images). Users should see imagery updates automatically as they occur. The capability needs to provide a framework useful in the JIE and IC ITE environments that provides scalable storage and processing capabilities and which can be provisioned to client applications as a service. Work closely with NGA and other partners throughout the process to ensure requirements are met.

Technical Focal Point: Ms. Polly Shaffer, 571-557-2629, polly.b.shaffer@nga.mil

National Reconnaissance Office (NRO)

NRO-14-BAA-RIF-0001

Requirement Title: Scalable electric propulsion system module for Cubesat and larger space vehicle missions

Military System or Acquisition Customer: Potentially all Government Space Craft

Description: Develop a low-cost, scalable electric propulsion system module that can be easily assembled into arrays for use across mission classes (2 kg – 2000 kg spacecraft). Reduce integration cost and complexity of space missions through self-contained bolt-on modules with cubesat cross sectional area (10 cm x 10cm x depth). Enable precision pointing; maneuverability to suit mission adaptability; and, controlled reentry. Demonstrate high module specific impulse (isp >2000 s), thrust density (>100mN per square meter), and deltaV (>1000 m/s) to meet future mission needs. Qualify for use in rideshare launches (possibly achieving manned spaceflight rating). This is a key enabler for smallsat viability for DoD space operations. Develop methods to lower fabrication and integration costs, increase thrust density, extend thruster life, and establish a catalog product for use across DoD.

Technical Point of Contact: Mr. Cobert, 703-808-3155, cobertma@nro.mil

NRO-14-BAA-RIF-0002

Requirement Title: Advanced Onboard Signal Processing to Support Electronically Steerable Array and Very high through-put Processing Applications

Military System or Acquisition Customer: Potentially all Government Space Craft

Description: Develop and demonstrate a very high through-put (> 1TFLOP), radiation hardened (RH) and low power single board computer processing capability based on adaptation of commercial intellectual property for high reliability space system applications. This effort will integrate multiple RH digital signal processing (DSP) circuits with a very high through-put RH multi-core general purpose processor and high data rate memory devices to provide a generic building block to achieve > 1TFLOP of onboard processing capability to support the Electronically Steered Arrays (ESA) and other advanced signal processing needs. This effort will work closely with specific programs and space system designers to establish specific processing algorithm (to include but not be limited to Noise Suppression versus Time space Adjacency, Spatial filtering for Clutter Suppression using Laplacian Convolution and others) and ESA through-put requirements. At the completion of this two year effort a test-bench demonstration will be conducted for a specific system and serve to expedite the transition of this advanced processing technology into systems of record.

Technical Point of Contact: Mr. Cohn, 703-808-4250, cohnlewi@nro.mil

North American Aerospace Defense Command / US Northern Command (NORAD / USNORTHCOM)

NORTHCOM-14-BAA-RIF-0001

Requirement Title: Energy Generation Suitable To Arctic Conditions

Military System or Acquisition Customer: Potential field demonstration in Nome, AK.

ALCOM, USNORTHCOM, Army PEO; Air Force PEO

Description: Demonstrate a scalable power and/or thermal generation system for use in arctic installations such as wind/diesel hybrids, solar-diesel hybrids, low temperature variant geothermal power, biomass district heating. Need to supplement/mitigate potential power disruptions for contingency military arctic operations. The equipment will need to perform a field demonstration in an arctic location as part of a larger USNORTHCOM effort. The generator should be capable of producing a minimum of 100KW with scalability up to 4MW. The equipment must show the ability to operate within the arctic circle environment and to be integrated into a distribution microgrid to enhance energy reliability.

Technical Point of Contact: Dr. Bill Waugaman, 719-556-7311,

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NORTHCOM-14-BAA-RIF-0002

Requirement Title: Mobile Deployable Acoustic Detection Capability

Military System or Acquisition Customer: PEOs/PMs for Mobile Sensor Systems (NAVSEA, PMS 485, NAVAIR & SPAWAR)

Description: There is a need for unclassified (1) affordable approaches to make corroborating detections from acoustic sensor systems that could augment other detection capabilities, and (2) obtain acoustic queuing and tracking data from non-broadcasting (dark) targets that may be trying to transit an area undetected and (3) obtain affordable and reliable detection alternatives to above the surface line of sight sensors. These technologies are needed to improve MDA that exploits the acoustic area of target detection.

Technical Point of Contact: LT Alexander Kelly, 719-556-8743,

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NORTHCOM-14-BAA-RIF-0003

Requirement Title: Personally Identifiable Information (PII) Firewall

Military System or Acquisition Customer: Defense Information Systems Agency (DISA)
(established capability gap of Information Volume and Velocity JCTD)

Description: Joint and coalition forces and other Federal departments situational awareness is enhanced by information gained through open source information such as Twitter, Facebook, Flickr, blogs, etc. Operational utility is significantly hampered by the inability to legally and legitimately analyze this information due to the exposure of PII from analytical tools currently available. There is a need (1) for blocking (removal/blocking/masking) direct PII found within streaming or static data sets (text, images, etc.) or metadata of social media without loss of information, and (2) to be monitoring and analytical tool agnostic (the post-processed data should operate in common monitoring and analytical tool sets).

Technical Point of Contact: Ed Doray, 719 554-1353, Edmund.doray@northcom.mil

U.S. Pacific Command (USPACOM)

PACOM-14-BAA-RIF-0001

Requirement Title: Infrared Kestrel Eye

Military System or Acquisition Customer: PEO Missiles and Space (M&S) for Small Satellite Bus, PEO IEWS for Small Satellite Payload

Description: Demonstrate affordable, lightweight, low cost modified payload to Kestrel Eye (KE) small imaging satellite. Current KE program is to demonstrate small low cost imaging satellite to provide near-real time situational awareness directly to the tactical warfighter who also had tasked the satellite directly from theater. However KE is currently simply a visible sensor. This effort would be to build a new satellite to include an infrared payload, then KE concept could include additional capabilities such as nighttime imagery and maritime applications.

Technical Point of Contact: Martin Lindsey, Ph.D., PACOM J85, 808-477-8010, martin.lindsey.ctr@pacom.mil

PACOM-14-BAA-RIF-0002

Requirement Title: Broad-spectrum Halogen-free Individual Water Purification Agent

Military System or Acquisition Customer: PEO Soldier, JPEO-CBD, MEDCOM

Description: Joint, special operations, coalition and relief Warfighters often work in environments with limited access to reliable and clean drinking water. Remote operations may not support powered water purifications processes. Additionally, traditional halogenated water purification tablets can pose secondary health risks, especially when used in water with high dissolved organic content. The need is for a halogen-free, broad spectrum water purification agent designed for individual Warfighter use that is thermally stable, available in dry form, environmentally benign and safe for use in water with high dissolved organic content.

Specifically, broad spectrum efficacy means having capacity to purify water containing: (1) viral, bacterial (vegetative and spore form), fungal and single cell pathogenic microorganisms; (2) main classes of chemical warfare agents; (3) certain toxic heavy metals and/or their oxides, such as arsenic compounds; (4) suspended and dissolved organic matter.

Technical Point of Contact: F. Michael von Fahnestock, Ph.D., PACOM J85, 808-477-9157, frank.vonfahnestock@pacom.mil

PACOM-14-BAA-RIF-0003

Requirement Title: Long Range Payload Delivery Unmanned Underwater/Surface Vehicle (LR-UUSV)

Military System or Acquisition Customer: Navy, NOAA

Description: Joint and coalition forces require a long range, high endurance hybrid unmanned underwater/surface vehicle that can transit for long, open ocean distances on the surface with a relatively low signature and then submerge to deliver small payloads; avoid surface traffic; and

conduct covert intelligence, surveillance, and reconnaissance (ISR) operations. The system should be capable of operating in a surface mode with an average speed of 10+ knots and a submerged mode with an average speed of 2+ knots. The system should be capable of travelling 3,000 nautical miles with a maximum dive depth of 500 ft. When submerged, the system should be able to transit up to 200 nautical miles (any depth) and should also have the capability to loiter near the surface with only sensors, communications, or other small masts extending above the waterline. The primary payload will be payload canisters 21 inches in diameter and 60 inches in length with a dry weight of up to 600 lbs and wet weight of approximately 300 lbs (minimum 2). The system should include a dry payload bay of at least 4 cubic feet and steady state payload power supply of approximately 50 watts, with a periodic requirement for up to 100 watts. The system should be easily transportable by container (preferably 20ft or 40ft). Innovative combinations of power systems, including environmental scavenging, are recommended.
Technical Point of Contact: Gregory Vandiver, PACOM J85, 808-477-8041, gregory.vandiver@navy.mil

Office of the Deputy Assistant Secretary of Defense for Emerging Capabilities and Prototyping (Rapid Reaction Technology Office (RRTO))

RRTO-14-BAA-RIF-0001

Requirement Title: Land/Ground sensors to enhance early warning/denial capabilities through Detection, Identification, and Geo-Location

Military System or Acquisition Customer: Rapid Reaction Technology Office

Description: The Rapid Reaction Technology Office (RRTO) is looking for novel sensor modalities that can be developed, demonstrated, and delivered in the 2020-2025 timeframe. Land/Ground sensor technologies of interest include NLOS long haul communications, anti-tamper, anti-jamming, multi-modal communications, mesh networking capability, autonomy, and low power consumption. Sensors should use an open architecture as they will need to be easily integrated with other sensor systems.

Technical Focal Point: Dietrich Wiegmann, 301-394-1863, dietrich.m.wiegmann.civ@mail.mil

U.S. Special Operations Command (USSOCOM)

SOCOM-14-BAA-RIF-0001

Requirement Title: Joint Mission Network/Ground Forces Platform/System Interoperability

Military System or Acquisition Customer: PEO-Rotary Wing/PM Mission Equipment

Description: Integrate Special Operations Forces (SOF) ground forces radios into Special Operations Aviation Regiment (SOAR) aircraft for both enroute and on-objective operations. Currently, ground forces are in a data black hole when enroute to the objective on-board SOAR aircraft. Further, coordination between air crews and ground forces is limited to voice communications both while enroute and on-objective. A tremendous increase in situational awareness, for both aircrews and ground forces, can be created by integrating existing SOF ground force radios into SOF aircraft and including SOAR aircrews in the existing ground forces tactical network while on the objective.

Technical Point of Contact: LTC David C. Phillips, (757) 878-5093, david.c.phillips12.mil@mail.mil

SOCOM-14-BAA-RIF-0002

Requirement Title: Small Lightweight Geo-locating Device

Military System or Acquisition Customer: PEO-SOF Warrior/PM-Ammo & Weapons

Description: Provide a lightweight, highly accurate one-man portable day/night target visualization and locating system packaged in a single ruggedized housing. It will be a self-contained Night Vision Device, Camera, Laser Pointer, and Target Locator; with an integrated Laser Rang Finder, and an Azimuth/Inclination-Finder. The size shall be less than or equal to 9 inches in one dimension. The device weight shall be less than or equal to 5.5 pounds and should be capable of one hand operation. The maximum location error should be 15 meters at a range of 3000 meters, and be able to recognize vehicle sized targets at 3000 meters in clear weather. This tool will reduce soldier load, and at the same time provide the operator with large scale data processing/automation.

Technical Point of Contact: Peter Depa, (813) 826-6149, peter.depa@socom.mil

SOCOM-14-BAA-RIF-0003

Requirement Title: Mission Driven Data Management

Military System or Acquisition Customer: PEO Strategic Reconnaissance

Description: Develop and demonstrate knowledge management and visualization technologies for small dismounted teams operating in isolated and complex environments. Emphasis to be placed on reports, spreadsheets, power point briefings, Keyhole Markup overlay files and traditional and non-traditional imagery, video and audio data files. Develop techniques and technology to address open standards, Open Geospatial Consortium and DoD Discovery Metadata Standards. This is new capability providing large scale data processing tool meeting needs across domains.

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U.S. Transportation Command (USTRANSCOM)

USTRANS-14-BAA-RIF-0001

Requirement Title: Assured Mobility Communications

OSD / Defense Agency RIF BAA Annex

Military System or Acquisition Customer: USTRANSCOM Command, Control, Communications, Computers & Intelligence (C4I) various systems, networks, and programs of record

Description: A host-based User Activity Monitoring (UAM) capability to assist the government in identifying and mitigating insider threats. UAM data available for analysis and processing in near real-time must be able to protect information and mitigate cyber threats to mobility operations and establish a resilient cyber defense posture, transform cyber defense operations, enhance situational awareness, and assure survivability against highly sophisticated cyber-attacks. This includes a platform independent capability to secure deployment/distribution information resident in or traversing low assurance info networks/environments, and cryptographically secure, compliant, and trusted communications.

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