AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
FUNDING OPPORTUNITY ANNOUNCEMENT

FY20 DEFENSE ESTABLISHED PROGRAM TO STIMULATE COMPETITIVE RESEARCH (DEPSCoR)

OVERVIEW INFORMATION

The Department of Defense (DoD) announces the fiscal year 2020 (FY20) Defense Established Program to Stimulate Competitive Research (DEPSCoR). The program is sponsored and managed by the Basic Research Office, Office of the Under Secretary of Defense for Research and Engineering (OUSD [R&E]), awarded by the Air Force Office of Scientific Research (AFOSR), and administered through the Office of Naval Research (ONR). The DoD plans to award FY20 DEPSCoR appropriations through this announcement.

The program statute for DEPSCoR (Pub. L. 115–91, div. A, title II, §219[e][3], Dec. 12, 2017, 131 Stat. 1331) states that DEPSCoR's objectives are to: (1) enhance the capabilities of institutions of higher education (IHE) in eligible States and Territories (listed below and henceforth referred to as the States/Territories) to develop, plan, and execute science and engineering (S&E) research that is relevant to the mission of the DoD and competitive under the peer-review systems used for awarding Federal research assistance; (2) increase the number of university researchers in eligible States/Territories capable of performing S&E research responsive to the needs of the DoD; and (3) increase the probability of long-term growth in the competitively awarded financial assistance that IHE in eligible States/Territories receive from the Federal Government for S&E research. Consistent with these long-term objectives of building research infrastructure, the DoD intends to competitively make, and fund from fiscal year 2020 appropriations, multiyear awards for S&E research in areas relevant to the DoD's mission and important to national security.

This funding opportunity aims to create basic research collaborations between a **pair** of researchers, namely 1) Applicant/Principal Investigator (PI), henceforth referred to as Applicant, a full-time faculty member who has never served as a PI on a prior DoD-funded award and 2) Collaborator/co-Principal Investigator (co-PI), henceforth referred to as Collaborator, an investigator who will provide mentorship to the Applicant and has served as a PI on a DoD-funded research award actively between 1 October 2013 and 30 September 2020. This structure is aimed at introducing potential applicants to the DoD's unique research challenges and its supportive research ecosystem.

Tenured or tenure-track faculty members with appointments at IHE, in the following States/Territories, are eligible to apply for DEPSCoR opportunities: Alabama, Alaska, Arizona, Arkansas, Connecticut, Delaware, District of Columbia, Guam, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Oregon, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, U.S. Virgin Islands, Vermont, West Virginia, Wisconsin, and Wyoming.

Hyperlinks have been embedded within this document and appear as underlined, and blue-colored words in the midst of paragraphs. The reader may "jump" to the linked section within this document by "clicking" (CTRL + CLICK, or CLICK).

SUMMARY OF FUNDING OPPORTUNITY INFORMATION

1. FEDERAL AWARDING AGENCY NAME

Air Force Office of Scientific Research
875 North Randolph Street, STE 325, Room 3112
Arlington, VA 22203

2. FUNDING OPPORTUNITY TITLE

Defense Established Program to Stimulate Competitive Research (DEPSCoR)

3. ANNOUNCEMENT TYPE

Initial Announcement - Funding Opportunity Announcement (FOA)

4. FUNDING OPPORTUNITY NUMBER

FOA-AFRL-AFOSR-2020-0004

5. CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER(S)

12.431 – Basic Scientific Research

6. KEY DATES

Schedule of Events		
Event	**Date**	**Eastern Standard Time**
AcquTrak website open for registration and submission (https://acqupass.noblis.org/ApplyDEPSCoR)	15 June 2020	NLT 11:59PM
Questions Regarding White Paper and Supporting Documentation (submitted by)	29 June 2020	NLT 11:59PM
AcquTrak Registration (required by)	14 September 2020	NLT 11:59PM
White Paper and Supporting Documentation submission on AcquTrak website (https://acqupass.noblis.org/ApplyDEPSCoR) (required by)	21 September 2020	NLT 11:59PM
Notification of White Paper Selection	20 November 2020	NLT 11:59PM
Request for written feedback on your white paper submission (required by) (Email request to: DEPSCoR-feedback@noblis.org)	27 November 2020	NLT 11:59PM
Full Proposal Submission (by invitation only) electronically on Grants.gov website (submitted by)	15 February 2021	NLT 11:59PM
Notification of Selection for Award	12 April 2021	NLT 11:59PM

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I. PROGRAM DESCRIPTION

A. OBJECTIVES

The aim of DEPSCoR is to improve the research capabilities at institutions of higher education (IHE) in eligible States/Territories to perform competitive basic research in science and engineering that is relevant to the DoD mission and reflect national security priorities. As defined in the DoD Financial Management Regulation:

> Basic research is systematic study directed toward greater knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications towards processes or products in mind. It includes all scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs. It is farsighted high payoff research that provides the basis for technological progress (DoD 7000.14-R, vol. 2B, chap. 5, para. 050105.A).

The DoD's basic research program invests broadly in many scientific fields to ensure that it has early cognizance of new scientific knowledge.

To address the program's aim, DEPSCoR will focus on capacity building through human and technical resources by soliciting applications in a DEPSCoR competition. DEPSCoR seeks proposals that advance knowledge in fundamental science involving bold and ambitious research that may lead to extraordinary outcomes such as disrupting accepted theories and perspectives.

B. COLLABORATION COMPOSITION

This funding opportunity aims to create basic research collaborations between a **pair** of researchers, namely 1) Applicant/Principal Investigator (PI), henceforth referred to as Applicant, a full-time faculty member who has never served as a PI on a prior DoD-funded award and 2) Collaborator/co-Principal Investigator (co-PI), henceforth referred to as Collaborator, an investigator who will provide mentorship to the Applicant **and** has served as a PI on a DoD-funded research award actively between 1 October 2013 and 30 September 2020. This structure is aimed at

introducing potential applicants to the DoD's unique research challenges and its supportive research ecosystem.

The Applicant is permitted to submit only one DEPSCoR white paper per this FOA. Each white paper is permitted a single Applicant and a single Collaborator.

The website https://discover.dtic.mil/products-services/ is a non-comprehensive repository of government-funded scientific, technical, and engineering information for the DoD. Researchers new to DoD and Applicants are encouraged to visit the site as a starting point for identifying past and present DoD-funded researchers.

While each member of the collaboration should be in a tenure-track appointment or tenured at IHE in DEPSCoR-eligible States/Territories, you do not need to be in the same state. Likewise, the Applicant and Collaborator can have appointments at the same IHE.

Proposals should name the Applicant as the PI and their IHE as the primary institution. Awards will be issued to the IHE where the Applicant resides. It is anticipated that the Collaborator will be funded through a sub-award. The Applicant must receive greater than 50% of the funding. The relationship among participating institutions and their respective roles, as well as the apportionment of funds including sub-awards, if any, shall be described in both the proposal text and the budget. In addition to providing technical expertise to the project, the Collaborator is strongly encouraged to provide guidance and mentorship to the Applicant in the DoD application process.

In this announcement, the term "you/your" refers to the Applicant.

C. TOPICS

The FY20 DEPSCoR competition seeks proposals addressing the topics listed below. You are strongly encouraged to contact the Program Officer prior to submitting a white paper, preferably by email to discuss the current state of the art in his/her area of interest and how your research would advance it. This information will be requested in the IV.C.4 White Paper Package.

SECTION	Topic Number	SERVICE	TOPIC AREA	PROGRAM OFFICER
I.C.1	1	Air Force Office of Scientific Research (AFOSR)	Cognitive and Computational Neurosciences	Dr. Hal Greenwald
I.C.2	2	AFOSR	Space Science	Dr. Julie Moses
I.C.3	3	AFOSR	Agile Science of Test and Evaluation	Dr. Brett Pokines
I.C.4	4	AFOSR	Materials with Extreme Properties	Dr. Ali Sayir
I.C.5	5	Army Research Office (ARO)	Propulsion and Energetics	Dr. Ralph Anthenien
I.C.6	6	ARO	Computational Architectures and Visualization	Dr. Michael Coyle
I.C.7	7	ARO	Optoelectronics	Dr. Michal Gerhold
I.C.8	8	ARO	Probability and Statistics	Dr. Michael Lavine
I.C.9	9	ARO	Molecular Structure and Dynamics	Dr. James Parker
I.C.10	10	ARO	Social and Behavioral Science	Dr. Lisa Troyer
I.C.11	11	ARO	Biotronics	Dr. Albena Ivanisevic
I.C.12	12	Office of Naval Research (ONR)	Aerospace Structures and Materials	Dr. Anisur Rahman
I.C.13	13	ONR	Ocean Acoustics	Dr. Kyle Becker
I.C.14	14	ONR	Machine Learning, Reasoning, and Intelligence	Dr. Behzad Kamgar-Parsi
I.C.15	15	ONR	Power Electronics & Electromagnetism, Adaptive & Machinery Controls and Advanced Machinery Systems	Mr. Lynn Petersen

1. **Topic 1: Cognitive and Computational Neurosciences**

   The Cognitive and Computational Neuroscience program funds high-risk, high-potential basic research that uses experimental and computational modeling techniques from systems neuroscience, cognitive neuroscience, computational/theoretical neuroscience, cognitive science, and cognitive psychology to understand the neural mechanisms responsible for perception, cognition, and behavior. The program also supports brain-inspired algorithm and hardware development provided these are useful for testing proposed neuroscience theories and/or enabling novel capabilities in computing, artificial intelligence, or autonomous systems.

Potential topics that would be of interest to the program include but are not limited to the following:

- **Neural Information Representation.** It is well established that neurons communicate information via action potentials (APs, "spikes"), but understanding how neurons represent information has remained a long-standing challenge. Debates continue regarding whether neurons use precise spike timing or frequency to encode information, the functions of noisy, probabilistic population codes, and whether every spike carries signal. Proposed research projects should characterize neural activity with the aim of reliably decoding neuronal information. Proposers should describe how their research, if successful, will advance our ability to test hypotheses regarding neural mechanisms and functions and/or enable greater sophistication for applications such as sensory and sensorimotor prosthetics, brain-machine interfaces, and deception detection.

- **Bio-inspired Sensing.** Humans and other animals often use strategies to process sensory information, recognize and locate objects, and navigate in real-world environments that outperform current man-made systems. Artificial systems featuring such strategies could augment human capabilities while enhancing or maintaining situational awareness. Proposals should describe a species' sensory function in which the sensor, environment, and behavior align with the proposed application(s), hypotheses about the associated neural information processing mechanisms, and a research plan that culminates in a proof-of-concept demonstration.

- **Brain-inspired Machine Learning.** Current machine learning algorithms excel at identifying statistical features in complex data sets, yet computers lack the robustness and generalizability associated with human learning. Specifically, humans can leverage previously learned knowledge to avoid needing large training sets, transfer knowledge from one task to other related tasks or contexts to accelerate learning, continuously update their learned knowledge, and adapt to time-varying contexts and environments. The program seeks to create brain-inspired or biomimetic algorithms that advance the state of the art and have the potential for revolutionary progress on these or related research challenges.

- **Brain-inspired Computing.** Recent examples of commercially-developed neuromorphic hardware have focused on power consumption and density advantages over conventional hardware, but brain-inspired circuits also hold promise for novel computing architectures that can address problems that traditional von

Neumann architectures cannot (or at least not within polynomial time or better). Research proposals on brain-inspired computational capabilities should describe how the research will fill gaps in computing or how it will enable novel artificial intelligence algorithms.

Innovative ideas that may not fit into these categories but are germane to the program's general objectives are also welcomed.

Models of brain structures and functions should be biologically plausible and demonstrate consistency with the current understanding of the structure and function of the brain components being modeled. Brain-inspired algorithms or hardware need not remain entirely faithful to the biological details where other approaches are more reasonable, but neuroscience evidence should be used for benchmarking and theoretical guidance. Proposals should provide a definition of success based on specific metrics and/or one or more challenge problems.

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2. Topic 2: Space Science

The AFOSR Space Science program supports basic research on the solar-terrestrial environment extending from the Sun through Earth's magnetosphere and radiation belts to the mesosphere and lower thermosphere region. This geospace system is subject to solar radiation, particles, and eruptive events, variable interplanetary magnetic fields, and cosmic rays. Perturbations to the system can disrupt the detection and tracking of aircraft, missiles, satellites, and other targets; distort communications and navigation signals; interfere with global command, control, and surveillance operations; and negatively impact the performance and longevity of U.S. Air Force space assets.

Fundamental research focused on improving understanding of the physical processes in the geospace environment is encouraged. Particular goals are to improve operational forecasting and specification of solar activity, thermospheric neutral densities, and ionospheric irregularities and scintillations. Activities that support these goals may include validating, enhancing, or extending solar, ionospheric, or thermospheric models; investigating or applying data assimilation techniques; and developing or extending statistical or empirical models. An important aspect of the physics is understanding

and represents the coupling between regions, such as between the solar corona and solar wind, between the magnetosphere and ionosphere, between the lower atmosphere and the thermosphere/ionosphere, and between the equatorial, middle latitude, and Polar Regions.

Research goals include, but are not limited to:

- The structure and dynamics of the solar interior and its role in driving solar eruptive activity;
- The mechanism(s) heating the solar corona and accelerating it outward as the solar wind;
- The triggers of coronal mass ejections (CMEs), solar energetic particles (SEPs), and solar flares;
- The coupling between the solar wind, the magnetosphere, and the ionosphere;
- The origin and energization of magnetospheric plasma;
- The triggering and temporal evolution of geomagnetic storms;
- The variations in solar radiation received at Earth and its effects on satellite drag;
- The impacts of geomagnetic disturbances on the thermosphere and ionosphere;
- Electron density structures and ionospheric scintillations;
- Ionospheric plasma turbulence and dynamics;
- The effects of neutral winds, atmospheric tides, and planetary and gravity waves on the neutral atmosphere densities and on the ionosphere.

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3. Topic 3: Agile Science of Test and Evaluation

The Agile Science of Test and Evaluation (T&E) program supports basic research inventing and innovating revolutionary capabilities responsive to the Air Force T&E community. Crossing scientific frontiers necessitates enhancing and pioneering test and measurement capabilities. The program sponsors basic research in areas enabling metrology and facilitating correct and comprehensive interpretation of test information. Agile science of test and evaluation leads to improving the ability to analyze and model operational environments, pursue science discoveries, and accelerate research & acquisition. The AFOSR T&E program encompasses six broadly-defined, overlapping thrust areas: Aeroelasticity and Aerodynamics, Enabling Materials and Processes, Hypersonics, Information Management and Fusion, Sensors and Electromagnetics and Science of Integrated Risk Assessment. The

Program is closely aligned with other AFOSR science areas advancing experimental methodologies and merging scientific disciplines.

The AFOSR T&E program is closely engaged with technical experts at the Air Force Test Center (AFTC) organizations including Arnold, Edwards, Eglin and Holloman Air Force Bases, who help guide the program on basic research objectives. Basic research in areas that advance the science of testing is broadly defined and spans mathematics as well as most disciplines in engineering and the physical sciences. Areas include, but are not limited to:

- Novel measurement techniques, materials, and instruments that enable accurate, rapid, and reliable test data collection of physical, chemical, mechanical, and flow parameters in extreme environments, such as those encountered during transonic flight, hypersonic flight, and the terminal portion of weapons engagement;
- Accurate, fast, robust, integrals models reducing requirements to test or help provide greater understanding of test results;
- Advanced algorithms and computational evaluation techniques that are applicable to new generations of computers, including massively parallel, quantum, and neuromorphic machines;
- Advanced algorithms and test techniques that allow rapid and accurate assessment of devices and software to cyber vulnerability;
- New processes and devices that increase bandwidth utilization and allow rapid, secure transfer of test data to control facilities during test;
- Advanced mathematical techniques that improve design of experiment or facilitate confident comparison of similar but disparate tests;
- Advanced models of test equipment and processes that improve test reliability and efficiency.

The portfolio also seeks basic research in other T&E areas, not listed above, that may advance the science of test and contributes to the development of knowledge, skills, and abilities for the AF T&E community.

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4. Topic 4: Materials with Extreme Properties

Materials with Extreme Properties program aims to provide the fundamental knowledge required to enable revolutionary advances in

future U.S. Air Force technologies through the discovery and characterization. Extreme environments are combination of heat-, stress-, magnetic-, electric-, microwave-, and acoustic fields. Materials of interest are ceramics, metals, and hybrid systems including inorganic composites that exhibit superior structural, functional and/or multifunctional performance.

The following research concentrations areas are selected to highlight the philosophy about function, environment and state of the materials that could create disruptive source of transformations.

Computational Materials Science. The aim of this research concentration area is to explore the possibility for the quantification of microstructure through reliable and accurate descriptions of grain and particle shapes, and identifying sample distributions of shape descriptors to generate and predict structures which might revolutionize the design and performance. The quality of computerized representation of microstructures and models will be measured by its (a) geometric accuracy, or faithfulness to the physical landscape, (b) complexity, (c) structure accuracy and controllability (function), and (d) amenability to processing and high level understanding. In order to satisfy these metrics, the approaches may require development of an accurate methodology for the quantification of 3-dimensional shapes in both experimental and theoretical microstructures in heterogeneous systems, and to establish a pathway for an accurate comparison tools (and metric).

Synthesis Science and Response Far from Equilibrium. The transformative breakthrough has not originated from the investigations of materials in equilibrium state but in contrary at the margins of the disciplines. In this context, this program embraces materials and processing science approaches that are far from the thermodynamic equilibrium domain; i.e., materials for quantum sciences, adaptive oxides, multiferroics, frustrated structures (layered structured materials), highly doped polycrystalline laser materials, and other non-equilibrium materials. This area requires understanding of super saturation of lattice-structure and manipulation of lattice substructure by understanding elastic softening of a lattice containing a critical amount of dopants, which could lead to an order disorder transition with further super saturation. The intent is to elucidate complex interplay between phase transitions for electronic/magnetic phase separation and untangle the interdependence between structural, electronic, photonic and magnetic effects.

Hypersonic Material. This topic area includes a wide range of activities of hypersonic that require understanding and managing the

non-linear response of materials to combined loads (i.e., thermal, acoustic, chemistry, shear or pressure fields) under high energy density non-equilibrium extremities. The ultimate goal is to exploit these phenomena and design future materials, sensors and components for hypersonic environments.

Combined External Fields. This subtopic also stresses a fundamental understanding of external fields and energy through the materials microstructure at a variety of time scales and in a variety of conditions of extreme fields; i.e., dielectric breakdown at high temperatures. The aim is to link an effective property to relevant local fields weighted with certain correlation functions that statistically exemplify the structure and demonstrate scientific pathway to design new materials with tailorable properties.

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5. Topic 5: Propulsion and Energetics

Propulsion and Energetics Research supports the Army's need for higher performance propulsion systems. Future systems must provide reduced logistics burden (lower fuel/propellant usage) and safer (insensitive) higher energy density systems.

Fundamental to this area are the extraction of stored chemical energy and the conversion of that energy into useful work for vehicle and projectile propulsion. In view of the high temperature and pressure environments encountered in these combustion systems, it is important to advance current understanding of fundamental processes to enable truly predictive models as well as to advance the ability to make accurate, detailed measurements for the understanding of the dominant physical processes. Thus, research in this area is characterized by a focus on high pressure, high temperature combustion processes and on the peculiarities of combustion behavior in systems of Army interest.

Hydrocarbon Combustion. Research on combustion phenomena relevant to diesel cycle engines is focused on intermittent reacting flows containing fuel injection processes, jet break-up, atomization and spray dynamics, ignition, and subsequent heterogeneous flame propagation.as well. Gaining fundamental understanding of these phenomena pertaining is a major objective. Novel diagnostics for the investigation of the dense field region of the spray are of special interest. Research on heterogeneous flames requires supporting study into kinetic and fluid dynamic models, turbulent flame structure, soot

formation and destruction, flame extinction, surface reactions, multiphase heat transfer, and other factors that are critical to an understanding of engine performance and efficiency. An additional consideration is the high pressure/low temperature ignition environment encountered in advanced engines, which influences liquid behavior and combustion processes at near-critical and super-critical conditions. Fundamental research is needed in many areas, including low temperature physical and chemical rate processes, combustion instability effects at low temperatures, and non-equilibrium behavior. New characterization methods to investigate kinetics and flame phenomena in-situ at high pressure are needed. New computational methods to be able to predictively model complex reacting systems are also needed. With advances in sensing, modeling, and control architectures, it is becoming possible to further optimize the performance of combustion systems. Providing the foundations for such active control is also of interest to the program.

Energetic Materials. Research on energetic material combustion processes is focused on understanding the dynamics of the planned and inadvertent ignition and subsequent combustion of these materials which are commonly used for propulsion in gun and missile systems and in ordinance. The program is also addressing the characterization of advanced energetic materials, e.g., those based on nanoscale structures and/or ingredients. Basic research is needed in several areas, including: thermal pyrolysis of basic ingredients and solid propellants; flame spreading over unburned surfaces (particularly in narrow channels); surface reaction zone structure of burning propellants; chemical kinetics and burning mechanisms; propellant flame structures; characterization of physical and chemical properties of propellants and their pyrolysis products; and coupling effects among the ignition, combustion, and mechanical deformation/fracture processes. The use of advanced combustion diagnostic techniques for reaction front measurements, flame structure characterization, and determination of reaction mechanisms is highly encouraged, especially those able to probe surface and sub-surface reactions in the condensed phase. Also of interest are novel methods which can well characterize the ignition and burning behavior of a material utilizing only minute quantities of that material. Complementary model development and numerical solution of these same ignition and combustion processes are also essential. There is also need to understand the unplanned or accidental ignition of energetic materials due to stimuli such as electrostatic discharge, impact, friction, etc. This requires, for example, research on the processes of energy absorption and energy partitioning in the materials, the effect of mechanical damage on the ignition events, and other topics relating to the safety of energetic materials.

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6. Topic 6: Computational Architectures and Visualization

The Computational Architectures and Visualization program is concerned with modeling, analysis, design, and validation of computational infrastructure, both hardware and software, with special emphasis on the effect emerging and future computational architectures will have on managing, processing, analyzing, and visualizing massive data sets. This is due to the fact that the Army's ability to generate data of all types from the battlefield to the laboratory far outpaces the Army's ability to efficiently manage, process, analyze, and visualize such massive amounts of information. Emerging architectures only exacerbate the problem because the present and traditional models of computation no longer apply.

The research strategy is to focus on the effect that the technological shift to these new, advanced architectures will have on newly-developed systems and how to compute with these architectures efficiently as well as to make very large simulations and the visualization of massive data sets more interactive for the user while maintaining a high level of accuracy. As such, this programs funds innovative architectural designs of both hardware and software components and their interfaces that efficiently optimize computational resources and innovative algorithms that render massive data sets and/or massive geometric models and perform large scale Army simulations both quickly and accurately. Advances in this program are expected to lead to new computer modeling and design concepts (or paradigms) as well as software libraries that compute efficiently on these new and emerging architectures, that are scalable (usable on large-scale complex problems and able to handle massive amounts of data), and accurate (precise enough to predict and detect phenomena of interest) for both the laboratory and the battlefield. Also to be expected is the development of more efficient, interactive, and physically realistic battlefield, training, and scientific simulations.

Computational Architectures. Future computer systems will be both massively heterogeneous and parallel, implying the present and traditional models of computation will no longer be applicable. As a result, new computational theories are needed as well as mathematical abstractions and models of computation to address the difficulties associated with heterogeneous, parallel and distributed processing. Of special interest is determining how these new abstractions, algorithms, and computational processes map onto emerging computational

resources of different types (e.g., multi-core, quantum, cloud, and chaotic computing, and determining which platforms are most suitable for Army applications). Other important issues to be considered for these emerging and future architectures are programmability, language and compiler support, real-time scheduling, resource-allocation, and the development of a flexible software environment.

Visualization. Interactive simulation and visualization provides new and enhanced capabilities for the examination, exploration, and analysis of information and data critical to the Army. However, Army applications are not limited to any one type of data or computational platform. As a result, new research and techniques are needed in order to visualize and simulate complex Army data such as training for battlefield scenarios with speed and precision on any platform for superior analysis and information extraction capabilities for realistic Army simulations and full situational awareness. Specific research areas of interest are, but not limited to, computational geometry, robust geometric computing, geometric and solid modeling, interactive graphics, 3D visualization tools, verification and validation, and synthetic environments. Special emphasis is placed on making very large simulations and the visualization of massive data sets faster, more computationally efficient, and more interactive for the user while maintaining an appropriate level of fidelity and physical realism.

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7. Topic 7: Optoelectronics

Research in this subarea includes novel semiconductor structures, processing techniques, and integrated optical components. The generation, guidance and control of UV through infrared signals in semiconductor, dielectric, and metallic materials are of interest. The Army has semiconductor laser research opportunities based on low dimensional semiconductor structures (quantum dots, wells, wires, etc.) operating in the eye-safe (>1.55), 3-5, 8-12, and 18-24 microns regions for various applications, such as ladar, infrared countermeasures, and free space/integrated data links. Components and sources in the UV/visible spectral ranges (particularly < 300 nm) may be of interest as well. Research is necessary in semiconductor materials growth and device processing to improve the efficiency and reliability of the output of devices at these wavelengths.
Research that leads to an increase in the data rate of optoelectronic structures is sought. Interfacing of optoelectronic devices with electronic processors will be investigated for full utilization of

available bandwidth. Electro-optic components will be studied for use in guided wave data links for interconnections and optoelectronic integration, all requirements for high speed full situational awareness. Optical interconnect components are needed in guided-wave data links for computer interconnection and in free-space links for optical switching and processing. For high-speed optical signal processing as well as potential for power scaling, research on individual and 1 or 2-D arrays of surface or edge-emitting lasers is necessary. Research addressing efficient, novel optical components for high speed switching based on plasmonics, quantum dots, metamaterials or other regimes may be of interest. Emitters and architectures for novel display and processing of battlefield imagery are important.

Recent advances in neuromorphic photonic information processing (neurophotonics for short) and computation are highlighted a thrust of interest. Neurophotonic processing within a photonic IC (PIC) requires smaller and more energy efficient modulator devices on the order of 5 microns or less and 1 femtojoule/bit. Speeds of modulation should be several Gb/s or higher, and the insertion loss should be < 0.1 dB to achieve cascaded modulators of < 1 dB/cm. Modulation at 16 bit or higher resolution will be required for neurophotonic processor implementations. Other advances leading to enhanced neurophotonic regimes including energy efficient and high-speed photodetectors and light sources (most likely coherent) are sought. Exploration of ideas leading to enhanced performance in both 2D and 3D architectures that take advantage of bosonic properties of light (over the limited fermionic charge) will be considered. While single photon, quantum communications and quantum integrated photonics are not focused upon here, low photon (<100) count signals can be considered. Such research could impact single photon regime work with overlap due to similar quantum optics considerations.

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8. Topic 8: Probability and Statistics

The Probability and Statistics (P&S) program accepts proposals in all areas of probability and statistics that may aid in the development of new Army capabilities. The program emphasizes two main thrust areas, of which the first thrust area is in the foundations of statistics. Recent developments, such as the rise of data science and machine learning, and the reproducibility and replicability crises have led to renewed interest in the foundations of statistics. Since the Army is a major consumer of statistical analyses, it is naturally interested in their

foundations. The P&S program will concentrate on foundational issues that are still unsettled but not adequately supported by other funding agencies. The second thrust area is in developing statistical methods for data types that are of special interest to the Army.

Foundations of Statistics. This thrust is divided into two major topics. The first is near-optimization. Many statistical and decision problems are framed as optimization. That is, we write down a set of equations that describe the system we're studying, and then we look for the optimal point, or a nearly optimal point, in the space of inputs. However, in many problems it would be better, for reasons of robustness, interpretability, and implementation among others, to find the entire region of the input space that is nearly optimal. The near-optimization topic seeks proposals that will develop methods for finding, at least approximately, that region of the input space.

The second major topic addresses the possibility that there may be many good statistical models of the same data. Many statistical data analyses proceed by positing a statistical model – e.g. linear regression with Gaussian errors -- checking that the model describes the data reasonably well, then fitting the model. But it's possible that, for example, a generalized linear model or a treed regression would also describe the data reasonably well. The many-models topic seeks proposals for research that will help identify cases when many different models all describe the data well, particularly when those models lead to substantially different conclusions.

Statistical Models of Army-Relevant Data. The Army has interests beyond those of the general public in several types of data and experiments. The P&S program seeks proposals to develop statistical models and methods for experiment and data types of particular Army interest. Two examples follow, though these are not exhaustive. The first example is in the area of forensic science. The Army is interested in evaluating evidence from criminal investigations involving DoD personnel and from sites that are suspected to harbor adversaries. The P&S research program seeks proposals that will create innovative approaches for source attribution of forensic samples such as drugs, explosives, DNA, or fingerprints; develop methods or protocols for extracting information from mixed DNA samples; develop tools, approaches, and techniques for modeling the statistical assessment of a DNA match with limited information to inform marker and panel selection; develop new quantitative, rather than qualitative, methods for patterned forensic analyses such as firearms, fingerprints, or blood splatters; and develop methods to pre-process, match, and analyze pattern evidence with or without human intervention.

The second example is in the area of wearable monitors. Most data from wearable monitors is analyzed with models in which the data from different people are assumed to be independent of each other. But when many people – e.g. soldiers – perform the same activity at the same time and location in parallel, their data may exhibit dependence. The P&S program seeks proposals to investigate the dependencies, how they can be modeled, and how they can be used to advantage. For example, P&S seeks proposals for distinguishing change points for one person from group-wise change points or for using group-wise data for quicker detection of an individual's change point. P&S also seeks proposals for determining what computing is best carried out locally, on the monitoring unit, as opposed to transmitting all the data to a central computing server. These are just two examples of advancing methods for parallel monitoring data. P&S seeks any proposal that addresses parallel monitoring data.

These are just two examples of data types in which the Army has special interest. The P&S program seeks proposals for developing statistical methods to address all types of Army-specific data or experiments. These areas include the Army Modernization Priorities and the DoD Modernization Priority Areas stated in the National Defense Strategy.

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9. Topic 9: Molecular Structure and Dynamics

The goal of the Molecular Structure and Dynamics program is to determine the reactive pathways and intermediates for reactions of molecules and molecular ions in gas and condensed phases at a range of temperatures and pressures, and to develop theories that are capable of accurately and efficiently describing and predicting these phenomena. In the long term, these studies may serve as the basis for the design of future propellants, explosives, and sensors. This Program is divided into three research thrusts: (i) *Reaction Dynamics*, (ii) *Computational Modeling*, and (iii) *Chemistry of Novel Energetic Materials*.

Research in the ***Reaction Dynamics*** thrust explores energy transfer mechanisms in molecular systems. In particular, research is focused on understanding dynamic processes such as roaming radicals, chemical reactions in solid state crystals and heterogeneous mixtures, phase transformations, kinetically stabilized versus thermally stabilized polymorphs and opportunities for control of polymorphic phase, and

control of chemical processes using a variety of spectroscopic methods. Studies that yield new insights on the decomposition pathways of energetic molecules including their associated ionic states, both in the gas and condensed phases, are also of interest. The role that cations and anions play during detonation of bulk phase energetic materials is currently of high interest in the program. Proposals are especially encouraged in this area.

Research in the ***Computational Modeling*** thrust is focused on the development and validation of theories for describing and predicting the properties of chemical reactions and molecular phenomena in gas and condensed phases. In particular, research targeted at the development and implementation of novel theoretical computational chemistry methods is of interest. Ideally, such methods will go beyond current theories to allow for efficient, accurate, and *a priori* prediction of thermochemical properties. Such methods may take advantage of near-ideal parallel processing on massive computer clusters, or they may seek to solve current scaling problems through novel implementation of unprecedented theories via computer algorithms. The accurate prediction of intermolecular forces for problems in solid-state chemistry, such as the prediction of x-ray crystal structures, is also of interest.

Research in the ***Chemistry of Novel Energetic Materials*** thrust is focused on the synthesis, characterization, and measurement of properties of novel disruptive energetic materials. For a programmatic definition, disruptive energetic materials are those which have the potential to release two to ten times the explosive power of RDX when detonated. Such novel disruptive energetic materials will likely be derived from systems which differ significantly from traditional hydrogen-carbon-nitrogen-oxygen energetic materials. To be practical, any useful EM must have a high potential energy stored within the chemical bonds and also be stable from unwanted stimulations leading to accidental detonation. This principle can be used to develop notional disruptive energetic materials, and the methods of chemical synthesis can be used to target them for development. Academic research in this area is focused on discovery and characterization.

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10. Topic 10: Social and Behavior Science

The goal of this Program is to promote basic research on social behavior to discover the theoretical foundations of social behavior at

all levels, from single agents to collectives and global societies. The thrusts of this Program are (1) developing reliable and valid measures and models of social and behavioral dynamics, (2) discovering, modeling, and validating theories of interactions among social, natural, and physical systems; and (3) generating new cross-cultural models of the impact of social institutions on the scientific enterprise.

Measuring & Modeling Social and Behavioral Dynamics. The behavior of single agents comprises a social system. The individual behaviors, however, cannot simply be summed to accurately depict or predict the dynamics of a social system. There are a number of well-documented intervening collective processes (e.g., polarization, evaluation apprehension, Ringlemann effect, risky-shift, information transfer biases, identity decay, and risk transfer) that may lead to local or system-wide adjustments. Little is known about the conditions under which such collective processes are activated or how they interact to affect collective outcomes. Moreover, existing methods to detect them are often fraught with bias, relying on subjective self-reports, reliance on instruments that are not cross-culturally consistent, observer/experimenter bias, demand effects in experiments, and non-representative sampling frames. In addition to challenges in measuring social dynamics, traditional methods of modeling and empirically testing theoretical claims are often deficient. There is a tendency to use statistical techniques that rely on assumptions that are not borne out in the social phenomena being studied (e.g., assumptions of linear relationships, continuous scales, non-independence of observations, normally distributed data). The aim of this thrust is to inform and advance social science theories by generating and validate measures, methods, technologies, and models that objectively capture individual and collective dynamics to overcome this gap. The thrust looks favorably on the use of emerging methods in biophysiological measurements, measurement of social dynamics of non-human species, and cross-cultural research. It also encourages non-traditional modeling strategies that overcome deficiencies of using continuous linear models and normal distributions when phenomena are not continuous, linear, or normally distributed, as well as overcoming inappropriate assumptions of non-independence of observations. This thrust will enable new capabilities for the Army to more accurately predict risks posed by single agents, collectives, and regimes, as well as provide a foundation for understanding the basis for improving performance in and outcomes of collectives and populations.

Modeling and Validating Interactions among Social, Natural, and Physical Systems. Social systems are embedded in a larger ecological system consisting of turbulent and dynamic natural phenomena (e.g., droughts, floods, earthquakes) and constantly evolving physical

systems (i.e., human-built systems, including dense urban environments, cyber environments, utility systems, transportation routes). This embeddedness imposes tensions on social systems, which may shift global social orders, impact alliances, incite conflicts, and generate sociopolitical instabilities. Different social systems, however, may be more or less resilient to the shifts in natural and physical systems. While this is anecdotally recognized, rigorous research to model the interactions among these systems is relatively new and beset with methodological challenges arising from the difficulty of tracking impacts of one system on another over different temporal and spatial expanses, the multi-level character of how effects from one system spillover to another, a lack of ability to identify how features of one system impact features of another (e.g., how the physical infrastructure of a city impacts the resilience of the city to shocks from natural disasters). Capturing the fragility/resilience of social systems to shifts in natural and physical systems will enable improved capabilities to predict emerging regions of potential future social unrest and violence, providing the Army with an early warning system to forecast and prepare for emergent conflict and the ability to plan and mobilize multidomain operations.

Modeling the Scientific Enterprise. Science is an inherently social activity and while recent research has explored the social networks of science (e.g., who publishes with whom, who mentors whom) and the demographics of actors in those networks, there is very little rigorous research on the overall enterprise of science and the impact of social institutions, like economic, political, educational, and religious systems on the trajectory of science: what leads to a discovery; how do discoveries transition to application; why do some discoveries lie dormant for decades before an application is realized, while others are almost immediately translated to application. Taxonomies related to science have been developed for example to describe (a) categories of science (e.g., Pasteur's Quadrant), (b) relations between funding and scientific activities in the research and development pathway (e.g., 6.1 – 6.7), (c) pathways from basic science to obsolescence (e.g., "cradle-to-grave"), (d) types of research strategies (e.g., "exploration vs. exploitation"),and (e) changing states of discoveries (e.g., "Sleeping Beauty Effect"). But these are merely systems of categorization and fail to capture the dynamic and socially embedded nature of science that leads to scientific discovery and leads scientific discovery to transition from one state to another. There is a long history in the philosophy of science that does recognize the social dynamics of science, but has yet to be operationalized. Organizational science has developed case studies of organizations that rapidly generate discoveries and transition them to swiftly seize market dominance. While rich in description, case studies fall short of a generalizable

theory of the scientific enterprise. The aim of this thrust is to pursue new models that capture the socially embedded dynamic nature of science by focusing on science not as only a local team-driven or organizationally specific phenomena, but also investigate science as a macro institutionally motivated enterprise. A macro perspective on science will provide new insights on factors that enable both discovery and inventions that improve lives and capabilities. This thrust encourages formal modeling strategies using cross-cultural data to depict the impact of culturally unique configurations of social processes and institutions that affect science, discovery, and transitions. Success in this thrust will result in new insights on how social institutions catalyze and impede science.

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11. Topic 11: Biotronics

This research area focuses on the discovery and manipulation of phenomena and the creation of new processes where electronics and biology overlap at the cellular / sub-cellular level. This length scale is where the amplitudes of many types of energies (e.g., electrostatic, mechanical, and chemical terms) converge, and correspondingly, where electronics can have fundamental biological impacts and where leveraging electronics capabilities at the nanoscale can yield unique new understanding of the cellular and intracellular processes. New electronic structures and materials are now able to focus localized static electric and magnetic fields and electromagnetic fields at the nanoscale, which presents the opportunity to selectively address and manipulate the organelles and membranes making up the structure of the cell. Moreover, cell constituents can have a frequency dependent response to mechanical and electromagnetic excitation, resulting in unique electronically enabled and controlled biological experiments. Molecular and subcellular events at the biological interfaces or surfaces are key to downstream biological dynamics. The stimulation or manipulation of these events by electronic means provides the opportunity for unique control and experimentation that are orthogonal to existing biochemical or genetic approaches. Ion flow, which is fundamental to inter- and intra-cellular signaling and process control, is susceptible to electromagnetic influence and produces electromagnetic signatures of cellular processes. The dynamics of charged and polarized cellular components also produces minute displacement currents, and can produce very large field distributions in a confined nanoscale space (e.g., within a protein scaffold or across a lipid bilayer); both of which are subject to electromagnetic probing

and analysis. The different geometries of organelles within a cell result in different electromagnetic signatures and sensitivities which can be leveraged for selective control of cellular processes. Proteins play a role in almost every cellular process. As extremely large and complex molecules, they should have electromagnetic and mechanical responses that can be exploited for control. The skeletal protein assemblies of the cell, in particular, may offer a highway for the introduction of electrical currents or mechanical vibrations. Bio-chemical or genetic alteration of the interface of the cell and its components can introduce new electromagnetic properties, for example a new capability for photosynthesis in bacteria or new electromagnetic responses. Cellular engineering of membranes, cellular organelles, and proteins by the introduction of nano-particles and bio-molecules can introduce new sensitivities and new functionality. Opto-genetics is a well-established procedure for interrogating cells. Early attempts at "magneto-genetics" have been controversial, however "electro- or RF-genetics" may offer new opportunities. There may also be inherently non-trivial quantum mechanical mechanisms linked to biological behaviors, such as navigation. Inherently quantum phenomena such as the tunneling of electrons and protons play a critical role in many intracellular processes and can be modulated or manipulated with nanoscale electric fields. This research area seeks understanding and control of inter- and intra-cellular phenomena at the micro- and nano-scale.

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12. Topic 12: Aerospace Structures and Materials

Robust, adaptive and sustainable structures is a core capability needed for the power projection mission. Naval aviation demands structural and materials challenges that are unique and often more stringent than land-based aviation requirements. Meeting these challenges requires a strong program which sustains a focused aircraft S&T activity. Airframe structure is central to all naval aviation aircraft and weapons for both manned and unmanned operations. Airframe materials are the underlying enabling technology for naval air vehicle and weapons structures. Advances in structural and material science offers significant opportunity for improvements in availability and readiness, reduced sustainment requirements, fatigue assessment and service life enhancement, reduced weight and improved range. Improvement in mechanistic understanding of deformation and failure of the advanced structure is an enabler for enhanced analysis and design tools, and upgraded or new guidance, specifications and standard practices. The

program focuses on the Navy's unique aspects of design, materials selection, fabrication, analysis and repair related to air-vehicle and weapon structures. S&T investments in these areas offer opportunities in durability, life extension, sustainment and readiness. Most airframe technology challenges are not platform specific—rather they are fully represented in both current, new-build and planned next-generation designs.

Research Concentration Areas:

The program consists of three thrusts: Metallic Structures, Composites Structures and Advanced Concepts. These are primarily concerned with load-bearing applications and related airframe functionality. The structures and materials focus area will also support the infrastructure necessary to maintain technology superiority, while serving as a pipeline of future scientists and engineers.

Research Challenges and Opportunities:

Metallic Structures. Topics in combined loading mechanics; environmentally assisted cracking; test methods; electrochemical stress; localized damage evolution; protective coatings and structural remediation; low-, high- and giga- cycle fatigue.

Composite Structures. Topics in characterization of structural response, damage initiation, environmental effects, under static-, dynamic-, and fatigue- loading; durability and repair of bonded joints; constituent materials development, handling-processing-property relationships; near net-shape and out-of-autoclave fabrication of composites.

Advanced Concepts. Topics in adaptive, reconfigurable structures; multifunctional surfaces; EMI shielding; protective coatings for IR optical apertures; PMC/CMC joining; lightweight armor materials and additive manufacturing for repair.

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13. Topic 13: Ocean Acoustics

The Ocean Acoustics program contains three thrust areas:

Shallow-Water Acoustics. This thrust addresses the basic research interests described above in areas of the ocean where the acoustic field is highly influenced by interactions with the seabed.

Deep-Water Acoustics. This thrust addresses issues associated with low-frequency acoustic propagation, scattering and communication

over distances from tens to thousands of kilometers in the deep ocean where the sound channel may or may not be bottom limited.

Arctic Acoustics. The primary goal here is to understand the effects of changing Arctic conditions on acoustic propagation and ambient noise, particularly in under-ice environments. The thinning ice in the Arctic may result in reduced transmission loss compared to that observed during earlier investigations.

In addition to the investments under these thrusts, we continue to maintain more modest investments in research related to acoustic communications, particularly focusing on understanding and exploiting channel capacity.

Research Challenges and Opportunities:

1) Shallow-water scattering mechanisms related to reverberation and clutter; seabed acoustic measurements supporting geoacoustic inversion; acoustic propagation through internal waves and coastal ocean processes and the development of unified ocean/seabed/acoustic models, including scattering from rough surfaces, biologics and bubbles; and penetration/propagation within the porous seafloor.

2) The effects of environmental variability induced by ocean internal waves, internal tides and mesoscale processes—as well as by bathymetric features including seamounts and ridges—on the stability, statistics, spatial distribution and predictability of broadband acoustic signals remain areas of high interest. Also of interest is the coherence and depth dependence of deep-water ambient noise.

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14. Topic 14: Machine Learning, Reasoning, and Intelligence

The Machine Learning, Reasoning and Intelligence program focuses on developing the science base and efficient computational methods for building versatile intelligent agents (cyber and physical) that can perform various tasks with minimal human supervision. In addition, they should be able to collaborate seamlessly with teams of humans and other agents in environments that are unstructured, open, complex and dynamically changing.

Even though there is no universally accepted definition of intelligence, or artificial intelligence, there are certain capabilities an intelligent agent must possess the ability to:

- Learn, improve and adapt
- Understand the environment
- Plan to achieve its goals

This requires world-scale knowledge and reasoning ability. There have been significant advances in building highly intelligent agents that can play challenging games with well-specified rules.

This program focuses on developing agents that are “street smart”, namely, agents that can make good (or optimal) decisions and survive to achieve their goals in dynamic environments where rules are not clear and other actors in the scene do not take turn.

This program addresses naval applications that involve the use of intelligent autonomous agents. Such agents serve as force multipliers by rapidly understanding sensor data streams and turning that into decision aids. This program is basic research, therefore while direct linkages to naval problems are not necessary, the potential for future applicability should exist.

Research Concentration Areas:

1) Building blocks of machine intelligence – develop methods for –

    - Building knowledge bases from diverse sources
    - Learning complex concepts and tasks from annotated and unlabeled examples, instructions, and demonstrations
    - Reasoning with uncertain and qualitative information, as well as self-assessment
    - Planning in large-scale domains in information architectures that seamlessly integrate knowledge-bases, learning, reasoning, and planning for decision-making

2) Teams of agents and humans –

    - Develop computational methods for building decentralized collaborating teams of autonomous agents, in particular agents that are fairly capable in terms of sensing, communication and computational resource
    - Develop computational models of human decision-making and behavior for use by agents
    - Develop mathematical theories of swarm control, particularly engineered swarms with desired behaviors

3) Visual scene understanding – develop theory and algorithms for

4D scene understanding from images/video; recognition of scene type, objects, activities, and events; and inference of intentions:

- For autonomous agent perception
- For understanding surveillance imagery
- For semantic search of visual databases
- For succinct natural language descriptions of images and video

Research Challenges and Opportunities:

1) Building knowledge bases, machine learning, reasoning, planning, and architectures for seamless integration of these modules.
2) Decentralized perception and planning for cooperative teams of autonomous agents.
3) Computational models of human behavior and decision-making for use by autonomous agents.
4) Scene understanding from visual data and other modalities, object recognition, activity recognition, event recognition, inferring intensions.

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15. Topic 15: Power Electronics & Electromagnetism, Adaptive & Machinery Controls and Advanced Machinery Systems

Work in these areas supports the Navy's interest in advanced naval power and energy systems science and technology, and autonomous technology:

- **Power electronics and electromagnetism.** Development and improved reliability/availability of next-generation, wide-bandgap (WBG) semiconductors (Gallium Nitride (GaN)); development of advanced machinery insulation systems (motors, generators, cables, laminated bus, drives); development of prediction techniques (prognostics) for estimating useful remaining life of insulation systems; development of improved, light-weight magnetic materials (inductors and high frequency transformers).

- **Autonomous controls.** Development of rapid, autonomous control systems for unmanned/manned vehicles.

Research Concentration Areas:

- Navy and United States Marine Corps (USMC) require power systems that meet agility, efficiency, scalability, controllability and security requirements
- Reliability and availability of pulsed and continuous duty, high power and energy, Navy and USMC weapon systems

Research Challenges and Opportunities:

1) Power electronic devices and electromagnetism -
   - Revive and enhance education to prepare the next generation of electrical engineers
   - Investigate failure modes of WBG semiconductors to enable reliable devices
   - Innovative energy extraction
   - Advance electromagnetics technologies to enhance capabilities, efficiency, size, weight, power density, reliability and cost
   - More efficient, power-dense and cost-effective electric machinery is required to meet Navy's expanding demands in mission flexibility, active protection, situation awareness, advanced weaponry and energy efficiency

2) Adaptive controls -
   - Provide a leap ahead capability for DoD platforms that utilize distributed machinery systems (resources to loads) by implementing advanced resilient control architectures that operate from a 'systems of systems' perspective, minimizing "human in the loop" reliance

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II. FEDERAL AWARD INFORMATION

The Basic Research Office anticipates approximately $7.2 million in total funding will be made available for this program to fund approximately twelve (12) awards up to $600,000 (total cost) each. Each award will be funded up to $200,000 (total cost) per year for three (3) years in the form of a grant.

Awards are subject to funding availability. There is no guarantee of an award.

The DEPSCoR award is to an IHE. However, should the awardees transfer IHE, the agency may attempt to accommodate these changes if funds are available and approved by the Basic Research Office. Potential options may include: (1)

grant remains at awarded DEPSCoR IHE with a new PI, identified by the DEPSCoR awardee, (2) sub-award to the new IHE of the DEPSCoR awardee (new IHE must be in a DEPSCoR-eligible state), or (3) termination of DEPSCoR grant or any combination of the above. The new PI must meet the stated DEPSCoR-eligibility requirements.

A. ADDITIONAL DEPSCoR FUNDING OPPORTUNITIES

In addition to this funding opportunity, the Basic Research Office will fund up to three additional Defense University Research Instrumentation Program (DURIP) awards up to a maximum of $300,000 each per Service (ARO, ONR, and AFOSR). This additional funding is separate than the funding maximum stated in the DURIP announcement, and is set aside by the Basic Research Office for researchers in DEPSCoR-eligible States/Territories. All questions relating to the DURIP awards must be directed to the administering agency.

You are strongly encouraged to examine and apply directly to the DURIP award opportunity as well. You will need to indicate you are in a DEPSCoR-eligible state.

Service	FY21 Programs
AFOSR	**DURIP**
ARO	**DURIP**
ONR	**DURIP**

III. ELIGIBILITY INFORMATION

A. ELIGIBLE APPLICANTS

Though this is a collaboration between the Applicant and Collaborator, the Applicant's IHE will submit the proposal. The Applicant and Collaborator are eligible to apply to this announcement if both IHE are located in an eligible State/Territory. States/Territories are deemed eligible to submit proposals for DEPSCoR research grants based on meeting both of the following criteria:

1. Falls into a specific range of DoD R&D S&E funding to IHE in that State/Territory as defined in legislation[1]

AND

2. Contains an advanced degree granting program in science, mathematics, and/or engineering.

IHE in 37 States/Territories are eligible to receive awards under this announcement.

IHE do not need to submit proposals through an EPSCoR State Committee in response to this announcement. Awards made as a result of this announcement will be limited to IHE in States/Territories that are eligible under the DEPSCoR program authority.

STATES/TERRITORIES DoD HAS DETERMINED ELIGIBLE FOR FY20 DEPSCoR AWARDS

Alabama	Delaware	Indiana	Maine	Nebraska	Oklahoma	South Dakota	Wisconsin
Alaska	District of Columbia	Iowa	Minnesota	Nevada	Oregon	Tennessee	Wyoming
Arizona	Guam	Kansas	Mississippi	New Hampshire	Puerto Rico	U.S. Virgin Islands	
Arkansas	Hawaii	Kentucky	Missouri	New Mexico	Rhode Island	Vermont	
Connecticut	Idaho	Louisiana	Montana	North Dakota	South Carolina	West Virginia	

B. COST SHARING OR MATCHING

We do not require cost sharing or matching for proposals under this announcement. Cost sharing is not an evaluation or selection criterion.

1. ***The average annual amount of all DoD obligations for S&E research and development that were in effect with IHE in the state for the three fiscal years preceding the fiscal year for which the designation is effective or for the last three fiscal years for which statistics are available is less than the amount determined by multiplying 60 percent times the amount equal to 1/50 of the total average annual amount of all DoD obligations for S&E research and development that were in effect with IHE in the United States for such three preceding or last fiscal years, as the case may be.***

C. OTHER

1. Employment Requirement

As the Applicant and Collaborator, both must hold a tenured or tenure-track position with your IHE, otherwise your proposal must include a letter from your IHE stating that you will be considered for a tenured or tenure-track position if you currently hold a short-term appointment. You are not eligible to submit a white paper or proposal if you do not meet this requirement.

2. Acknowledgment of Support and Disclaimer Requirements

You must include the VI.C.3. Acknowledgement of Research Support on all materials created or produced under our awards.

The VI.C.4. Disclaimer Language for Research Materials and Publications must be included on materials as required.

Our award document may provide additional instructions about specific distribution statements to use when you provide research materials to us. You are not eligible to submit a white paper or proposal if you cannot accept these terms.

3. Expectation of Public Dissemination of Research Results

We expect research funded by this announcement will be fundamental. We expect public dissemination of research results if you receive an award. This is a basic requirement for unclassified research results.

We intend, to the fullest extent possible, to make available to the public all unclassified, unlimited peer-reviewed scholarly publications and digitally formatted scientific data arising from research and programs funded wholly or in part by the DoD as described in the OUSD Memorandum, *"Public Access to Department of Defense-Funded Research"* dated 09 Jul 2014.

We follow DoD Directive 5230.24 and DoDI 5230.27 policies and procedures to ensure broad dissemination of unclassified research results to the public and within the Government. The DoD Instruction 5230.27 policy and procedures allowing publication and public presentation of unclassified fundamental research results will apply to all research proposed under this competition unless the Basic Research Office gives you an explicit, written exclusion to these policies with the Grants Officer's advice and consent. All exclusions must be authorized or required by law, and must cite a valid legal authority.

You must provide a copy of all peer-reviewed publications developed or produced from research conducted with DoD funds to the Basic Research Office.

You are not eligible to submit a white paper or proposal if you cannot accept these terms.

4. Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements

You must complete the "Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements" provided with the Grants.gov package. We provide more specific information about this requirement in section IV.D.3.B Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements.

We cannot determine you are eligible for funding unless we receive this form.

5. Conflict of Interest (COI)

a) General Requirement for Disclosure

You and your IHE must disclose any potential or actual scientific or nonscientific COI to us. You must also disclose any potential or actual COI for any sub-recipient you include in your proposal. You must provide enough information for us to evaluate your disclosure. We may have to ask you more questions if we need more information.

At our discretion, we may ask you for a COI mitigation plan after you submit your proposal. Your plan is subject to our approval.

b) Scientific COI

Scientific collaborations on research and development projects are generally the result of close collaboration prior to the submission of applications for support. Accordingly, these collaborations should be considered when considering potential conflicts of interest. The potential conflict is mitigated by the disclosure of these collaborations, and the list of current and pending support you provide for senior and key researchers.

IV. APPLICATION AND SUBMISSION PROCESS

The application and submission process is completed in three stages:

1. Online Registration via AcquTrak (required)
2. White Paper and Supporting Documentation submission via AcquTrak (required)
3. Full Proposal Submission Package (via grants.gov - REQUIRED) (**By INVITATION ONLY**. Must include acceptance email in package.)

A. ONLINE REGISTRATION VIA ACQUTRAK

The AcquTrak Online Registration portal opens on **15 June 2020**. You must register on the AcquTrak website **by 11:59 PM Eastern Time on 14 September 2020** (see Section IV.G.5 Submission Dates and Times). Note: If you registered at the AcquTrak website in a prior competition, you must re-register for this competition. Usernames and passwords used to submit previous applications will not be retrieved. You must provide the following information at the time of registration:

- Your name, title, department, IHE, phone number, and e-mail address
- Title of the your proposed research topic
- Name of Program Officer (see Section I.C TOPICS)
- Topic Area (see Section I.C TOPICS)
- DoD award number(s) for each award given to Collaborator as the principal investigator

B. WHITE PAPER AND SUPPORTING DOCUMENTION SUBMISSION

White papers are a **MANDATORY** component for this three-stage application and submission process to minimize the labor and cost associated with the production of detailed proposals that have very little chance of being selected for funding.

If you do not register and submit a White Paper and Supporting Documentation before the due dates and times, you will not be eligible to participate in the remaining Full Proposal submission process and are not eligible for funding.

To submit White Papers and Supporting Documentation, **you must register** on AcquTrak (https://acqupass.noblis.org/ApplyDEPSCoR) **by 11:59 PM Eastern Time on 14 September 2020** (see Section IV.G.5 Submission Dates and Times).

White Papers and Supporting Documentation **must be submitted** to AcquTrak (https://acqupass.noblis.org/ApplyDEPSCoR) **by 11:59 PM Eastern Time on 21 September 2020** (see Section IV.G.5 Submission Dates and Times).

The submission process could take several minutes depending on the network connection and the size of the file being submitted. You are responsible for allowing enough time to complete the online form, upload the documents and press the submit button before the deadline. An e-mail confirmation will be sent to the applicant upon receipt of the submission.

Documents submitted after the deadline or found to be non-compliant will not be reviewed.

Evaluation of the white paper will be issued via email notification. You are ineligible to submit a proposal under this FOA if your white paper was not identified as being of "particular value" to the DoD.

Only electronic submissions will be accepted and reviewed.

C. CONTENT AND FORMAT OF THE WHITE PAPER

1. Pre-white paper Inquiries and Questions

For help with technical matters, you should contact the Program Officer (PO) identified as the POC for your topic of interest as listed in section I.C. TOPICS.

If you have general questions about this announcement or administrative matters, **you should submit your question in writing by email** to the **Grants Officer** (see section VII.B GENERAL INQUIRES AND QUESTIONS).

All technical or general pre-white paper inquiries and questions must be submitted **no later than 11:59 PM Eastern Time on 29 June 2020** (see Section IV.G.5 Submission Dates and Times). Questions will not be answered after this date.

The PO does not have the authority to make commitments. Grants Officers acting within their warranted capacity are the only people authorized to make commitments for the Government.

2. White Paper and Supporting Documentation (as a whole)

White Papers and Supporting Documentation submitted under this FOA are expected to be unclassified; classified proposals are not permitted.

All white paper submissions will be protected from unauthorized disclosure in accordance with applicable law and DoD regulations. You are expected to appropriately mark each page of their submission that contains proprietary information.

IMPORTANT NOTE: Titles given to White Papers should be descriptive of the basic research they cover and not be merely a copy of the topic title.

Applicants must submit the following nine (9) documents:

- Cover Page
- Abstract
- Program Description Narrative
- Collaboration Composition Statement
- Basic Research Statement
- [2] Curriculum Vitae (both the Applicant and Collaborator must submit a CV)
- [2] List all previous DoD funding (both the Applicant and Collaborator must submit a list)

All documents must be submitted in PDF format in compliance with the guidelines below. When submitting the white paper and supporting documents, you must upload as one PDF file.

3. Marking Requirements for Confidential Proprietary Information

You must mark the white paper sections that contain proprietary or confidential information. However, under Freedom of Information Act (FOIA) requirements, some or all proposal information may be subject to release.

Your entire white paper, or any portions thereof, without protective markings or otherwise identified as requiring protection will be considered voluntarily furnished to us without restriction, and will be treated as such for all purposes. White papers may be disclosed to reviewers for training purposes in future competitions.

4. White Paper Package

The due date for receipt of white papers is **21 September 2020 by 11:59 PM Eastern Time** (see Section IV.G.5 Submission Dates and Times)**.** White papers received after the published deadline will not be considered under any circumstance. Early submission of white papers is welcomed and encouraged.

a. *Cover page* (one (1) page limit, single-sided): Include your name, IHE, proposed title, topic number addressed, and the name of the program officer contacted about the proposed work (if engaged). Include a protective legend for proprietary information, if applicable.

b. *Abstract* (not to exceed 300 words): Describe the research problem and objective, technical approaches, and anticipated outcomes of the research. The abstract must be submitted without proprietary restrictions. Therefore, this non-proprietary abstract must be a version that is releasable under the Freedom of Information Act without changes.

c. *Program Description Narrative* (three (3) page limit, single-sided): State the defense challenge or topic area of research. Describe the basic scientific research approach. Summarize the state of the field and describe what is innovative about the proposed approach. What results, new knowledge, or insights might this approach afford compared to alternate approaches other researchers in this field have taken. Include approximate yearly costs for the project. Reference citations are not required but may be included within the three-page limit.

d. *Collaboration Composition Statement* (one (1) page limit, single-sided): Describe the composition of the collaboration and how the collaborator will provide mentorship. Describe how the collaboration fulfills the purpose of DEPSCoR.

e. *Basic Research Statement* (one (1) page limit, single-sided): Describe how the proposed research meets the DoD definition of basic research. Describe the extraordinary outcomes that may be achieved as a result of the proposed project.

f. Identify anticipated human or animal subject research (one (1) page limit, single-sided) (where applicable).

g. *Curriculum Vitae* (CV) (two (2) page limit, single-sided): The Applicant and Collaborator must each submit a two (2) page limit CV. The CV should include relevant experience, publications, and funding received in the area of interest, and any previous involvement and experiences with the DoD.

h. List all previous DoD funding active between 1 October 2013 and 30 September 2020 for both the Applicant and Collaborator to include project title(s), award number(s), and the name of the PI on each listed award. The role of both the Applicant and Collaborator must be

demonstrably noted for each prior DoD funded award such as PI, co-PI, etc.

Documents must be submitted in the following format as a single PDF file:

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

D. FULL PROPOSAL SUBMISSION PACKAGE

1. Full Proposal Packages will only be accepted from collaborations invited to submit proposals.

All the application forms you need are available electronically on Grants.gov. From the "View Grant Opportunity" page, you can click on the "Package" tab to download the application package.

We will not issue paper copies of this announcement.

Proposal packages must be submitted electronically to Grants.gov **no later than 11:59 p.m. Eastern Time on 15 February 2021** (see Section IV.G.5 Submission Dates and Times).

Please contact us to request a reasonable accommodation for any accessibility requirements you may have.

2. Content and Form of Application Submission

a. The application as a whole

You must submit your proposal electronically through Grants.gov. We will not accept or evaluate any proposal submitted by any means other than through Grants.gov. We must receive your proposal before the IV.G.1. Proposal Submission Deadline.

DO NOT password protect any attachments.

You must use the electronic Standard Form (SF) 424 Research and Related (R&R) Form Family, OMB Number 4040-0001. The SF 424 (R&R) Application for Federal assistance form must be your cover page. No pages may precede the SF 424 (R&R).

You must mark your application with the FOA number.

A summary of what is required for a complete proposal is summarized below:

- **We require the forms and attachments in bold text with all applications**
- *Some applications require the attachments in italic*
- We provide more instructions in IV.D.3. Component Pieces of the Application

R&R FORM, OMB No. 4040-0001	FIELD	ATTACHMENT
SF 424 (R&R) Application for Federal Assistance, including an authorized signature	**18**	**Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements**
	18	**Certification Regarding Lobbying**
	18	*Disclosure of Lobbying Activities (SF-LLL)*
R&R Other Project Information Form	**7**	**Project Abstract Summary**
	8	**Project Narrative Attachment Form**
	9	**Bibliography & References Cited**
	10	*Facilities and Other Resources*
	11	*Equipment*
	12	*Other Attachments*
R&R Senior/Key Person Profile Form		**Biographical Sketch**
		Current & Pending Support
R&R Budget Form		**Budget Justification**
R&R Project/Performance Site Locations Form		**None**
R&R Personal Data		*None*

The SF 424 (R&R) must include the signature of an authorized representative from your IHE. The signature is affixed electronically by Grants.gov upon submission. This signature is considered the signature for the application as a whole.

b. Proposal Format

- Paper Size – 8.5 x 11-inch paper
- Margins – 1 inch
- Spacing – 1.5-line spacing

- Font – Times New Roman, 12 point
- Page Limitation – Research Efforts not more than 12 pages
- Content – As described below

c. Proposal Length

Your Research Effort section must not exceed twelve (12) single-sided pages. We will not consider more than the maximum number of project narratives pages in our evaluation.

You must not include elaborate brochures, reprints, or presentations beyond those sufficient to present a complete and effective proposal.

We created this table to help you understand how to calculate your page count

INCLUDED IN PAGE COUNT	NOT INCLUDED IN PAGE COUNT
IV.D.3.f.(2). Research Efforts	Everything else

You must include enough budget related information in your proposal to support your costs as necessary, reasonable, allocable, realistic, and in compliance with 2 CFR 200 Subpart E – Cost Principles

Not having enough information in your proposal to understand if your costs are necessary, reasonable, allocable, and realistic is the most common reason awards are delayed.

d. Marking Requirements for Confidential or Proprietary Information

You must mark the proposal sections that contain proprietary or confidential information. However, under the Freedom of Information Act (FOIA) requirements, some or all proposal information may be subject to release.

Your entire proposal, or any portions thereof, without protective markings or otherwise identified as requiring protection will be considered voluntarily furnished to us without restriction, and will be treated as such for all purposes.

e. Advance Preparation for Electronic Submission through Grants.gov

Your proposal must be submitted electronically through Grants.gov. You should verify that the person authorized to submit proposals for

your organization has completed Grants.gov registration well in advance of the submission deadline. Grants.gov electronic proposal submissions cannot be accomplished before your organization is fully registered. **Registration with Grants.gov may take up to twenty-one (21) days.**

(1) A Grants.gov getting started checklist is available at: https://www.grants.gov/en/web/grants/learn-grants/grants-101/getting-started-%20checklist.html.

(2) Guidance for registering with Grants.gov as an organization may be found at: https://www.grants.gov/web/grants/applicants/organization-registration.html**.**

(3) Questions relating to the Grants.gov registration process, system requirements, how an application works, or the proposal submittal process can be answered by email at support@grants.gov, telephone at (800) 518-4726 or (606) 545-5035, or at https://www.grants.gov/web/grants/support.html.

(4) An active System for Award Management (SAM) registration and an active Dun and Bradstreet Data Universal Numbering System (DUNS) number are required to register through Grants.gov. Section IV.F.1 SAM Registration Required provides more information.

3. Component Pieces of the Application

IMPORTANT NOTE: Titles given to Proposals should be descriptive of the basic research they cover and not be merely a copy of the topic title.

a. SF-424 Form (R&R) Application for Federal Assistance

The SF 424 (R&R) Application for Federal assistance form must be your cover page. No pages may precede the SF 424 (R&R).

Complete all required fields in accordance with the "pop-up" instructions on the SF 424 (R&R) form. You can turn on Grants.gov "Help Mode" to provide additional instructions for forms. "Help Mode" is turned on by the icon with the pointer and question mark at the top of the form.

We have special instructions for completion of several SF 424 (R&R) form fields in your application.

Our instructions are:

FIELD	INSTRUCTION
2.	You may leave "Applicant Identifier" blank
3.	You may leave "Date Received by State" and "State Application Identifier" blank
9.	You must list Air Force Office of Scientific Research as the reviewing agency if Grants.gov has not pre-populated this answer
16.	You should check "No." and "Program is Not Covered by Executive Order 12372"
17.	Select "I Agree" to : • Provide the certification regarding lobbying that is required by 31 U.S.C. 1352 as implemented by DoD in 32 CFR Part 28. *The full text of this certification is also found at Appendix A to Part 28 of 32 CFR at http://www.ecfr.gov/* *A Certification Regarding Lobbying form is provided in the package.* ▪ Certify that all statements contained in the proposal, your Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements and Certification Regarding Lobbying are true, complete, and accurate to the best of your knowledge. *See section VI.C. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS for more information and links to the full text of these items.*
18.	You must attach the completed IV.D.3.b Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements. You must also attach the completed IV.D.3.c Certification Regarding Lobbying Form, you *may* have to attach the completed Disclosure of Lobbying Activities (SF-LLL) *if you have lobbying activity that you must disclose.*

b. Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality Agreements

You must attach this representation to field 18 of the SF 424 (R&R).

You must complete and attach the "Representation for Tax Delinquency, Felony Conviction, and Internal Confidentiality

Agreements" provided with the Grants.gov package. We cannot fund an award if this information is not provided.

If you answer "is" a corporation with a felony conviction and/or "is" a corporation with a felony conviction on this representation, you may not be eligible for an award if your proposal is selected. You should contact us right away to discuss your situation to find out if you can submit your application.

If you do not attach this form to the SF 424, we may request the representation after you submit your application, but we are not required to do so.

c. Certification Regarding Lobbying & Disclosure of Lobbying Activities (SF-LLL)

You must attach the Certification Regarding Lobbying Form in field 18 of the R&R Other Project Information Form.

If you have lobbying activity that you must disclose under 31 U.S.C. 1352 as implemented by the DoD in 32 CFR Part 28, you must also attach the completed Disclosure of Lobbying Activities (SF-LLL). You can find instructions for completing this form at https://www.grants.gov/web/grants/forms/sf-424-mandatory-family.html. If you do not have lobbying activities to disclose, you do not need to complete the SF-LLL.

d. R&R Other Project Information Form

Complete this form as indicated. You must include all necessary attachments.

FIELD	INSTRUCTION
1, 1a.	You must address all prospective human subject involvement by answering these questions. Additional documentation pursuant to National Policy and U.S. Air Force standards is required for all proposals with human use or involvement. Your inquiries about our requirements should be sent by email directly to our Research Protections Officer at afrl.ir.hrpo@us.af.mil with a copy to the Basic Research Office for the announcement topic.

2, 2a.	You must address all prospective animal subject and/or recombinant deoxyribonucleic acid (rDNA) involvement by answering these questions. Additional documentation pursuant to National Policy and U.S. Air Force standards is required for all proposals with animal or rDNA use or involvement. Your inquiries about our requirements should be sent by email directly to our Research Protections Officer at brett.j.taylor2.mil@mail.mil with a copy to the Basic Research Office for the announcement topic.
4a.	For any proposal that has an actual or potential impact on the environment, answer yes and provide the answers and attachments required for fields 4b, 4c, and 4d. Additional documentation in accordance with National Policy and U.S. Air Force standards is required for any proposal with an actual or potential impact on the environment.
7.	Attach your IV.D.3.e. Publicly Releasable Abstract
8.	Attach your IV.D.3.f. Project Narrative
9.	Attach your IV.D.3.g Bibliography and References Cited
10.	Attach a Facilities and Other Resources description document here if you need to supplement your IV.D.3.f. Project Narrative facilities and resources section.
11.	You may supplement your IV.D.3.j. Budget Justification by attaching an Equipment Justification here. Do not duplicate information included on your budget justification. If you attach an Equipment Justification, make sure you reference the attachment in your budget justification.
12.	Attach your IV.D.3.o. Data Management Plan here if applicable
13.	Attach your IV.D.3.p. Letter of Support

e. Publicly Releasable Project Abstract Summary

You must attach the Project Abstract Summary to field 7 of the R&R Other Project Information form.

You should identify the Program Officer and topic area your proposed research falls under (see section I.C. TOPICS).

You must provide a concise abstract of 300 words or less with your proposal. You must mark the abstract publicly releasable. The abstract should use terms the public can understand to describe the research objective, technical approach, anticipated outcome, and potential impact of the specific research.

Use only characters available on a standard QWERTY keyboard. Spell out all Greek letters, other non-English letters, and symbols. Graphics are not allowed.

If you receive an award, we must publish your abstract to a searchable website available to the general public in accordance with the statutory requirement contained in Section 8123 of Public Law 113-235. The website address is https://dodgrantawards.dtic.mil/grants/#/home.

f. Project Narrative

You must attach the Project Narrative to field 8 of the R&R Other Project Information Form. The narrative must be complete and self-contained to qualify for review.

You must identify the Program Officer and topic number your proposed research falls under. You must clearly describe your research, including your research objective and approach. Your project narrative will be evaluated using the criteria listed in section V.A CRITERIA. You should show strength in as many of the evaluation and selection areas as practicable to demonstrate maximum competitiveness.

Your narrative should include the following elements:

(1) Statement of Objectives

You must summarize your proposed research on a single-page titled "Statement of Objectives." We may decide to incorporate your statement of objectives into the award as a description of the work instead of incorporating the whole technical proposal.

You should use active verbs when you prepare the statement of objectives, e.g., "conduct" research in a subject area, "investigate" a problem, "determine" to test a hypothesis.

(2) Research Efforts

This section must not be longer than twelve (12) single-side pages. The Basic Research Office will not review proposals that exceed this page limit.

You should describe the basic scientific or technical concepts that will be investigated in great detail. State the research objectives and approach, and the relationship and comparable objectives to

research progress elsewhere. Describe your research team's knowledge in the field. Discuss the nature of the expected results.

The adequacy of this information will influence the overall evaluation in accordance with the criteria and procedures specified in section V. APPLICATION REVIEW INFORMATION below.

(3) Applicant (PI), Collaborator (co-PI), and Senior/Key Personnel Time

(a) You must provide an estimate of the time the Applicant and Collaborator will devote to the research. Your estimate must include information pertaining to the proportion of time anticipated to be devoted to this research, to other research, and to other commitments of time such as sabbatical, extended leave, and teaching duties.

You should budget time for two required trips per year to DEPSCoR-related activities, which include attending a program review (Washington, DC area) and participating in a DoD-organized workshop (in a nearby metropolitan area).

(b) State the number of graduate students that will engage in the project for whom each senior staff member is responsible.

(c) If the Applicant, Collaborator, or other Senior/Key personnel have current, pending, or expected research supported by other sponsors or agencies during the period you seek our support, state the title of the other research, the proportion of time to be devoted to it, the amount of support, name of agency, dates, etc. You must attach a list of Current and Pending Support for each person listed on the IV.D.3.h. R&R Senior / Key Person Profile Form. Each abstract should include research title, objectives, approach, and budget for both present and pending research projects. Send any changes as they become known.

(4) Your Facilities

(a) Describe the facilities available for performing the proposed research, and any additional facilities or equipment the organization proposes to acquire at its own expense for the work.

(b) Indicate any government-owned facilities that will be used. Indicate any government-owned equipment possessed presently that will be used. The facilities contract number, or in

absence of a facilities contract, the specifics of the facilities or equipment, and the number of the award under which they are accountable are required.

(c) Government Furnished Equipment: You may list any special Government-owned property or test equipment required to complete the research. When possible and practicable, give a description or title for each item, the current location, and an estimated cost as applicable. If you do not have information about individual items, group items you require by class and provide an estimate of values.

g. Bibliography and Reference Cited

You must attach your narrative Bibliography and References to field 9 of the R&R Other Project Information Form.

h. R&R Senior/Key Person Profile Form

You must attach a short biographical sketch and list of significant publications (vitae) for each Senior/Key Person, whether or not the individuals' efforts under the project are to be funded by DoD. You must also attach a list of current and pending support, regardless of the source, as discussed in Applicant (PI), Collaborator (co-PI), and Senior/Key Personnel Time including title and objectives of the other research projects; the percentage per year to be devoted to the other projects; the total amount of support the individual is receiving in connection to each of the other research projects or will receive if other proposals are awarded; name and address of the agencies and/or parties supporting the other research projects; and period of performance for the other research projects.

You must list all key persons proposed for the research on the R&R Senior/Key Person Profile (Expanded) Form. Senior/Key Persons are generally the Applicant, Collaborator, and Senior Staff.

Failure to submit this information may cause the proposal to be returned without further review.

This information will be used to support protection of intellectual property, controlled information, senior/key personnel, and information about critical technologies relevant to national security. Additionally, this information will be used to limit undue influence, including foreign talent programs, by countries that desire to exploit United States' technology within the DoD research, science and technology, and innovation enterprise.

i. R&R Budget Form

You must provide all information requested. You must estimate the total research project cost. You must categorize funds by year and provide separate annual budgets for projects lasting more than one year. **A budget justification must be attached**.

You must include enough budget related information in your proposal to support your costs as necessary, reasonable, allocable, realistic, and in compliance with 2 CFR 200, Subpart E – Cost Principles.

Not having enough information in your proposal to understand if your costs are necessary, reasonable, allocable, and realistic is the most common reason awards are delayed.

j. Budget Justification

You must provide a detailed budget justification for each year that clearly explains the need for each item. The entire budget justification and supporting documentation must be combined into a single file and attached to field L of the R&R Budget Form. The budget narrative submitted with the application must match the dollar amounts on all required forms. Please explain each calculation and provide a narrative that supports each budget category. This detailed budget justification must match the proposed budget categories. Each year of the budget justification narrative must stand alone; lump sum budget justifications are not allowed. If options are proposed, option detailed budget justifications must stand alone as well, no lump sum justifications allowed.

(1) You **must** itemize travel. State the purpose of each trip proposed, the number of trips, the number of travelers, the destination, the duration, and the basis for calculating costs such as airlines and hotels.

(2) You **must** itemize materials, supplies, and equipment. List all material/equipment by type and kind with associated costs. Indicate what your costs are based on, such as vendor quotes, historical data and/or engineering estimates. You should include vendor quotes and/or catalog pricing data.

(3) Proposals including request to purchase **equipment** must include equipment quotes or vendor agreements. "Equipment" is nonexpendable, tangible personal property with a unit cost of $5,000 or more having a useful life of more than 1 year, unless

determined otherwise by recipient's internal policy. Items that do not meet the "equipment" definition can be included under supplies. List each piece of equipment to be purchased and provide description of how it will be used in the project. Budget narrative should explain why the equipment is necessary for successful completion of the project. Provide quotes in the English Language (US Dollars) if available, or indicate the basis of the equipment cost. If you have any sub-award(s), you should describe how you determined sub-award costs were determined fair and reasonable. Your business office usually makes this determination.

(4) **DHHS/ONR Rate Agreement:** If you use a Government rate agreement to propose indirect cost rates and/or fringe benefit rates, you should attach a copy of the agreement you used.

(5) Helpful Cost Principle Reference Information

(i) 2 CFR 200, Subpart E – Cost Principles

(ii) General Provisions for Selected Items of Cost in 2 CFR 200.420 through 2 CFR 200.475

k. R&R Sub-award Budget Attachments Form

You must attach all sub-award budgets to field 12 of the R&R Other Project Information Form.

You must provide a budget at the same level of detail as your D.3.i. Prime budget for each proposed sub-award.

l. Sub-award Budget Justification

You must attach all sub-award budget justifications to field 12 of the R&R Other Project Information Form.

You must provide a sub-award budget justification at the same level of detail as your D.3.j. prime budget justification for each proposed sub-award.

m. R&R Project/Performance Site Locations Form

You must complete all information as requested. You must include the ZIP+4 for each performance location you list.

n. R&R Personal Data Form

To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A subsection 1681 Et. Seq.), The DoD is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each applicant must include this form completed as indicated.

This form will be used by DoD as the source of demographic information, such as gender, race, ethnicity, and disability information for the Principal Investigator and all other persons identified as Co-Principal Investigator(s). Each application must include this form with the name fields of the Principal Investigator and any Co-Principal Investigator(s) completed; however, provisions of the demographic information in the form is voluntary. If completing the form for multiple individuals, each Co-Principal Investigator can be added by selecting the "Next Person" button. The demographic information, if provided, will be used for statistical purposes only and will not be made available to merit reviewers. Applicants who do not wish to provide some or all of this information should check or select the "Do not wish to provide" option.

o. Data Management Plan (Optional)

You can decide if you want to include a Data Management Plan with your application. If you do, attach your Data Management Plan to field 12 of the R&R Other Project Information Form.

Your "Data Management Plan" should be two (2) single-sided pages or less in length and discuss:

(1) The types of data, software, and other materials to be produced in the course of the project, and include a notation marking items that are publicly releasable;

(2) How the data will be acquired;

(3) Time and location of data acquisition if they are scientifically pertinent;

(4) How the data will be processed;

(5) The file formats and the naming conventions that will be used;

(6) A description of the quality assurance and quality control measures

during collection, analysis, and processing;

(7) If existing data are to be used, a description of their origins;

(8) A description of the standards to be used for data and metadata format and content;

(9) Plans and justifications for archiving the data;

(10) The timeframe for preservation; and

(11) If for legitimate reasons the data cannot be preserved, the plan must include a justification citing such reasons.

p. Letter Of Support

Attach a **letter of support** from the Collaborator that discusses how they will foster a ***mentorship*** relationship with the Applicant to field 12 of the R&R Other Project Information Form.

E. INFORMATION YOU MUST SUBMIT IF SELECTED FOR POSSIBLE AWARD

We may request additional necessary information from you during negotiations, or as required for award considerations. You must respond promptly.

If you do not fully comply with our information requests by the time we are ready to make an award, we may determine that you are not qualified to receive an award, and use that determination as a basis for making an award to another applicant.

If your proposal includes human, animal, or rDNA use or involvement, you must submit all documentation requested during negotiations or you may not receive an award.

Foreign national Applicant, Collaborator, or research personnel may be asked to provide a copy of the front and back of their green card by secure means such as https://safe.apps.mil/ if our Grants Officer asks for this information.

F. DUNS UNIQUE ENTITY IDENTIFIER, CAGE, AND SYSTEM FOR AWARD MANAGEMENT (SAM)

1. SAM Registration Required

As required in 2 CFR 25.110 all applicants, unless exempted, must:

- Be registered in SAM.gov before submitting its application;
- Provide a valid DUNS unique entity identifier; and
- Continue to maintain an active SAM registration with current information at all times any Federal award is active, or any application is under consideration by a Federal awarding agency.

A Commercial and Government Entity (CAGE) code is obtained or specified as part of the SAM registration process. A CAGE code is required.

2. SAM Exemption or Exceptions Not Available Under This Announcement

We will not issue an Agency level exemption to SAM registration under 2 CFR 25.110(d)(1) for applicants under this announcement.

You must comply with SAM registration requirements and include an Organizational DUNS code in field 5 of the SF 424 (R&R) application or we cannot make an award.

3. Questions about SAM Registrations and Updates

You can get questions about SAM registration and entity updates answered by live chat at https://www.fsd.gov/fsd-gov/home.do and telephone at (866) 606-8220 or (324) 206-7828. Top help topics for SAM.gov are available at https://www.fsd.gov/fsd-gov/learning-center-system.do?sysparm_system=SAM.

4. Consequences of Non-Compliance with SAM Registration Requirements

We cannot make an award to you unless you comply with SAM requirements. If you are non-compliant, we may determine you are not qualified to receive an award, and use that determination to make an award to someone else as authorized by 2 CFR 25.205(b). You cannot receive payments without an active SAM record and CAGE code.

G. SUBMISSION DATES AND TIMES

1. Proposal Submission Deadline

We must receive your validated proposal electronically through Grants.gov **no later than 11:59 PM Eastern Time on 15 February 2021** to be considered for selection (see Section IV.G.5 Submission Dates and Times). This is the final due date. We recommend you submit your application early.

You are responsible for making sure your application is submitted, received, and validated by Grants.gov before the application deadline. If you submit your application late, your proposal is not eligible for consideration.

(a) Timely Receipt Requirements and Proof of Timely Submission

Online Submission: All applications must be validated by Grants.gov **no later than 11:59 PM Eastern Time on 15 February 2021**. Proof of timely submission is automatically recorded by Grants.gov. The applicant AOR will receive an acknowledgement of receipt and a tracking number (GRANTXXXXXXXX) from Grants.gov with the successful transmission of their application. Applicant AORs will also receive the official date/time stamp and Grants.gov tracking number in an email.

A second confirmation is provided by email when your application has passed Grants.gov validation and the status is updated from received to validated. **Your application is not complete until you receive the validation confirmation.** Your submission must be validated before the submission deadline.

When the administering agency successfully retrieves the application from Grants.gov, and acknowledges the download of submissions, Grants.gov will provide an electronic acknowledgement of receipt of the application to the email address of the applicant with the AOR role.

Applications received by Grants.gov after the established due date will be counted as late and will not be considered.

(b) Applicants using slow internet, should be aware that transmission can take some time before Grants.gov receives your application. Again, Grants.gov will provide either an error or a successfully received transmission in the form of an email to the

applicant with the AOR role. The Grants.gov Support Center reports that some applicants end the transmission because they think that nothing is occurring during the transmission process. *Please be patient and give the system time to process the application.*

2. How Proposal Submission Time is Determined

We use the system-generated Grants.gov time stamp to determine when you submitted your successfully validated proposal. Grants.gov policies and procedures for application submission and processing apply.

3. Grants.gov Tracking Number is Application Receipt

Grants.gov generates a confirmation page when you submit your application. A second confirmation is provided by email when your application has passed Grants.gov validations and the status is updated from received to validated. Your application is not complete until you receive the validation confirmation.

The validation confirmation page includes a system-generated Grants.gov tracking number; this serves as your receipt. You should keep a copy of all confirmations.

You can verify the submission time and application status with your tracking number through Grants.gov at http://www.grants.gov/web/grants/applicants/track-my-application.html.

4. Other Submission Requirements

If Grants.gov rejects your electronic application submission for any reason, you must correct all errors and resubmit your application before the proposal submission deadline as outlined in section IV.G.1. Proposal Submission Deadline.

5. Submission Dates and Times

Schedule of Events		
Event	**Date**	**Eastern Standard Time**
AcquTrak website open for registration and submission (https://acqupass.noblis.org/ApplyDEPSCoR)	15 June 2020	NLT 11:59PM
Questions Regarding White Paper and Supporting Documentation (submitted by)	29 June 2020	NLT 11:59PM
AcquTrak Registration (required by)	14 September 2020	NLT 11:59PM
White Paper and Supporting Documentation submission on AcquTrak website (https://acqupass.noblis.org/ApplyDEPSCoR) (required by)	21 September 2020	NLT 11:59PM
Notification of White Paper Selection	20 November 2020	NLT 11:59PM
Request for written feedback on your white paper submission (required by) (Email request to: DEPSCoR-feedback@noblis.org)	27 November 2020	NLT 11:59PM
Full Proposal Submission (by invitation only) electronically on Grants.gov website (submitted by)	15 February 2021	NLT 11:59PM
Notification of Selection for Award	12 April 2021	NLT 11:59PM

H. INTERGOVERNMENTAL REVIEW

N/A - This program is excluded from coverage under Executive Order (E.O.) 12372.

I. FUNDING RESTRICTIONS

1. Proposal Preparation Costs

Your proposal or application preparation costs are not considered an allowable direct charge to any award under this announcement. Your costs are, however, an allowable expense to the normal bid and proposal indirect cost as specified in 2 CFR 200.460 proposal costs if you receive a grant or cooperative agreement.

2. Pre-award Costs

You must request our prior approval if your research requires a specific date pre-award costs become allowable, or if you need more than ninety (90) days pre-award cost authorization as described in 2 CFR 200.308(d)(1) and 2 CFR 200.458. **Your business office must provide this request in writing.** You must document why pre-award costs are necessary and essential for the research in the request, and identify a specific date for our Grants Officer to consider. We will

only consider approval of a specific date or more than ninety days pre-award costs before an award is made.

Our grants include up to ninety (90) calendar days pre-award costs in accordance with the DoD Research and Development General Terms and Conditions, July 2018 (DoD T&C) FMS Article IV.C. Pre-award costs section; however, the actual date costs become allowable is not final until an award is made. We recommend you ask for a specific date as described above to prevent misunderstandings.

All costs incurred before a grant or cooperative agreement award are at the recipient's risk as described in 2 CFR 200.308(d)(1). We are under no obligation to reimburse your costs if for any reason you do not receive an award, or if your award is less than anticipated and inadequate to your pre-award costs.

V. APPLICATION REVIEW INFORMATION

A. CRITERIA

DEPSCoR seeks to increase the number of researchers at and improve the capabilities of IHEs in eligible States/Territories to perform competitive S&E research relevant to the DoD.

Proposed research should describe cutting-edge efforts on basic scientific problems. White papers deemed to be applied research, as opposed to basic research, will not advance to the proposal stage of the competition.

You should show strength in as many of the evaluation and selection areas as practicable to demonstrate maximum competitiveness.

1. Evaluation Criteria

Your white paper and proposal will be evaluated against the following criteria (each are equally important):

- Scientific and technical merits of the proposed research
- The Applicant's and Collaborator's qualifications, ability to perform the proposed work, and the overall management approach
- Relevance of the proposed research to the DoD
- (**Full Proposal Evaluation Only**) Realism and reasonableness of proposed costs, with the Applicant receiving greater than 50% of funding

All, some, one, or none of the applicants may be contacted after the proposal review process by phone by the Director of the Basic Research Office, USD (R&E) to clarify certain aspects of their proposed research efforts.

2. No Further Evaluation Criteria or Criterion will be used for Proposal Selection

B. Review Process

1. Cost Analysis

If your proposal is selected for possible award, we will analyze the cost of the work for realism and reasonableness. We must make sure the costs you propose are necessary, reasonable, realistic, and allocable to the proposed research before we can make an award. We may analyze your technical and cost information at the same time.

2. Agency Review of Risk Posed by Applicants

a. We must review information available about you and entities included in your proposal through the Office of Management and Budget (OMB) designated repositories of government-wide eligibility qualification and financial integrity information. Our risk review is required by 31 U.S.C. 3321 and 41 U.S.C. 2313,and includes both public and non-public information. You must be qualified and responsible as described at 32 CFR 22.415 Standards to receive a grant award.

b. We must consider the non-public segment of the Federal Awardee Performance and Integrity Information System (FAPIIS) system accessible through SAM.gov for all awards exceeding the current simplified acquisition threshold of $250,000.

c. At a minimum, the information in the system for a prior Federal award recipient must demonstrate a satisfactory record of executing programs or activities under Federal grants, cooperative agreements, or procurement awards; and integrity and business ethics. We will consider any comments you provide, in addition to the other information in the designated integrity and performance system, when making our risk judgment about your integrity, business ethics, and record of performance under Federal awards.

d. We may make an award to a recipient who does not fully meet our standards as described at 2 CFR 200.205(a)(2) if it is determined that the information is not relevant to the current Federal award under consideration or there are specific conditions that can appropriately mitigate the effects of the non-Federal entity's risk in accordance with 2 CFR 200.207 Specific conditions.

We must comply with the guidelines on government-wide suspension and debarment described in 2 CFR 200.213, and must require you to comply with these provisions for all work we fund.

These provisions restrict Federal awards and sub-awards with certain parties that are debarred, suspended or otherwise excluded from or ineligible for participation in Federal programs or activities.

C. DISCLOSURE OF ADMINISTRATIVE PROCESSING BY CONTRACTOR PERSONNEL

We use support contractor personnel to help us with administrative proposal processing. These contractor personnel are employees of commercial firms that have a contract with us. We make sure all of our support contracts include nondisclosure agreements that prohibit disclosure of any information you submit to other parties.

D. NO GUARANTEED AWARD

We do not guarantee that any award will be made under this competition.

VI. FEDERAL AWARD ADMINISTRATION INFORMATION

A. WHITE PAPER SELECTION AND NONSELECTION NOTICES

1. Electronic Notification of White Paper Selection by 20 November 2020

If your white paper is selected for a full proposal submission and possible award, a notification will be sent to the Applicant via email.

If your white paper is not selected for a full proposal submission for this year’s DEPSCoR funding opportunity, a notification will be sent to the Applicant via email.

If you would like to request written feedback on your white paper submission, you must send the request to the following email address **no later than 11:59 PM Eastern Time on 27 November 2020**:

DEPSCoR-feedback@noblis.org

2. Selection for Possible Award Does Not Authorize Work

Our selection notice is not an authorization to start work, and is not an award guarantee. We will contact your business office to get answers to any questions we have about your proposal, and negotiate specific award terms.

B. AWARD NOTICES

1. Electronic Notification of Full Proposal Selection by 12 April 2021.

If your full proposal submission is selected for award, a notification will be sent to the Applicant via email.

If your full proposal submission is not selected for award for this year's DEPSCoR funding opportunity, a notification will be sent to the Applicant via email.

If you would like to request written feedback on your full proposal submission, instructions will be provided in the notification email.

2. Federal Award Document

A grant signed by a warranted Grants Officer is the only official notice that an award has been made.

3. Electronic Federal Award Distribution

We send award documents to the Applicant and their IHE business office by email. This is called award distribution.

C. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Reporting of Matters Related to Recipient Integrity and Performance

You must report recipient integrity and performance information as required by Appendix XII to 2 CFR Part 200 – Award Term and Condition for Recipient Integrity and Performance Matters, incorporated here by reference. You should read the full text of this award term now using the link above to make sure you understand our requirements. You can also find this term at http://www.ecfr.gov.

2. Cross-Cutting National Policy Requirements

You must comply with all applicable national policy requirements as a condition of award. Key national policy requirements may be found in the DoD Research and Development General Terms and Conditions, latest version (DoD T&C); and, Appendix B to 32 CFR Part 22 – Suggested Award Provisions for National Policy Requirements that Often Apply, incorporated here by reference.

3. Acknowledgement of Research Support

You must acknowledge support provided by the Government in all materials based on or developed under our awards. The requirement extends to copyrighted and non-copyrighted materials published or displayed in any medium.

The following language must be used unless the award document provides different instructions:

"This material is based upon work supported by the Office of the Under Secretary of Defense for Research and Engineering under award number_____."

You must require any sub-recipients under your award to also include this acknowledgement.

4. Disclaimer Language for Research Materials and Publications

All materials based on or developed under our awards except scientific articles or papers published in scientific journals must use the following language unless the award document provides different instructions:

"Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the U.S. Department of Defense."

You must require any sub-recipients under your award to also include this acknowledgement.

5. Grants - Uniform Administrative Requirements, Cost Principles, and Audit Requirements

Our grants are governed by the guidance in Title 2, Code of Federal Regulations (CFR) Part 200, "Uniform Administrative Requirements,

Cost Principles, and Audit Requirements for Federal Awards" as modified and supplemented by the Department of Defense's (DoD) interim implementation in 2 CFR Part 1103 and 2 CFR Part 1125. Provisions of Chapter 1, Subchapter C of Title 32, CFR, "DoD Grant and Agreement Regulations" other than parts 32 and 33 continue to be in effect and apply as stated.

These regulations are incorporated by reference into this announcement.

6. Conditions of Award for Recipients Other Than Individuals

You must agree to comply with the requirements at 2 CFR Part 182, Subpart B "Requirements for Recipients Other Than Individuals" as a condition of award.

7. Minimum Record Retention Requirements

You must keep records related to our awards for at least three years after completion and the final Federal Financial Report is submitted. This requirement is described further in 2 CFR 200.333, incorporated here by reference. For grant awards, the DoD T&C OAR Article II. Records retention and access describes additional requirements.

Sometimes records must be retained for more than three years.

D. REPORTING

1. Monitoring and Reporting Program Performance

All of our awards require at least annual and final technical performance reports as required in 2 CFR 200.328. The DoD T&C REP Article I. Performance reporting will apply to grant awards. Some of our awards require more frequent technical reports.

You must provide your reports on time. Our awards include a schedule specifying the latest date for submission of each required report.

You must use a completed SF 298 Report Documentation Page as the first page of the final report. You can download an electronic SF 298 from http://www.gsa.gov/portal/forms/download/116146.

2. Technical Performance Report Format

a. Interim, Annual, and Final Research Performance Progress Reports (RPPR)

The format for use in submission of these reports can be found on the National Science Foundation website: https://www.nsf.gov/bfa/dias/policy/rppr/frpprformat_2016.pdf.

b. Institutional Formats for Theses and Dissertations

If your IHE has a format for theses and dissertations you can use that format unless your award states different requirements.

3. Department of Defense (DD) Form 882 Report of Inventions and Sub-awards

a. Invention Reports

(1) You must provide a final invention report on a DD Form 882. Our award documents specify the due date.

You can get the form at: https://www.esd.whs.mil/Portals/54/Documents/DD/forms/dd/dd0882.pdf

(2) You must submit this report even if you do not have a patent to report.

b. Sub-Award Reporting

You must use the DD Form 882 to tell us about any sub-awards. Your award will provide specific instructions. You can get the form at http://www.dtic.mil/whs/directives/forms/eforms/dd0882.pdf.

4. Standard Form (SF) 425 Federal Financial Report

a. If you request any advance payment(s) under your award, you must submit quarterly SF 425 Federal Financial reports for the life of the grant. Our awards include specific instructions.

You can get the form at: https://www.gsa.gov/forms-library/federal-financial-report

b. You do not have to submit quarterly SF 425 Federal Financial reports if you only request payments by reimbursement.

5. Electronic Payment Requests and Electronic Payment

You must submit payment requests electronically using the Invoicing, Receipt, Acceptance, and Property Transfer (iRAPT) application. All payments must be made using the electronic funds transfer (EFT) method.

You must register to use iRAPT in the Wide Area Workflow (WAWF) e-Business Suite at https://wawf.eb.mil/piee-landing. The website includes registration instructions.

If you have iRAPT or WAWF questions or problems, you can get help by telephone at (866) 618-5988 or (801) 605-7095, by electronic mail at disa.global.servicedesk.mbx.eb-ticket-requests@mail.mil, or via the Internet at: https://wawf.eb.mil/xhtml/unauth/web/homepage/vendorCustomerSupport.xhtml

6. Property Reports

If we furnish any property owned by the Government under an award, you must submit periodic property status reports as described in 2 CFR 200.329 and further implemented for grants by the DoD T&C REP Article III. Reporting on Property.

7. Other Reports

The Basic Research Office may ask for quarterly reports as needed. We use these informal reports for program purposes, such as preparation for meetings and other technical purposes. We highly recommend you provide this information in a timely manner by electronic mail directly to the Basic Research Office.

8. Electronic Submission of Reports

You must plan on submitting reports electronically through our online service specific portals or by email. Our award documents will provide the specific instructions.

VII. AGENCY CONTACTS

A. TECHNICAL INQUIRIES AND QUESTIONS

Questions of a technical nature on a specific topic must be directed to one of the program officers identified in Section I.A. OBJECTIVES above. You should **submit your questions in writing by email not later than 11:59 PM on 29 June 2020** to make sure we have time to respond (see Section IV.G.5 Submission Dates and Times). You should include the announcement number in the subject line.

If you submit a question by telephone call, fax machine, or other means you may not receive a response.

B. GENERAL INQUIRIES AND QUESTIONS

General questions about this announcement **must be sent to us by email**. Your questions will generally be consolidated with other questions and posted on Grants.gov so everyone gets the same information. You should include this FOA number in the subject line.

MRS. ELAINA BARKER
Grants Officer
Email: elaina.barker@us.af.mil

If you submit a question by telephone call, fax message, or other means you may not receive a response.

C. PROGRAMMATIC QUESTIONS

Overall DEPSCoR questions can be directed to the Basic Research Office. You must submit all questions in writing by electronic mail. You should include this FOA number in the subject line.

DR. JENNIFER BECKER
Program Manager
Email: jennifer.j.becker.civ@mail.mil

If you submit a question by telephone call, fax message, or other means you may not receive a response.

VIII. OTHER INFORMATION

A. OMBUDSMAN

1. An Ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and others for this acquisition. When requested, the Ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the Ombudsman does not affect the authority of the Government Program

Officer, Grants Officer, or evaluation officials. Further, the Ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of protests or formal grant disputes. The Ombudsman may refer the party to another official who can resolve the concern.

2. Before consulting with an Ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Grants Officer for resolution. Consulting the Ombudsman does not alter or postpone the timelines for any other processes.

3. If resolution cannot be made by the Grants Officer, concerned parties may contact the AFRL Ombudsman, Director of Contracting, HQ AFRL/PK. The AFRL Alternate Ombudsman is the Deputy Director of Contracting, HQ AFRL/PK. Please send an email to afrl.pk.workflow@us.af.mil with the subject of "Ombudsman".

4. The Ombudsman has no authority to render a decision that binds the agency.

5. Do not contact the Ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries must be directed to the Grants Officer.

B. GRANTS OFFICERS AUTHORITY

Grants Officers acting within their warranted capacity are the only individuals legally authorized to make commitments or bind the Government.

No other individuals are authorized to make commitments or otherwise bind the DoD.

C. ADDITIONAL FUNDING OPPORTUNITIES

New funding opportunities are posted throughout the year on the AFOSR, ARO, and ONR sites, we encourage you to monitor them for future opportunities and announcements.

AFOSR: http://www.wpafb.af.mil/afrl/afosr
ARO: https://www.arl.army.mil/business/broad-agency-announcements/
ONR: https://www.onr.navy.mil/en/work-with-us/funding-opportunities

Thank you for your interest in this announcement.