

ARMY GEOSPATIAL CENTER



BROAD AGENCY ANNOUNCEMENT (BAA)

SOLICITATION NUMBER W5J9CQ-21-R-0018

OVERVIEW INFORMATION

- **Federal Agency Name:** Army Geospatial Center (AGC)
- **Funding:** Research, Development, Test, & Evaluation (RDT&E)
- **Opportunity Title:** AGC Broad Agency Announcement
- **Announcement Type:** Initial Announcement
- **Funding Opportunity Number:** W5J9CQ-21-R-0018
- **Dates:**
 - Posting Date – 16 JULY 2021
 - Closing Date – 365 calendar days from the original posting date (white papers and proposals are due by 4:00pm Eastern Standard Time on the closing date)
- **Concise description of funding opportunity:** AGC is soliciting white papers and proposals in accordance with Federal Acquisition Regulation (FAR) 35.016, Department of Defense Federal Acquisition Regulation Supplement (DFARS) 206.102(d)(2), and DFARS 235.016, which provides for competitive selection of basic and applied research, advanced technology development, and advanced component development and prototypes (hereinafter referred to as research). This announcement is general in nature and addresses multiple topic areas of research for the Systems and Acquisition Support Directorate. Submissions in response to this announcement shall be for areas relating to the advancement of a wide variety of geospatial topics, which are listed herein. Accordingly, proposals selected for award are considered to be the result of full and open competition and fully compliant with Public Law 98-369, "The Competition in Contracting Act of 1984," DFARS 215.371-4(a)(4), and DFARS 235.006-71. This BAA is for procurement contracts (hereinafter referred to as contracts) only, and does not include grants, cooperative agreements, or other transactions.
- **Anticipated individual awards:** Multiple awards are anticipated; AGC reserves the right to select for award all, some, one, or none of the proposals received in response to this announcement.
- **Submission Process:** □ Two Step Process consisting of the following: Step 1- White Paper and Step 2 - Proposal (proposal submitted upon issuance of a formal Request for Proposal to Offeror). □
- **Types of instruments that may be awarded:** Contracts only
- **Amendments:** Any amendments to this BAA will be posted to the Contract Opportunities website at <https://beta.sam.gov/>
- **Agency Points of Contact:**

L. Maria Finan, Contracting Officer
Telephone: (703) 428-3611
Email: Maria.Finan@usace.army.mil

Lena Plummer-Milindez, Contract Specialist
Telephone: (703) 428-3603
Email: Lena.Plummer-Milindez@usace.army.mil

Daniel Visone, Technical Questions POC
Email: Daniel.L.Visone@usace.army.mil

PART I: FUNDING OPPORTUNITY DESCRIPTION:

The Army Geospatial Center (AGC), is soliciting proposals in accordance with FAR 35.016 relating to the advancement of the state-of-the-art and increasing knowledge or understanding in any of the geospatial research topic areas identified in this solicitation.

This announcement is open for 365 days from the original posting date. Any white papers or proposals received during that time shall only be considered for award of a contract, not any other transaction, grant, or cooperative agreement.

AGC Background

The U.S. AGC is a Major Subordinate Command (MSC) under the U.S. Army Corps of Engineers (USACE) located at the Humphreys Engineer Center in Alexandria, Virginia. The AGC focus is on the Army's Geospatial Enterprise function from Policy to Warfighting; supporting the Army's Mission Command Systems by facilitating collection, management, exploitation; and dissemination of relevant geospatial information and products to every level across the operational environment.

AGC Mission

Coordinate, integrate and synchronize geospatial information requirements and standards across the Army; develop and field geospatial-enterprise enabled systems and capabilities to the Army and the Department of Defense; and provide direct geospatial support and products to Warfighters.

Roles and Responsibilities

1. Execute policy and implement standards; monitor emerging technologies; validate Army Geospatial Enterprise (AGE) technical solutions.
2. Conduct Research Development Test & Evaluation (RDTE) aimed at increasing the agility of Mission Command through characterization and application of Geospatial Data & Information (GI&S).
3. Provide technical, acquisition integration and logistical support to the Army acquisition community and transitional technical capabilities under Joint Capability Technology Demonstration (JCTDs) and Quick Reaction Capabilities (QRCs), build and maintain a Ground – Warfighter Geospatial Data Model that provides a framework for common geospatial concepts and semantics required to share data and support common geospatial application services across the Army, other services, Department of Defense (DoD) organizations, and Coalition partners.
4. Serve as the Army's Geospatial Center of Excellence, providing direct support to Geospatial Engineers (Geospatial Planning Cell down to Brigade Combat Team), as well as all other operating and generating forces that consume or produce geospatial information and services.

Research Topic Areas for AGC 2021 BAA – Systems and Acquisition Support Directorate

A.1. Enterprise Support Branch

Introduction:

The Enterprise Support Branch synchronizes AGC policies, priorities, programs, production requirements, strategies and technologies across the Army Acquisition Community (Program Executive Officers/Program Managers/Product Managers) to ensure the efficient integration of Geographic Information System (GI&S) technologies in systems acquisition. The branch also advises program management of Army acquisition programs, currently fielded systems and technology integration/demonstration programs on the integration of GI&S capabilities in a manner consistent with Headquarters (HQDA) approved policy, regulation and guidance.

Research Areas:

Army Geospatial Enterprise Operations (AGC-01)

The object of this topic is to conduct research on the technology, architecture and processes to support enterprise geospatial operations within the Army, from the individual platform to the theater level, and including support from outside theater. It also considers the efficient integration of GI&S technologies into weapons systems across and within computing environments.

Geospatial Standards (AGC-02)

The object of this topic is to conduct research on the appropriate standards to support geospatial information collaboration, content discovery, content delivery and visualization among Army mission command networks and systems. This research considers creators, consumers and managers of GI&S; and considers the needs of systems ranging from high-powered-to workstations and servers-to handhelds and embedded applications-to disconnected and disadvantaged users. It takes into account Army data communications limitations, especially at the tactical level scanning and cartographic support equipment, techniques and management. It includes the metadata standards required to support data sharing and discovery services.

Geospatial Applications and Services (AGC-03)

The object of this research topic is to identify and define applications and services needed to support the AGE. These would include geospatially enabled applications to be implemented on multiple Army systems/platforms which improve Army capabilities, enhance geospatial synchronization, enhance the capabilities of systems using geospatial data, decrease bandwidth requirements, or otherwise improve the functioning of the AGE.

Data Model Development (AGC-04)

The object of this research topic is to support development of Army-wide geospatial data

model(s) that supports enterprise-wide geospatial services, and analyze the relation of that model to other Army and National System for Geospatial-Intelligence (NSG) models and data standards. It also includes research into the implementation of a geospatial data model in Army systems and programs.

Test and Certification (AGC-05)

The object of this research topic is to identify the experimentation, test, validation and certification strategies to directly support the Army Acquisition Community in ensuring the efficient integration of GI&S technologies and standards into Army acquisitions systems at the appropriate milestones defined by DoD Directive 5000 series. The research considers testing geospatial applications in both distributed and standalone environments.

Army Geospatial Enterprise Migration (AGC-06)

The object of this research topic is to support the evolution of the Army Geospatial Enterprise (AGE) to address emerging technologies, standards and changes to Army, Joint, and Coalition Operations. Prototypes and experiments should address enterprise migration strategies that include the requirements of a Standard and Sharable Geospatial Foundation (SSGF) and Mission Command Essential Capabilities. The research identifies migration issues for existing Army systems as well as novel implementation of technology to demonstrate AGE capabilities. Research areas include Open Geospatial Consortium Standards, Open Source Geospatial Software, 2-D and 3-D visualization software, globes, geospatial portfolio management and integration of multiple software packages. The research includes prototypes supporting geospatial applications in both distributed and standalone environments.

Geospatial Modeling & Simulation (AGC-07)

The object of this topic is to conduct research and engineering development into the production of digital terrain databases used in Modeling & Simulation (M&S). The research will consider processes for verifying and validating digital terrain databases and the processes used to develop these databases. The processes will undergo verification and validation on sample digital terrain databases.

Geospatial Experimentation (AGC-08)

The object of this research topic is to identify and define policies, procedures, instrumentation, and technologies required to conduct geospatial experimentation, to verify implementation of geospatial standards and profiles, and to measure performance parameters of mission command systems that utilize Geospatial Information.

Cloud Computing (AGC-09)

The object of this research topic is to explore various models of cloud computing in a geospatial enterprise and carry out experimentation pilot projects as necessary to validate the models. Research areas would include the optimal architecture to support cloud computing in a

geospatial enterprise, the benefits and challenges of cloud computing at various nodes of the enterprise, how various geospatial data types would be stored, indexed, and served in the cloud, and challenges for low-bandwidth and periodically disconnected users, geospatial visualization, geospatial processing, content management, providing analytics as a service, and geospatial data as a service via cloud computing. Additional areas could include security issues in the cloud environment, crowd-sourced data in the cloud, data validation, data synchronization, data backup, maintaining the currency of and adding to geospatial data in a deployed cloud, and the use of existing DoD, Army, Commercial and Federal Cloud Computing services versus standing up a geospatial cloud capability.

Disconnected Intermittent Low-Bandwidth (DIL) (AGC -10)

The object of this research topic is to explore various methods/models of providing geospatial data and services to support the AGE under DIL network conditions. This work can take the form of pilot projects, demonstrations, and integration of new Software (SW) technology into existing Army Hardware (HW), development of new HW SW to support this computing environment. Subject areas for this research would be security concerns, providing data back to the AGE, development of crowd sourcing methodologies, data synchronization when devices are connected, fast effective ways to load and manage data in android environments as well as loading multiple devices at one time. Beneficial outcomes of this research would reduce load times, increase data management efficiency, and enable delivery of data back to higher Army echelons.

Geospatial Architecture (AGC-11)

The object of this topic is to conduct research topic and engineering to develop architectures supporting the exchange of Geospatial Information using file-based exchange and web services across all echelons from the National to Tactical level. These architectures must support the exchange, distribution, discovery, and processing of faster, feature, and elevation data for all computing environments in both a connected and disconnected environment. Additional areas of research could include cross domain architectures, connected and disconnected access to data, software application architectures, and data architectures. Research must consider multiple platforms, echelons, security issues, and both raster and vector data.

Geospatial Data Center Architectures (AGC-12)

The object of this topic is to conduct research and engineering to design architectures supporting geospatial big data repositories (SIPR, NIPR and JWICS) and experiment with workflows and procedures for efficient distribution of geospatial data from a data center through all echelons to a soldier with a handheld. The architectures should include approaches and considerations for updating geospatial data in a data center, synchronization of data centers with tactical units and NGA (including NSG partners); and exposing Geospatial Authoritative Data Sources (ADS) and non- authoritative data sources. The architecture research should include support for 2D, 3D and 4D capabilities. Research geospatial analytic services that could be rapidly delivered from a data center to all Computing Environments

(CEs). Identify emerging Big Data technologies that could be utilized in lieu of enterprise level service servers to support storage of massive data sets.

Geospatial Content Management Methods (AGC-13)

The object of this topic is to conduct research on geospatial content management tools, techniques and procedures for Army users, identify techniques and technologies for cross domain access to geospatial data – utilizing a build once paradigm and/or propose new and novel geospatial data Quality Assurance/Quality Control (QA/QC) and validation tools/techniques and procedures for Big Data.

Research novel methods for copying, moving, distributing, and managing large geospatial data sets, rating data for appropriateness of use and completeness, and providing commanders tools to rapidly build mission ready data sets for distribution. The scope of the research includes support to the full spectrum of operations, operating and generating force as well as humanitarian assistance.

A.2. Imagery Systems Branch

Introduction:

The Imagery Systems Branch (ISB) conducts advanced and engineering development in the areas of geospatial intelligence including tasking, processing, exploitation and dissemination and provides support for fielding, operations and maintenance of space-related, ground-based Army Tactical Exploitation of National Capabilities (TENCAP) systems. The ISB serves as the AGC interface to the Army TENCAP Office. The ISB provides engineering and program management support, consultation to Product Director (PD) Army TENCAP and other Army organizations, to include identification of emerging technologies and new concepts that have potential application to Army/TENCAP systems implementations and interfaces with elements of the National Intelligence Community dealing with geospatial intelligence systems and architectures.

Research Areas:

Advanced and Engineering Development (AGC-14)

The object of this topic is to conduct research on geospatial intelligence systems and architectures along with development of support systems for their fielding, operations, and maintenance.

Emerging Concepts and New Technologies (AGC-15)

The object of this topic is to conduct research, development and systems engineering of technologies that facilitate primary data acquisition, exploitation & dissemination of Geospatial Intelligence (GEOINT) by tactical Army warfighters in potentially austere and bandwidth limited environments. Topics may include, but are not limited to, Non-Traditional

Intelligence, Surveillance, Reconnaissance (ISR) Pseudo Satellite (Air/Space) applications (collection, computing & networking), ISR automation (including tasking and exploitation), machine learning applications for multi-INT exploitation systems (including Big Data), and Modular Architectures (open-IT, Microservices).

A.3. Systems Applications and Integration Branch

Introduction:

The Systems Applications and Integration Branch (SAIB) conducts research and development in the areas of Artificial intelligence techniques (machine learning, machine reasoning, pattern recognition, natural language processing), big data, Human Geography, Decision Support Systems (DSS), complex systems dynamics, environmental security, digital image acquisition, and intelligence data exploitation architectures in support of the Army to include the Army Futures Command/Cross Functional Support Teams, DoD, Joint Information Environment, Electronic Warfare (EW), Space and mission command networks and systems, i.e., Communications, Computers, Command and Control Intelligence surveillance and reconnaissance (C4ISR) programs.

SAIB is focused on future innovation and concepts for capability development needs and opportunities. We develop, refine, engineer, and produce developed solutions that are relevant to the Army and Joint Common Operating Environment. SAIB continues to develop and demonstrate innovation, acquisition support, prototype technology development, and training support.

SAIB integrates and demonstrates technologies required to better manage, develop, demonstrate and evaluate multi-domain and joint emerging and operational capabilities that address DoD priorities and promote the use and benefits of rapid prototyping throughout the DoD. SAIB conducts proof-of-principle prototyping required to validate the technical feasibility of an envisioned capability and explore its operational value with high levels of confidence in delivering on the technical and operational promise for the warfighter.

Research Areas:

Artificial intelligence techniques (AGC-16)

SAIB conducts research and development in Artificial Intelligence (AI) techniques (machine learning, machine reasoning, pattern recognition, natural language processing) and systems. These AI systems are widely accepted as a technology offering an alternative way to tackle complex and dynamic problems in urban studies; and is necessary to increase the understanding of how innovative AI approaches will enhance warfighter awareness in urban and land dynamics modeling processes for applied research and prototype development.

(AGC-16.1) The objective of this topic will be to support the SAIB in the integration of AI derived applications and techniques in urban land dynamics domain as well as the emerging challenges they face to develop innovative Artificial intelligence techniques (machine learning,

machine reasoning, pattern recognition, natural language processing) in order to examine source data and extract from the ontological models that best represent the decision domain and support requirements.

(AGC- 16.2) The objective of this topic will be to enhanced capabilities to collect large volumes of geographic data (big data, data lakes, data fabric), development of new methods and tools that can intelligently and automatically transform geographic data representation, query processing, spatial analysis, and data visualization leveraging Artificial Intelligence techniques (machine learning, machine reasoning, pattern recognition, natural language processing).

(AGC- 16.3) The objective of this topic will be to leverage Artificial Intelligence (AI) techniques (machine learning, machine reasoning, pattern recognition, natural language processing) required to enhance technical capabilities to process, extract, exploit, and visualize the implied and tacit knowledge stored within a large data repository of structured and unstructured content. This topic seeks to improve the warfighters ability to “VISUALIZE and DESCRIBE” the Operational Environment with critical understanding about emerging trends and relationships within the available data. The particular elements of this research should consider intelligence frameworks required to extract, analyze, and visualize entities and their relationships from the unstructured data, then fuse and visually display structured data (geospatial, relational, temporal, and traditional database attributes) with unstructured data (free text narratives) in a User Defined Operational Picture (UDOP). This topic will include research and development for technologies to collect, collate, process, analyze and disseminate natural resources phenomenon as early warning and detection further defined as Natural Resources Intelligence (NARINT) sometimes titled “Environmental Security”. This topic requires the examination of all source data for Water Security and other resiliency focused domains that best represent the anticipatory analytics required for Water, Food, and Energy vulnerability indicators of future conflict.

(AGC- 16.4) The objective of this topic will be to develop and integrate AI capabilities focused on leveraging open source intelligence for early indicators and warnings to highlight and prioritize geographical areas of National Security interest deemed most at risk or in crisis and in need of security cooperation, foreign internal defense, and/or crisis repose. SAIB seeks to integrate AI applications to support both improved situational understanding and improved U.S. DoD resources relevant to Foreign Military Sales (FMS), force allocation decisions for the Global Force Management Allocation Plan (GFMAP) and Theater Special Operations Command (TSOC) requests for forces.

(AGC- 16.5) The focus of this topic will be to conduct research and development of future 3D/4D Data visualizations, future Virtual Reality (VR) Applications for Terrain Analysis and Mission Command operational design and planning. This research topic will also include the innovation of techniques to visualize in 3D social media analytics for improving warfighters understanding of the cognitive aspects of the human security environment.

(AGC- 16.6) The object of this topic will be to conduct research and development of future Army Cloud Computing Enterprise Transformation required for geospatial web services and

generating composite web services out of atomic services in order to provide Joint and interagency users with a higher level of functionality.

Joint Operational Technologies & Integration (AGC-17)

The objective of this topic is to conduct research into developing and maintaining methodologies, IT infrastructures, analytical techniques, integrated into C4ISR technologies for use in: Joint All-Domain Operations (JADO), Counter Intelligence and Human Intelligence (CI/HUMINT), Geographic Intelligence (GEOINT); sciences and technologies related to Stability Operations, Human Geography; Critical Infrastructure Protection (CIP), Humanitarian aid and SOF missions. This research topic is also used to operationalize and integrate technologies for the collection, collation, processing, analysis and dissemination of natural resources phenomenon as early warning and detection further defined as Natural Resources Intelligence (NARINT).

Civil-Military Informatics (AGC-18)

The objective of this topic is to conduct RDT&E to support advanced DoD Civil-Military Business Intelligence and Analytics to provide dynamic capabilities, empowering decision makers to support superior planning, analysis, and decision support capabilities today and in the future. Utilizing big data principles to connect diverse data sources from government, commercial and open sources, CIV-MIL Business Intelligence analytics capabilities allow for data-based analysis of DIME/PMESII-PT framing, regional stability operations, Partner Nation capabilities, Great Power Competition, Humanitarian Assistance and Disaster Response planning.

This research will encompass the innovations of advanced Knowledge Management Systems (KMS), big data with machine learning capabilities designed to optimize computing systems for open source data-intensive environments improving decision making capabilities and how Civil Military Operations (CMO) provide capabilities to 'see', 'hear', 'read', 'understand', 'reason', 'interpret', 'learn' and 'recommend' from existing data and reports. This topic will include the networking science and graphing of high volumes of unstructured data, visualization, dissemination and decision support capabilities for understanding the human aspects of the Civil- Military Operations (CMO). This also includes the geospatial analysis, and modeling for CMO resource allocation; social media analysis in support of measuring the operational impact of CMO; dissemination of geospatial and human geography CMO data products to interagency, intergovernmental organizations (IGOs), and non-governmental organizations (NGOs); development of a CMO ontology for knowledge management and inference; and subject matter expert support for disaster mitigation, preparedness, relief and recovery operations capabilities.

Joint Information Environment (JIE) (AGC-19)

The objective of this topic is to conduct research and development required to prototype, test, evaluate, experiment with the collection, processing, exploitation and dissemination (CPED) of data required for the Joint Information Environment. This topic will also include the research, development, testing, and new modalities for training necessary for implementation, transition,

and sustainment of prototype tools, new techniques, tactics, and procedures required to conduct strategic and operational level offensive and defensive information, public affairs, psychological, and civil affairs operations. This topic will include physical, informational, and cognitive aspects of the Joint Information Environment.

Note for definition: (The physical dimension includes the connective infrastructure that supports the transmission, reception, and storage of information. The informational dimension contains the content (or data) itself. It refers to the content and flow of information, such as text or images, or data that staffs can collect, process, store, disseminate, and display. The informational dimension provides the necessary link between the physical and cognitive dimensions. The cognitive dimension refers to the minds of those who are affected by and act upon information. This dimension focuses on the societal, cultural, religious, and historical contexts that influence the perceptions of those producing the information and of the targets and audiences receiving the information. In this dimension, decision makers and target audiences are most prone to influence and perception management. From a military standpoint, information enables decision making, leadership, and combat power; it is also key to seizing, gaining, and retaining the initiative, and to consolidating gains in an OE. Army commanders conduct information operations to affect the information environment. (See FM 3-13 for doctrine in the information environment and the various information-related capabilities available to commanders).

Army and Joint Simulations (AGC-20)

The objective of this topic is to integrate and demonstrate technologies to improve the representation of realistic synthetic environments in Army and Joint simulations to include related military installations, monuments, and memorials.

Database Development (AGC-21)

The object of this topic is to provide technical expertise and research to USACE HQ, districts, divisions, other Army and DoD customers in the definition and evolving of geospatial data standards, plans, policies and uses. In this research area, AGC identifies, develops, analyzes, reviews and evaluates applications and technologies that manipulate and process varying levels of topographic and hydrographic geospatial information. AGC seeks new or existing data base manipulation techniques, application methods and procedures to manage information on, but not limited to, USACE projects, dams, river charts, harbors, and other information of interest to the USACE Districts, Divisions, Military Engineers and National emergency with defense and civil objectives. Investigations include, but are not limited to, the use of information from new terrain sensors such as Interferometric Synthetic Aperture Radar (IFSAR) and LIDAR to populate databases. Activities also include data dissemination approaches and system development using web-based GIS and map applications.

Joint Operational Technology Implementation (AGC-22)

Development of Strategic Strategies for the Operational and Strategic Adoption and implementation of innovative technical solutions (GOTS/COTS) for the Department of Defense. The objective of this topic is to conduct research and development required to prototype, test,

evaluate, experiment with the operational and strategic adoption and implementation of innovative geospatially related COTS and or GOTS technical solutions for decision making. This topic will also include the research, development, testing, and new modalities for doctrine, organization, training, and policy inclusions necessary for implementation, transition, and sustainment of prototype tools, new techniques, tactics, and procedures required to conduct strategic and operational level offensive and defensive strategies. This topic will include physical, informational, and cognitive aspects of the Technology Adoption Model (TAM) to establish the relationships between the level of technology acceptance and users factors which include perceived usefulness, perceived ease of use, attitude toward using, and actual usage behavior at the highest level of operational or strategic use.

DoD Communities of Practice (CoP) and Communities of Interest (CoI) are an aggregate of individuals, organizations, and systems that collect, process, analyze, produce, disseminate, or act on information.

These CoPs and CoIs are a heterogeneous global environment where humans and automated systems observe, orient, decide, and act on data, information, and knowledge. With the power and function of information as a conduit for influence on decision-making and command and control, the adoption and full implementation of technical solutions is a key component of the commander's operational environment. Characterized by ubiquitous on-demand media and interpersonal hyper-connectivity, today's geospatially relevant technical solutions enables collaboration and information sharing on an unprecedented scale. Within the current and future data rich environments, the United States can expect challenges across three interrelated dimensions: the physical, composed of command and control systems, and the supporting infrastructure that enables individuals and organizations to create information-related effects; the informational, composed of the content itself, including the manner by which it is collected, processed, analyzed, stored, disseminated, and protected; and the cognitive, composed of the attitudes, beliefs, and perceptions of those who transmit, receive, respond to, or act upon information. Effects in the physical and informational dimensions of the data rich environments ultimately register an impact in the human cognitive dimension, making it the central object of DoD's decision-making cycles. The results of this research objective will be to provide multiple inputs from academic, industry, and USG provisioning a multilayer strategy and planning support necessary for the operational and strategic adoption critical to the implementation of innovative technical solutions (GOTS/COTS) for Commands with complex operational imperatives requiring multi-agency, multi-disciplinary solutions to include core Services/Agency entities across the USG. Further results from this research objective will be geared toward accelerating the OODA-loop and deploy new capabilities within adversaries innovation-information-cycle, increased mission effectiveness, reduced blue-on-blue, shared situational awareness, and provisioning an efficiency in DoD responsive capability delivery & reduced IT costs.

Great Power Competition (AGC-23) (formerly known as Grey Zone Challenge)

The objective of this topic is to conduct research and development required to study, prototype, test, evaluate, experiment with the operational and strategic geospatially related solutions for identifying, mapping, and making decisions within a Great Power Competition or

Gray Zone. This topic will also include the research, development, testing, and new modalities for (DOTMLPF-P) Doctrine development, Organization changes, Training required, Material (technical solutions) requirements, Leadership impacts, Personnel requirements for Professional Military Education (PME), Facilities, and Policy inclusions necessary for implementation, transition, and sustainment of prototype tools, new techniques, tactics, and procedures required to identify, map, and conduct strategic and operational level offensive and defensive strategies within Gray Zones. This topic will include physical, informational, and cognitive aspects required to establish the technical approach and implementation for DoD and National Military Strategy objectives as inputs to the military component of interagency responses to Great Power Competition and specific gray zone conflicts with Russia and China.

Defining the Great Power Competition

Great Power Competition, existing short of a formal state of war, present novel complications for U.S. policy and interests in the 21st Century. We have well-developed vocabularies, doctrines, and mental models to describe war and peace, but the numerous gray zone challenges where Great Power Competition exist defy easy categorization. For purposes of this paper, Great Power Competition challenges are defined as competitive interactions among and within state and non-state actors that fall between the traditional war and peace duality. They are characterized by ambiguity about the nature of conflict, opacity of the parties involved or uncertainty about the relevant policy and legal frameworks.

Great Power Competition challenges can be understood as a pooling of diverse conflicts exhibiting common characteristics. Notably, combining these challenges does not imply a single solution, since each situation contains unique actors and aspects. It is also significant that there is not just one technical solution, one data source, nor one DoD warfighter information capable or available to the commanders and staffs to VISUALIZE and DESCRIBE the Operational Environment or operational framework relevant to the Great Power Competition/Gray Zone space. Overall, Great Power Competition challenges rise above normal information systems capabilities to visualize and describe everyday peacetime geo-political competition, assess multiple perspective, and map the ambiguous nature of events, objectives, tertiary effects.

Recommended Reading for this topic includes:

1. First is to study the Assessing Revolution and Insurgent Strategies Project at this link. The 46 case studies as well as the human factors and legal research provide a foundation for study of the phenomena that take place in the gray zone. Below are the selected or representative cases of the 5 types of revolutions categorized from 1962-2009.
2. George Kennan and his 1948 concept of political warfare.
3. Sam Sarkesian (Unconventional Conflicts in a New Security Era: Lessons from Malaya and Vietnam) on unconventional conflicts:
Asymmetric conflicts: For the US these conflicts will be limited and not considered a threat to its survival or a matter of vital national interests; however, for the indigenous adversaries they are a matter of survival. Conflicts with Political-Social

Milieu Center of Gravity: The center of gravity will not be the armed forces of adversaries as Clausewitz would argue but more in the political and social realms as Sun Tzu espouses.

SOF Enterprise: The Hyper-Enabled Operator (AGC 24)

The objective of this topic is to conduct research and development required to study, prototype, test, evaluate, and experiment in the area of both virtual and cognitive domains by leveraging technologies to asymptotically drive the observe-orient-decide portion of the OODA Loop to zero. This research will focus on how the fusion of distributed AI (GeoAI, NLP Recurrent Neural Networks RNN) with autonomous systems will transform warfare for the SOF missions in order to embrace the benefits of these emergent technologies focused on hyper-enabling the SOF operator.

Information processing technologies are proliferating at the lowest levels. Today, even mundane home appliances like TVs and refrigerators routinely carry an array of sensors and internet-connected embedded microprocessors. Every traffic signal light, cell phone and aircraft is a potential sensor platform and interface to the populous of an area—we live in a sea of data. Smart autonomous systems, mixed reality, Artificial Intelligence (AI) and Machine Learning (ML) algorithms, increased computational capabilities, and other emergent technologies are changing the way we think and operate—especially as the digital universe grows exponentially with increased access to data that will fuel these algorithms. This research will have a concentration on social network (RNN) visualizations and aggregate emotional and sentiment analyses that enhance contextual understanding of the human terrain, also known as Human Geography, to include the testing and experimentation of designed decision science variables discerning whether they actually have a positive impact towards accelerating a decision. This research will focus on Warfighters adoption of data as an asset with data-centric values where data can be in many structured, unstructured, and semi-structured forms including images, documents, audio and video files, marked-up languages, and tabular data frames. The resulting benefits of this research will demonstrate how data assets bring value to the decision maker and must be managed, protected, and transformed into actionable information.

Tomorrow's multi-domain competition will be won by those who are best able to extract timely, actionable information from the sea of data and provide it to an empowered operator postured to seize opportunities. Making sense of data at machine speed will be essential to allowing SOF professionals to retain their historic overmatch. This research and development will focus on creating advantages that will come from our ability to find new access to data, more efficient means of analysis, and faster access to information at the decisive point. In order to embrace this future phenomenon, this research and development effort is focused on pursuing the explicit means necessary for the Hyper-Enabled Operator (HEO) concept required to provide U.S. SOF with cognitive overmatch against future adversaries. AGC SAIB seeks to support the USSOCOM Future Operating Concept defined as the hyper-enabled team as a combination of SOF professionals and partners that are empowered, equipped, and networked, to operate in the multi-domain environment of the physical, cognitive, and virtual domains.

Recommended reading and reference for this topic is the following:

<https://smallwarsjournal.com/jrnl/art/hyper-enabled-operator>
<https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>
https://fas.org/irp/doddir/army/adrp6_0.pdf

Quantum Innovations: Geospatial Processing, Analysis, Visualizing, Disseminating and Sensing with Quantum Systems/Computers (AGC 25)

Quantum computing is a fundamentally different way of performing computation than classical computing. Many problems that are considered hard for classical computers may have efficient solutions using quantum computers. Recently, technology companies including IBM, Microsoft, and Google have invested in developing both quantum computing hardware and software to explore the potential of quantum computing. Because of the radical shift in computing paradigms that quantum represents, we see an opportunity to study the unique needs the us DoD have when anticipating the use of quantum computing for Geospatial processing, visualization, and disseminating. Under this topic, the research will include but not be limited to the following:

- (1) Understanding how quantum systems can be used to store and process geospatial information
- (2) Understanding and implementing quantum algorithms to solve specific geospatial problems
- (3) Methods of analysis/visualizing and disseminating quantum derived geospatial information.
- (4) Understanding and development of Quantum Sensors leveraging tiniest changes in temperature, magnetism, and noise, to find hidden geospatial phenomenon like underground oil pockets, underground tunnels, improved earthquake monitoring, etc.

PART II: AWARD INFORMATION:

This BAA is for contracts. Accordingly, the Government may award any appropriate contract type under the FAR. This BAA supersedes all previous editions and shall remain in effect until superseded.

Multiple awards are anticipated as a result of this BAA. The amount of resources made available under this BAA will depend on the quality of the submissions received and the availability of RDT&E funds. The Government reserves the right to:

1. Select for negotiation all, some, one, or none of the proposals received in response to this BAA.
2. Award contracts with or without discussions with Offerors.
3. Remove Offerors from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time or the Offeror fails to timely provide requested additional information.
4. Have sole discretion to negotiate all contract clauses with selectees.
5. Accept proposals in their entirety or to select only portions of proposals for award. In the event the Government desires to award only portions of a proposal, negotiations may be opened with the Offeror.
6. Fund proposals in phases with options for continued work at the end of one or more of the phases.

Selection Notices/ Award Process for Contracts.

Offers may be submitted at any time during the open BAA solicitation period, as specified in Part I. The submission of a white paper is required before submitting a proposal to prevent undue effort on the formation and evaluation of a proposal not of interest to the Government and improbable for award. Once submissions (white papers) are received, responses to Offerors will be provided via email notification from the Contracting Officer within 75 working days.

This is an open BAA and utilizes a two-step process:

Step 1: White papers may be submitted during the times specified in Part I. All white papers will be evaluated in accordance with the evaluation criteria identified in Section V. White paper responses will contain the Government evaluation board's opinion of whether the idea expressed in the white paper is likely to generate a successful proposal. All information necessary to submit a white paper is in this BAA; no additional information is available.

Step 2: Proposals may be requested by a formal Request for Proposal (RFP) when the Governments' scientific or peer review committee's opinion of the idea expressed in the white paper is likely to generate a successful outcome. All proposals will be evaluated in accordance with the evaluation criteria identified in Section V. Proposal evaluations will be conducted without regard to any comments resulting from the review of a white paper. Proposal responses will contain the Government's intent to either pursue or not pursue an award based on the proposal. All information necessary to submit a proposal is in this BAA; no additional information is available.

PART III: ELIGIBLE APPLICANTS:

The Offeror must be considered responsible in accordance with FAR 9.104. By submission of an offer or execution of a contract in response to this solicitation, the Offeror certifies they are not debarred, suspended, declared ineligible for award of public contracts, or proposed for debarment pursuant to FAR 9.406-2. If the Offeror cannot certify, or if the status of the Offeror changes prior to award, the Offeror must provide detailed information as to its current status.

Proposals submitted under this BAA should clearly identify within the proposal any research that is expected to be fundamental in nature as defined in National Security Defense Directive 189. Fundamental research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.

The AGC highly encourages small business concerns, women owned small businesses, small disadvantaged business concerns, small businesses located in HUBZones, businesses participating in the Small Business Administration 8(a) program, service disabled veteran-owned small businesses, and veterans to submit research proposals for consideration. There will be no set-aside used for this BAA and all contracts awarded as a result of this BAA are considered full and open competition.

Awards of contracts to colleges and universities are permissible under this BAA, in accordance with 10 USC 2361, and are highly encouraged to submit proposals for consideration.

The AGC highly encourages proposals from Historically Black Colleges and Universities or Minority Institutions (HBCUs/MIs) for students to provide research support to any of the research and development areas listed in this BAA. HBCU/MIs interested in submitting a proposal must address the specific areas of research under which they are submitting. They must also clearly state within their proposal their capability to perform the contract and include a positive statement of their eligibility as an HBCU or MI. These contracts will be written in accordance with the Contract Student Regulation as regards pay, GPA requirements, place of performance and every other requirement or statement within the regulation.

Department of Defense funds may NOT be provided to any institution of higher education that either has a policy of denying or that effectively prevents the Secretary of Defense from obtaining, for military recruiting purposes, entry to campuses or access to students on campuses or access to directory information pertaining to students.

Any white papers or proposals from United States Government facilities and organizations, or Federally Funded Research and Development Centers (FFRDCs) will not be considered under this announcement.

All Offerors and proposed subcontractors must affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DoD Component through an active contract or subcontract. All affirmations must state the office(s) that the Offeror supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest must be disclosed. The disclosure shall include a description of the action the Offeror has taken or proposes to take to avoid, neutralize, or mitigate such conflict. Without prior approval, a contractor cannot simultaneously be a SETA and related research and development performer. Proposals that fail to fully disclose potential conflicts of interests or do not have acceptable plans to mitigate identified conflicts will be rejected without technical evaluation and withdrawn from further consideration for award.

All Offerors - If a prospective Offeror believes that any conflict of interest exists or may exist (whether organizational or otherwise), the Offeror should promptly raise the issue with AGC by sending his/her contact information and a summary of the potential conflict by e-mail to the Agency Contact identified herein, before time and effort are expended in preparing

a proposal and mitigation plan. If, in the sole opinion of the Government after full consideration of the circumstances, any conflict situation cannot be effectively avoided or mitigated, the proposal may be rejected without technical evaluation and withdrawn from further consideration for award under this BAA.

Foreign or foreign-owned Offerors are advised that their participation is subject to foreign disclosure review procedures. If the Offeror anticipates the efforts of foreign nationals on any proposal submitted hereunder; the foreign national's name, nationality and extent of involvement in the proposed research must be provided. Foreign nationals cannot work under a contract or any instrument unless all AGC- required security clearances and approvals have been obtained. There are no exceptions to these requirements.

PART IV: WHITE PAPER AND PROPOSAL SUBMISSION INFORMATION:

Introduction:

In preparing white papers and proposals, it is important that Offerors keep in mind the characteristics of a suitable proposal acceptable for formal evaluation, including the focus on scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding. Offerors should include all the information specified in this announcement, to avoid delays in evaluation. White papers will be responded to within 75 working days of receipt, either with a formal Request for Proposal (RFP) or advisement of nonacceptance of white paper. All Offerors' submissions shall be sent to the AGC BAA Proposals Mailbox at AGCBAAProposals@usace.army.mil. Offerors shall adhere to the following instructions pertaining to the type of document they are submitting:

A. White Paper Submission Instructions

****DO NOT submit White Papers to technical personnel****

White papers shall not contain classified data. Offerors are expected to appropriately mark each page of their submission that contains proprietary information; do not provide submissions marked "classified," "confidential," "secret," etc.

1. White paper submissions shall be submitted to the AGC BAA Proposals mailbox at AGCBAAProposals@usace.army.mil.
2. The following information must be included in the body of the e-mail when submitting the white paper:
 - a. Topic Name and Topic Number (Do not use any acronyms for topic name.)
 - b. Vendor Name and Address
 - c. Proposal Title
 - d. Total Dollar Amount
3. The Offeror's white paper shall not exceed 5 (five) pages and shall address the topic

area (i.e. AGC-21) of which they are submitting their white paper for. All pages shall be formatted for printing on 8-1/2- by 11-inch paper with a font size not smaller than 12 point and a minimum of one-inch margins all around. Smaller, but easily readable, font sizes may be used for figures, tables, and charts. Pages within each document (cover sheet and each attachment) shall be numbered consecutively. Document files must be in .rtf, .txt, Portable Document Format (.pdf, ISO 32000-1), OpenDocument (.odx, ISO/IEC 26300:2006), .doc, .docx, xls, or .xlsx formats. Submissions must be written in English. White paper contents should consist of:

- a. A title descriptive of research to be performed.
- b. The applicable topic area and topic number.
- c. The name and phone number of the principal investigator or senior researcher tentatively supervising the project.
- d. The estimated duration and a cost/price rough order of magnitude (ROM).
- e. One or more paragraphs describing the objective(s) or goals of the proposed research to include a statement of the working hypothesis to be proved or disproved, if appropriate.
- f. One or more paragraphs describing the technical approach to be taken during the research. If experimental, it should include a description of the scope of the testing program. If analytical, it should include key assumptions to be made, the scientific basis for the analysis, and the numerical procedures to be used.
- g. One or more paragraphs describing the potential military and/or civil payoffs that might ultimately derive from the proposed research to the Corps of Engineers.
- h. A one-page curriculum vitae of the principal investigator.

B. Proposal Submission Instructions

****DO NOT submit Proposals to technical personnel****

Proposals shall not contain classified data. Offerors are expected to appropriately mark each page of their submission that contains proprietary information; do not provide submissions marked “classified,” “confidential,” “secret,” etc.

1. When invited to do so by the Government, an Offeror may develop and submit a full proposal. ***Proposals are to be submitted only upon the issuance of a formal Request for Proposal by the Contracting Officer to the Offeror.*** Therefore, the proposal is the only vehicle available to the Offeror for receiving consideration for award. The

proposal must stand on its own merit; only information provided in the proposal can be used in the evaluation process leading to an award. The proposal should be prepared simply and economically; providing straightforward, concise delineation of capabilities necessary to perform the proposed work. The technical proposal must be accompanied by a fully supported cost/price proposal, as cost and technical considerations are reviewed simultaneously.

2. Proposal submissions shall be submitted to the AGC BAA Proposals mailbox at AGCBAAProposals@usace.army.mil.
3. The following information must be included in the body of the e-mail when submitting the proposal:
 - a. Topic Name and Number (Do not use acronyms in the topic name.)
 - a. Vendor Name and Address
 - b. Proposal Title
 - c. Total Dollar Amount
4. Offerors are requested to provide their e-mail address with submission of proposal and the name, address, and phone number of their cognizant Defense Contract Audit Agency (DCAA) office.
5. Should an award be funded with military funds, contractor and subcontractor manpower reporting is required through The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs), at <https://sam.gov>. The below information is provided for your assistance in complying. “The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor shall report ALL contractor and subcontractor manpower required for performance of the awarded contract. The contractor is required to completely fill in all the following information using the web address: <https://sam.gov>: (1) Contracting Office, Contracting Officer, Contracting Officer’s Technical Representative; (2) Contract number, including task and delivery order number; (3) Beginning and ending dates covered by reporting period; (4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data; (5) Estimated direct labor hours (including subcontractors); (6) Estimated direct labor dollars paid this reporting period (including sub-contractors); (7) Total invoiced amounts (including sub-contractors); (8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different); (9) Estimated data collection cost; (10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information); (11) Locations where contractor and subcontractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website); (12) Presence of deployment or contingency contract language: and (13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country). As part of its

submission, the contractor will also provide the estimated total cost (if any) incurred to comply with this reporting requirement. Reporting period will be the period of performance not to exceed

12 months ending 30 September of each government fiscal year and must be reported by 31 October of each calendar year. Contractors may use a direct XML data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the web site. The specific formats for the XML direct transfer may be downloaded from the web site. The FAQs on the website are very helpful.

6. NOTE: All Offerors shall be registered in the System for Award Management (SAM) Database **prior to submitting a proposal**, which includes completion of the Representations and Certifications. Registration can be completed at <https://www.sam.gov>. When submitting a proposal, be sure to include the Commercial and Government Entity (CAGE Code), Duns and Bradstreet Data Universal Numbering System (DUNS Number) and the Tax Identification Number (TIN) obtained from SAM registration.
7. Proposals containing data that is not to be disclosed to the public for any purpose or used by the Government except for evaluation purposes shall include the following statement on their cover page:

“The proposal includes data that shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed - in whole or in part - for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this Offeror as a result of, or in connection with, the submission of this data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract, and as required in accordance with the Freedom of Information Act 5 USC 552 et seq. This restriction does not limit the Government's right to use information contained in this data if it is obtained from another source without restriction. The data subject to this restriction are contained in sheets.”
8. The Offeror shall also mark each sheet of data it wishes to restrict with the following legend:

“Use or disclosure of data contained on this sheet is subject to the restriction on the title page of this proposal.”
9. The Offeror's proposal shall contain at a minimum, a cover page, table of contents, list of illustrations/tables, an executive summary, and no more than 30 pages. All pages shall be formatted for printing on 8-1/2- by 11-inch paper with a font size not smaller than 12 point and a minimum of one-inch margins all around. Smaller, but easily readable, font sizes may be used for figures, tables and charts. Pages within each

document (cover sheet and each attachment) shall be numbered consecutively. Document files must be in .rtf, .txt, Portable Document Format (.pdf, ISO 32000-1), OpenDocument (.odx, ISO/IEC 26300:2006), .doc, .docx, .xls, or .xlsx formats. Submissions must be written in English.

10. The Offeror is required to address the topic name and topic number they are submitting the proposal against (e.g. Imagery Exploitation, AGC-15) and shall address four (4) main volumes (i.e. categories) consisting of the following: 1) Technical Proposal, 2) Quality Control Plan (QCP), 3) Cost/Price Proposal, and 4) Additional Representations and Certifications. Use the following numbering system when submitting proposals:

Proposal Contents/Checklist:

- i. Cover Page
- ii. Table of Contents
- iii. List of Illustrations/Tables
- iv. Executive Summary

VOLUME I - Technical Proposal

- 1.1 Technical Approach
- 1.2 Technical Discussion
- 1.3 Technical Program Summary
- 1.4 Risk Analysis and Alternatives
- 1.5 References
- 2.1 Special Technical Factors
- 2.2 Capabilities and Relevant Experience
- 2.3 Previous or Current Relevant Independent Research and Development (IR&D) Work
- 2.4 Related Government Contracts
- 2.5 Facilities/Resources
- 3.1 Schedule
- 3.2 Timeline Chart by Task
- 4.1 Program Organization
- 4.2 Organization Chart(s) with Key Personnel
- 4.3 Management and Technical Team
 - 4.3.1 Prime Contractor Responsibilities
 - 4.3.2 Subcontractor(s) Responsibilities
 - 4.3.3 Consultant(s) Responsibilities
- 4.4 Resumes of Key Personnel
- 5.0 Appendix (ces)

VOLUME II – Quality Control Plan (QCP)

VOLUME III – Cost/Price Proposal

- 1.0 Proposal Cover Sheet for Total Proposal
- 2.0 Summary by Cost Element and Profit or Fee for Total Proposal

3.0 Cost Summary Breakout and Supporting Detail

VOLUME IV – Additional Representations and Certifications

VOLUME V – Subcontracting Plan (if applicable)

11. A SF-33 must be completed by each Offeror and submitted with each full proposal.
12. All proposals shall include all the information specified in this BAA solicitation to avoid delays in evaluation.

Contents of Proposals:

VOLUME 1: Technical Proposal

The technical portion of the proposal shall contain the following information and any other information that the Offeror considers necessary to address the evaluation criteria listed in Part V, Administrative Information:

i. Cover Page: The cover page shall include the BAA number, Research & Development (R&D) topic, and reference number; name and telephone number for the principal points of contact (both technical and contractual); and any other information that identifies the proposal. The cover page should also contain the proprietary data disclosure statement, if applicable.

ii. Table of Contents: The Offeror shall follow the proposal contents/checklist provided in this and the above section and use it for a final quality-control checklist.

iii. List of Illustrations/Tables: This list is a quick reference of charts, graphs, and other important information. A separate list of tables is recommended.

iv. Executive Summary: The executive summary allows the Offeror to present briefly and concisely the important aspects of its proposal to key management personnel. The summary shall present an organized progression of the work to be accomplished, without the technical details, such that the reader can grasp the core issues of the proposed program. The executive summary should rarely exceed two pages.

1.1 Technical Approach: In this section, the Offeror should provide as much technical detail and analysis as is necessary or useful to support the technical approach it is proposing. The Technical Approach must clearly identify the core of the intended approach. It is not effective to address a variety of possible solutions to the technology problems.

1.2 Technical Discussion: A complete discussion stating the background and objectives of the proposed work, the approaches to be considered, the proposed level

of effort, and the anticipated results/products, to include the proposed reports and deliverables to be furnished. No technical approach is without its limitations or shortcomings. Every issue should be identified and compared with the successes/failures of previous approaches. A tradeoff analysis is a good way to make this comparison and should be supported by theory, simulation, modeling, experimental data, or other sound engineering and scientific practices. If the Offeror has a “new and creative” solution to the problem(s), that solution should be developed and analyzed in this section. The preferred technical approach should be described in as much detail as is necessary or useful to establish confidence in the approach.

1.3 Technical Program Summary: This section summarizes the above technical discussion in an orderly progression through the program, emphasizing the strong points of the proposed technical approach.

1.4 Risk Analysis and Alternatives: Every technology has its limitations and shortcomings. The proposal evaluator(s) will formulate a risk assessment and it is in the best interest of the Offeror to have its own understanding of the risk factors presented. Critical technologies should be identified along with their impact on the overall program as well as fallback positions that could still improve on existing approaches.

1.5 References: Any good technology discussion must present the basis for and reference the findings cited in the literature. Include the names, brief biographical information, experience, and a list of recent publications of the Offeror’s key personnel who will be involved in the research.

2.1 Special Technical Factors: In this section, the Offeror should describe any capabilities it has that are uniquely supportive of the technology to be pursued. The following subparagraphs are offered as possible areas to be addressed.

2.2 Capabilities and Relevant Experience.

2.3 Previous or Current Relevant Independent Research and Development (IR&D) Work. Include the names of other agencies to which the proposal has also been submitted.

2.4 Related Government Contracts. Past performance information to include the name, address, point of contact, phone number, email address, contract identification number, contract award date, and amount for a minimum of three (3) customers for whom the Offeror has performed similar services in the last three (3) years.

2.5 Facilities/Resources.

3.1 Schedule: The schedule represents the Offeror's commitment to perform the program tasks in an orderly and timely manner.

3.2 Timeline Chart by Task: Each major task identified must appear as a separate line on the program schedule. Planned meetings, such as kick-offs, presentations (including final), technical interchange meetings, etc., must be included in the timeline. The timeline must also indicate the anticipated meeting site.

4.1 Program Organization: A brief description of the Offeror's organization, to include name, address, phone numbers, and email addresses. In this paragraph, the Offeror should present its organization's ability to conduct difficult technical programs. Any pertinent or useful information may be included in this paragraph, but a minimum recommended response should address the following subparagraphs:

4.2 Organizational Chart(s) with Key Personnel: Include prime contractor and subcontractor organization charts.

4.3 Management and Technical Team: This should specifically identify what tasks will be performed by which party and why each subcontractor, if any, was selected to perform its task(s).

4.4 Resumes of Key Personnel: Include the resumes of the prime contractor, subcontractor, and consultant personnel to include the names, a brief biography, and a list of recent publications of the Offeror's key personnel. Documentation of previous work or experience in the field of the proposer is especially important.

5.0 Appendix(ces): Appendices may include technical reports, published papers, and referenced material. A listing of these reports/papers with short descriptions of the subject matter is usually adequate. Do not provide commercial product advertising brochures, as advertising are unwanted.

VOLUME II: Quality Control Plan (QCP)

Quality control activities are associated with the creation of project deliverables and services being offered under the suggested BAA topic. Quality control is used to prevent and resolve errors in project deliverables and services under the resultant contract. Quality control verifies that deliverables and services are of acceptable quality and meet the standards of the criteria established.

The Offeror shall implement a documented Quality Control Plan (QCP) that identifies and results in correction of potential problem areas throughout the entire scope of the contract. The QCP shall be submitted as part of the proposal.

The Offeror's QCP shall contain the following:

- a. Procedures of written and verbal communication with the Government regarding performance of the work.

- b. Procedures for handling corrective action without dependence upon Government intervention.
- c. At a minimum, specific surveillance procedures for each proposed deliverable and/or service identified in the proposal. These surveillance procedures shall identify who will perform the surveillance, the frequency, the method, listing of items under surveillance, and corrective actions that will be taken to correct deficiencies. A plan for maintenance of records of all quality control checks and corrective actions. For each deliverable and/or service, describe the quality control activities you will execute. Examples of quality control activities:
 - Quality control check list
 - Deliverable review
 - Structured walkthroughs
 - Statistical sampling
 - Testing process

VOLUME III: Cost Proposal

Contract Type. The preferred contract type is fixed-priced. If a fixed-priced contract type is not reasonable or feasible, an Offeror must submit, in the full proposal, a written justification explaining why a fixed-priced contract type is not reasonable or feasible. Upon acceptance of the justifications, cost-reimbursement contract type or hybrid contract type may be negotiated. Funding arrangements are at the discretion of the Government.

Content of Cost Proposal. The proposal shall include the price, broken out by cost (detailed cost elements) and profit for the proposed effort. The estimate shall be detailed for each task of the proposed work. The proposal must include a detailed breakout of how the money will be spent and how prices and rates were determined. Direct and indirect rates must be justified based on past commercial or Government rates, or by providing examples of equivalent rates for equivalent talent. If rates are based on DCMA or DCAA negotiated rates, the rate agreements shall be provided. Offerors shall furnish the name and telephone number of their cognizant audit agency. The estimate shall be detailed for each task of the proposed work. For proposal pricing purposes, an Offeror should assume a contract start date of ninety (90) days after submission of the proposal.

The cost proposal should be limited to the minimum number of pages necessary to satisfy the specific requirements set forth herein. Submission of volumes of computer-generated data to support the cost proposal is NOT necessary or desired. If computer-generated data is essential to support the cost proposal, it may be submitted as an addendum and must be clearly cross-referenced to the material it supports in the cost proposal.

Cost proposals shall represent the Offeror's best response to the solicitation. Any inconsistency, whether real or apparent, between promised performance and cost or pricing data must be fully explained in the proposal. Failure to explain any significant inconsistencies may demonstrate the Offeror's lack of understanding of the nature and scope of the work required. In accordance with FAR 35.016(e) and the USACE Acquisition Instruction, cost proposals must be sufficient

to establish the reasonableness, realism, and completeness of the proposed cost/price. Further, any modifications made to the initial proposal must likewise be thoroughly supported in writing, regardless of whether such changes are made during negotiations or at the time of a proposal revision.

At a minimum, Cost Proposals shall include the following:

- a. Proposal Cover Sheet for total proposal.
- b. Summary by cost element and profit or fee for total proposal (Fixed Price or Cost).
- c. Labor summary for total proposal by categories, rates and hours, including a description of labor categories, defined by Training, Education, Experience and Professional Certification. **For firm fixed price proposals submit fully loaded labor rates.
- d. Explanation of how labor rates are computed including base rates (actuals) and escalation, if applicable.
- e. Interdivisional Transfers (detailed breakout of costs), if applicable.
- f. Identification of indirect rates by fiscal year and explanation of how established and base to which they apply.
- g. Bill of Materials detailing items by type, quantity, unit price, total amount, and source of estimate. Provide vendor written quotes.
- h. Summary of all travel by destination, purpose, number of people, number of days, airfare, per diem, car rental, etc.
- i. Consultants by name, rate and number of days or hours. Furnish copy of consulting agreement and identify prior agreement(s) under which the consultant commanded proposed rate.
- j. Computer use by type, rate, and quantity.
- k. Other direct costs by type, amount, cost per unit and purpose (specifically identify any costs for printing or publication).
- l. DD Form 1861 (if proposing facilities capital cost of money).
- m. Subcontractor's proposal, with the Offeror's price/cost analysis of subcontractor's proposal. If subcontract was not competed, include justification.
- n. Forecast of monthly and cumulative dollar commitments for the proposed contract period.
- o. Proposed fee, if any.

Subcontractors' proposals must be similarly structured. All subcontracted work must be properly identified as such. If a subcontractor elects to submit an abbreviated proposal to the Offeror, it is the Offeror's responsibility to see that the subcontractor simultaneously submits a complete detailed proposal properly identified directly to the Contracting Officer. The Offeror must ensure that the subcontractor adheres to the guidance set forth herein. FAR 15.404-3 requires that the Offeror provide an analysis of the subcontractors' cost proposals. To that end, the Offeror's proposal must:

- a. Identify principal items/services to be subcontracted.
- b. Identify prospective subcontractors and the basis on which they were selected. If non-competitive, provide selected source justification.

- c. Identify the type of contractual arrangement contemplated for the subcontract and provide a rationale for same.
- d. Identify the basis for the subcontract costs as included in the Offeror's proposal (e.g., firm quote or engineering estimate, etc.).
- e. Identify the cost or pricing data or information other than cost or pricing data submitted by the subcontractor.
- f. Provide a price analysis of the proposed subcontract in accordance with FAR 15.404-1(b). The analysis should determine the reasonableness and completeness of each subcontractor's proposal. If the analysis is based on a comparison with prior prices, identify the basis on which the prior prices were determined to be reasonable. If price analysis techniques are inadequate or the FAR requires submittal of subcontractor cost or pricing data, provide a cost analysis in accordance with FAR 15.404-3(b). Cost analysis should include, but not be limited to, an analysis of materials, labor, travel, other direct costs, and proposed profit rates.

Cost Element Summary Format. Cost elements which do not pertain to the Offeror's proposal may be omitted. Do not lump elements together. Cost elements peculiar to a particular Offeror, which are not listed may be added. Elements may be rearranged to fit an Offeror's pricing structure. Certified cost/pricing data is required for proposals valued at \$2M or greater, in accordance with FAR 15.403 and 15.406-2, and Class Deviation 2018-O0012. For proposals valued at less than \$2M, the Government may request other than certified cost/pricing data to assist in determining a fair and reasonable proposal price.

VOLUME IV: Signed and dated Standard Form 33 and Additional Representations and Certifications.

VOLUME V: Subcontracting Plan

- a. For proposed contract awards exceeding \$750,000, large businesses and non-profits (including educational institutions) shall provide a Subcontracting Plan that contains all elements required by FAR 19.704 and DFARS 219.704.
- b. Subcontracting Plans will be reviewed for adequacy, ensuring that the required information, goals, and assurances are included. FAR 19.702(a)(1) requires an apparent successful Offeror to submit an acceptable Subcontracting Plan. If the apparent successful Offeror fails to negotiate a Subcontracting Plan acceptable to the Contracting Officer within the time limit prescribed by the Contracting Officer, the Offeror will be ineligible for award.
- c. Subcontracting Plans are determined to be acceptable or unacceptable based on the criteria established at FAR 19.705-4, DFARS 219.705-4, and AFARS 5119.705-4. Goals are established on an individual contract basis and should result in realistic, challenging and attainable goals that, to the greatest extent possible, maximize small business participation in subcontracting for Small Business, Small Disadvantage Business (SDB), Woman-Owned Small Business (WOSB), Service-Disabled Veteran-Owned Small Business (SDVOSB), Veteran-Owned Small Business (VOSB), and

Historically Underutilized Business Zone (HUBZone) Small Business.

- d. Subcontracting goals should result in efficient contract performance in terms of cost, schedule, and performance and should not result in increased costs to the Government or undue administrative burden to the prime contractor.

NOTE: Small businesses are exempt from this requirement to submit a Subcontracting Plan. Small Business Subcontracting Plan requirements do not apply to assistance instruments.

Proposals shall be submitted with a completed Standard Form 33 available at: <http://www.gsa.gov/portal/forms/download/116254>

PART V: ADMINISTRATIVE INFORMATION

Evaluation Criteria

1. Proposals submitted in response to this BAA will be evaluated in accordance with the following criteria:
 - a. The overall scientific and/or technical merits of the proposal, including how the proposal meets the FAR requirements for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding, rather than focusing on a specific system or hardware solution.
 - b. The potential contributions of the effort to the U.S. Army Geospatial Center mission.
 - c. The Offeror's capabilities, related experience, facilities, techniques, or unique combination of these which are integral factors for achieving the proposal objectives.
 - d. The qualifications, capabilities and experience of the proposed principal investigator, team leader and other key personnel who are critical to the achievement of the proposal objectives.
 - e. The reasonableness and realism of proposed costs (and fees, if any) and prices.
 - f. The Offeror's record of past performance.
2. Upon receipt of a proposal, the AGC evaluators will perform an initial review of its scientific merit and potential contribution to the Army mission and also determine if funds are expected to be available for the effort. Proposals not considered having sufficient scientific merit or relevance to the Army's needs or those in areas for which

funds are not expected to be available may be declined without further review.

3. It is the policy of AGC to treat all proposals as privileged information before award and to disclose the contents only for the purposes of evaluation. Proposals not declined as a result of initial review will be subject to an extensive peer review by highly qualified scientists from within the Government. The Offeror must indicate on the appropriate proposal form, any limitation to be placed on Disclosure of Information contained in the proposal.
4. Each proposal will be evaluated based on the merit and relevance of the specific R&D proposed as it relates to the overall AGC research and development program, rather than against other proposals in the same general area.

Type of Contract

Contract type may be Firm Fixed Price, Fixed Price Level of Effort, or Cost Plus Fixed Fee. The preferred contract type is fixed-priced. If a fixed-priced contract type is not reasonable or feasible, an Offeror must submit, in the full proposal, a written justification explaining why a fixed-priced contract type is not reasonable or feasible. Upon acceptance of the justifications, cost-reimbursement contract type or hybrid contract type may be negotiated. Funding arrangements are at the discretion of the Government. Selection of the type of contract is based upon various factors as described in FAR Part 16.

Any contract awards resulting from this BAA will incorporate the most current FAR and DFARS references and clauses. Contracts awarded by AGC will contain, where appropriate, detailed special provisions concerning patent rights, technical data rights and computer software, reporting requirements, equal employment opportunity, etc.

The Government will only award a contract to an Offeror deemed responsible in accordance with FAR 9.1.

PART VI: OTHER

Awards

With the submittal of all required information as described herein and the favorable evaluation of your proposal, the Government may bilaterally award without discussions; therefore, it is in the Offeror's best interest to review all requirements listed within. Note: contract clauses are self-deleting; therefore, there is neither a requirement nor need for a modification to the award if any clause is found not applicable. Performance after the receipt of an award signed by the Contracting Officer indicates your full acceptance of all terms and conditions within the award.

Awards will be made on SF-33, SF-26, DD-1155, or other document as appropriate. Awards will consist of all applicable clauses and contracts shall be in accordance with the Uniform Contract Format (UCF). Contract award will be made electronically.

Report Requirements

The number and types of reports will be specified in Section J of the contractual document. The reports will be prepared and submitted in accordance with DD Form 1423, Contract Data Requirements List.

This notice constitutes a BAA as contemplated in FAR 35.016. No additional written information is available, nor will a formal request for proposal (RFP) or other solicitation regarding this announcement be issued. Interested parties are invited to respond to this announcement. All responsible parties' responses will be considered.

Access to and Protection of Propriety Information

The Contractor agrees that, to the extent it receives or is given access to proprietary data, trade secrets, or other confidential or privileged technical, business, or financial information (hereinafter referred to as "proprietary data") under an established contract, it shall treat such information in accordance with any restrictions imposed on such information. The Contractor further agrees to enter into a written agreement for the protection of the proprietary data of others and to exercise diligent effort to protect such proprietary data from unauthorized use or disclosure. In addition, the Contractor shall obtain from each employee who has access to proprietary data under this contract, a written agreement, which shall in substance provide that such employee shall not, during his/her employment by the Contractor or thereafter, disclose to others or use for their benefit, proprietary data received in connection with the work under this contract. The Contractor will educate its employees regarding the philosophy of FAR Part 9.505-4, so that they will not use or disclose proprietary information or data generated or acquired in the performance of an established contract except as provided herein.

PART VII: AGENCY CONTACTS

POCs for this solicitation:

L. Maria Finan, Contracting Officer
Telephone: (703) 428-3611,
Email: Maria.Finan@usace.army.mil

Lena Plummer-Milindez, Contract Specialist
Telephone: (703) 428-3603
Email: Lena.Plummer-Milindez@usace.army.mil

Daniel Visone, Technical Questions POC
Email: Daniel.L.Visone@usace.army.mil

White paper and proposal submission mailbox:
AGCBAAProposals@usace.army.mil