National Geospatial-Intelligence Agency (NGA)



**International Solutions Office (TIP)**

**Task Order (TO): 0010**

**Statement of Work (SOW)**

**07 November 2019**

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# Introduction

This Statement of Work (SOW) supports a Task Order (TO) procurement of Systems Engineering and Integration (SE&I) support for the International Solutions Office (TIP). Introduction, background, objectives and scope material contained in the Base NEE SOW are applicable to this TO. The contractor shall provide all appropriate support to assist accomplishment of the requirements stated below.

## Background

NGA’s International Solution Office (TIP) delivers effective, resilient, and timely infrastructure and architecture solutions that meet current and emerging international GEOINT needs. TIP manages the development, delivery, and operations of capabilities between US and Foreign Partners. TIP balances foreign partner interests and needs to ensure technical compatibility across international partners to support the NGA International GEOINT Strategy. The capabilities delivered by TIP connect the NSG with the GEOINT capabilities of the Commonwealth, Third Party, and Coalition Partners with the goal of leveraging shared national security interests.

The NGA International Collaborative Environment (ICE), Global Service Proxy (GSP), Dissemination Services, the International Partner Operations Center (IPOC), BICES, and other IT architectures and capabilities enable integration by providing connectivity, data access and mission and collaboration tools. This enables the US and its Allies to share GEOINT mission areas (e.g. analysis, activity-based intelligence/structured observation management (ABI / SOM), collections, foundation data, algorithms, data science, technology, research and development, etc.).

## Scope

The Contractor shall perform SE&I services work in accordance with the requirements specified in this task order. The Contractor shall apply Model Based Systems Engineering and System Integration methods and tools to support the Government with engineering and integration efforts across the NSG and Allied System for Geospatial-Intelligence (ASG) enterprise. A brief description of the engineering activities to be supported under this Task Order are as follows:

* **Enterprise and Solutions Architecture Engineering.** The NEE contractor shall provideservices to plan, design, define, develop, document and baseline the GEOINT Enterprise Architecture (GEA), ASG Architecture (both 2nd and 3rd Party) and SAGE for CAPs and SAPs, to include Business, Data, Network, Security and Solutions-Level Architectures down to the program level ensuring NSG and ASG enterprise systems work together in an integrated fashion to deliver mission capabilities and solutions.
* **Enterprise Level Requirements Engineering.** The NEE contractor shall provide services to develop, document, decompose and allocate strategic through Enterprise level requirements to establish and enable GEOINT Mission Solutions across the agency and with international partners, to include CAP/SAP missions (e.g., GEOINT Enterprise Capabilities Documents (ECDs), Statements of Capabilities (SOCs), Capabilities Description Documents (CDDs), Capability-Oriented Requirement (COR) sets, Service-Oriented Requirement (SOR) sets, and Agile Frameworks and support traceability to System and Software Requirements Documents (SysRDs and SRDs).
* **Enterprise Integration Engineering (Cross Organization and Program Office).** The NEE contractor shall provide services to integrate program and project solutions that cut across Office and Program Office budget programs, development contracts and sensor segments ensuring the multiple parts come together seamlessly to deliver mission capabilities. The NEE contractor shall provide integration of international partner architecture systems and tools into the larger NSG/ASG for broader use, as approved by NGA and our International and Mission Partners.
* **Enterprise Analysis and Assessment.** The NEE contractor shall provide services to perform Capabilities-based Analysis, Business Engineering (Pre-Acquisition Engineering) and Analysis of Alternatives (AoAs), Trade Studies, and Engineering Assessments.
* **Modeling, Simulation & Analysis (MS&A).** The NEE contractor shall provide services to the Government for Modeling, Simulation and Analysis (MS&A). The contractor shall build and maintain digital representations of architectures, systems, services, subsystems, and components supporting GEOINT and use software to conduct performance, capacity, and proof-of concept MS&A across the NGA, NSG, ASG, commerce, and Mission Partner paradigms.

# Applicable Documents

Applicable documents specified in this section are required for execution of the work described in the TO SOW. These documents provide additional detail to those listed in the Base SOW.

## Compliance Documents

Refer to Base SOW.

## Reference Documents

Refer to Base SOW.

# Description of Work

## 3.1 Enterprise and Solutions Architecture Engineering Support

TIP requires SE&I support in Strategic, Enterprise, and Solutions-level Architecture Engineering. Engineer and Architect resources applied against this effort shall assist the Government in planning, designing, defining, developing, documenting and baselining the GEOINT Enterprise Architecture (GEA), inclusive of business, data, network, security and solutions-level sub-architectures, to ensure enterprise systems work together in an integrated fashion to deliver mission capabilities and solutions. The ASG Architecture (2nd and 3rd Party) is intended to be nested in the GEA, to the greatest extent possible. However, since ASG requirements are driven by mission owner needs, unique architectures and solutions that are not consistent with GEA may be required. Key activities of Enterprise and Solutions Architecture Engineering may include the following: systems analysis necessary to define and document the As-Is Architecture; planning, design, and systems engineering work necessary to build and portray the To-Be Architecture; the development of conceptual, logical and physical architecture and technical roadmaps defining the time-phased schedule for the path of systems and services from the As-Is to the To-Be Architecture; and program, segment and project-based solution-level architectures consistent with the enterprise-level architecture.

Enterprise, and Solutions Architecture Engineering Support includes support for, but is not limited to, the strategic, enterprise, and solutions-level architecture engineering activities that follow.

### Enterprise Architecture Support

The GEOINT Enterprise Architecture and the ASG Architecture are the authoritative sources of information that guide and constrain solutions architectures, services, and data so that it may be responsive to stakeholder requirements. This architecture information informs Government decisions on a number of critical activities including planning, programming, budgeting, and mission execution. Architecture information also supports key engineering services such as requirements decomposition and inter/intra-segment integration.

Enterprise Architecture activities the contractor shall support in the performance of this Task Order include, but are not limited to:

1. Design and update Enterprise-level digital models/representations architectures that capture Enterprise requirements and provide roadmaps to balance cost, schedule and performance.
2. Support the continued development, maintenance, and documentation of the GEOINT Enterprise Architecture (GEA) and ASG Architecture.
3. Define, develop, document, and maintain the NGA, NSG, ASG, United Stated Government (USG), commercial and foreign partner As-Is and To-Be Architectures consistent with the NGA GEOINT CONOPs 2022 (and future CONOPS) and inclusive of Business, Data, Network, Security and Solutions-level sub-architectures. NGA will maintain interfaces to Government and Commercial architectures.
4. Define, develop, recommend, and support implementation approaches ensuring optimized cloud architecture(s), as directed.
5. Recommend, instantiate and operate architecture tools that support analysis and decision making through architecture data in the form of models, simulations, reports and views so that stakeholders may use architecture data in either the acquisition or development lifecycle to answer investment and divestment questions.
6. Create appropriate and effective architecture information and artifacts (in accordance with the Department of Defense Architecture Framework (DoDAF) and the Intelligence Community’s (IC) Program Architecture Guidance (PAG)) that are relevant and usable across the NGA, NSG, ASG, USG, commercial, and foreign partners.
7. Assess architectural artifacts and components for compliance with NGA, NSG, ASG, USG, commercial and foreign partner standards as appropriate and provide recommendations on resolving deficiencies, gaps, and/or recommended enhancements. Ensure that the architecture is compliant with NGA’s U. S. Code 50, Section 3023 requirement.
8. Use the Joint Architecture Reference Models (JARM) to describe, analyze, and identify potential architectural service gaps, support AOA, leverage existing resources, and assist with invest and divest decisions for the agency.
9. Use MBSE methods and tools to build and maintain digital systems models of services, components, systems and subsystems across the NGA, NSG, ASG, USG, commercial and foreign partners. Use MBSE to link requirement and design artifacts to solution and enterprise level architectures.
10. Utilize the enterprise architecture and artifacts to improve the quality of NGA’s investments and engineering decisions by understanding, describing, and refining the alignment of GEOINT capabilities to people, process and technology. Assist with alignment of IT strategy and planning with the Agency's business and mission goals.
11. Manage and maintain the necessary processes and tools for automated maintenance and management of architecture artifacts within the repository for the enterprise.
12. Manage enterprise architecture documentation in collaboration with the Configuration Management function executed within NGA Foundational Engineering (NFE), as directed.

### Solutions-level Architecture Support

Solutions-level Architecture is the next level of architecture decomposition below Enterprise Architecture defining the orchestration of systems and services across the Enterprise to deliver the functions required to satisfy operational capabilities and mission activities. It includes the allocation of functions, services, requirement responsibility and interface definitions to the appropriate time phased architecture, technical roadmap, To Be Architecture and program.

Solutions-level Architecture activities the contractor shall provide in the performance of this Task Order include, but are not limited to:

1. Design solutions-level architecture digital models/representations that fulfill program requirements and provide solutions that balance cost, schedule and performance across the enterprise.
2. Analyze architecture information to provide recommendations for program investments and solution-level architecture and engineering.
3. Build, vet, and baseline solutions-level architectures consistent with the NSG and ASG enterprise architecture, to the greatest extent possible.
4. Conduct systems analysis to support re-use or development of like capabilities across the enterprise baseline to gain functional and cost efficiencies. The contractor shall ensure solutions do not duplicate functionality or diverge from NGA business and IT strategies.
5. Collaborate with Office/Program Office/Project Engineering and Foundational Systems Engineering to understand program, segment, and project timelines for the delivery of capabilities and to ensure the current architecture baseline and To-Be Architecture supports capabilities when they are delivered.
6. Develop and document necessary architecture requirements for International Solutions Office (TIP) capabilities and initiatives in NSG and ASG enterprise architecture baselines.
7. Assist the Government in architecting and planning the transition from paper-based processes to digital representations integrating architectures, requirements, integration, scheduling, budgeting and other data needed for systems engineering.

### Data Architecture/Data Services Architecture Support

The commonly used data and metadata formats used by NGA, NSG, ASG, USG, commercial, and foreign partners; the business rules for data access, releasability, conflation, validation, quality, retention, storage management, and refresh; and the technical services architecture to support the NGA’s data strategy of making data accessible to all users via common services. The Data Services Architecture for GEOINT (DSA-G) includes services for data ingest, conditioning, access, dissemination, security, management and storage.

Data Architecture/Data Services Architecture activities the contractor shall support in the performance of this Task Order include, but are not limited to:

1. Collaborate with the NSG Data Engineering (NDE) contractor and Government to incorporate the DSA-G into the Enterprise and Solution Architectures, Enterprise Requirements, Enterprise Technical Roadmaps, Business Architecture and Enterprise Integration engineering.
2. Provide support for Data and Data Services Architecture, design, implementation approaches and recommendations for NGA, NSG, and ASG operations.
3. Collaborate with NDE contractor to ensure data execution efforts are aligned with NGA priorities.

## Requirements Engineering

TIP requires SE&I support in Strategic, Enterprise, and Capabilities-level Requirements Engineering. Resources applied against this effort shall assist the Government in aligning traceability of capabilities and needs through developing, documenting, decomposing and allocating strategic (i.e., GEOINT Enterprise Capabilities Documents (ECDs), Statements of Capabilities (SOCs) and Capabilities Description Documents (CDDs), Capability-Oriented Requirement (COR) sets, Service-Oriented Requirement (SOR) sets,) through solution (i.e., System and Software Requirements Documents (SysRDs and SRDs) level requirements to establish and enable GEOINT mission solutions for all customers of the NGA, NSG, ASG, USG, commercial and foreign partners. The collective requirements engineering activity is inclusive of agile techniques to define requirements using capabilities, epics, features and user stories. This service includes top-down and bottom-up planning and coordination with respect to retiring legacy entities into receiving, future entities.

Requirements Engineering includes support for, but is not limited to, the strategic, enterprise, and capabilities-level requirements engineering activities that follow.

### High-Level Requirements Engineering Support

The contractor shall support the Government in developing, documenting, decomposing and allocating mission needs from strategic to Enterprise level requirements to establish and enable GEOINT mission solutions for all customers of the NGA, NSG, ASG, USG, commercial and foreign partners.

The contractor shall support High-Level Requirements Engineering activities in the performance of this Task Order to include, but are not limited to:

1. Support the continued development, maintenance, and documentation of all TIP strategic capabilities/requirements/needs, digital representations, documents to include all relevant SOCs, CDDs, NGA GEOINT CONOPS 2022 and future CONOPS.
2. Support the decomposition and allocation of all TIP strategic requirements/needs from all relevant SOCs, CDDs and the NGA GEOINT CONOPS 2022 to lower strategic, integration and Enterprise level requirement repositories, digital representations, and documents. This shall include the decomposition of high-level needs, epics, and requirements into Enterprise features and user stories which Program Offices, programs and projects will use to develop their program backlogs features and user stories for implementation using the most appropriate and efficient systems engineering approach.
3. Manage the TIP requirements database to provide a centralized location to capture all requirements and requirements documentation. Collaborate with Foundational Systems Engineering to maximize consistency with and eliminate duplication of Enterprise requirements.
4. Establish and manage the International Requirements Management Process for documenting requirements/needs, identifying areas for investment and divestment, and providing traceability of requirements from the GEOINT ECDs, SOCs, CDDs, and NGA GEOINT CONOPS 2022 through solutions engineering.
5. Validate decomposed, allocated requirements from the strategic documents to solution programs, segments and projects and coordinate with the user to demonstrate perceived intent and further develop requirements.
6. Coordinate with users and stakeholders to develop enterprise level requirements for new mission needs and to determine viable solutions for each request.
7. Capture new strategic requirements/needs and the associated Strategic Roadmaps from any NGA, NSG, or ASG Concept of Operations (CONOPS) development effort. The Strategic Roadmaps include the capture of groupings of time-phased capabilities and success criteria with associated dependencies to support the development of Solution Epics.
8. In collaboration with Enterprise Risk Management, performed on the NGA Foundational Engineering Contract, identify enterprise-level risks, opportunities and issues associated with requirements and the requirements management lifecycle and assist in risk mitigation.
9. Support and represent the Government Requirements Team at governance boards for approval of new user needs and requirements (e.g. Requirements Review Working Group).
10. Recommend new, agile processes and methodologies to decrease the requirements satisfaction timeline and to increase requirements visibility and efficiency across the NGA, NSG, ASG, USG, commercial and foreign partners.
11. Use MBSE to document and trace system requirements, design, analysis, and verification and validation activities from strategic through solution levels beginning in the conceptual design phase and continuing throughout the systems engineering life cycle.
12. Define, evaluate, and document information security requirements for new IT initiatives and cyber capabilities.
13. The contractor shall collaborate with the NSE contractor in the allocation/traceability of Enterprise requirements to programs requirements.
14. The contractor shall collaborate with the NFE contractor in the configuration control, configuration management of Enterprise and Solution requirements.

### Capabilities Requirement Analysis (Legacy Requirement) Support

The NEE contractor shall provideservices to support the Government in ensuring new strategic, functional, or operational capabilities address enduring requirements currently serviced by legacy entities.

The contractor shall support Capabilities Requirement Analysis (Legacy Requirement) activities in the performance of this Task Order to include, but are not limited to:

1. Decompose legacy system capabilities into their constituent parts, services, components, and functions as well as interfaces to other systems, consumer relationships and required data exchanges.
2. Identify and validate legacy capabilities that will persist into the future and ensure they are reflected within the To-Be architecture and technical roadmaps that capture the systems or enterprise services that will perform or absorb the capability.
3. Ensure technical roadmap timelines include the end of the legacy contract and the start of the follow-on/enduring system or enterprise service contract and identify potential gaps/overlaps in critical functionality.
4. Conduct capabilities retirement analysis engineering activity in collaboration with Enterprise and Capabilities-level Requirements Engineering.
5. Perform divestment analyses to identify overlapping capabilities or existing functions that can be absorbed into enduring/new systems to minimize duplication.
6. Conduct requirements trace using JARM Technical Service Types (TSTs)) for duplication analysis and provide reports to the Government describing the findings.
7. Automate the analysis and reporting needed to detail the gaps and duplication in the enterprise capabilities provided by external partners and IC ITE.
8. Assess the NGA, NSG, ASG, USG, commercial and foreign partner software/service repositories (e.g. the GEOINT Solutions Marketplace (GSM)) for reuse opportunities).

### Interface/Service Definition Support

The NEE contractor shall provideservices supporting the Government in transitioning the enterprise from a point-to-point interface environment to a services-oriented/Application Program Interface (API)-oriented environment where applicable and ensure detailed interface definitions are consistent with the defined enterprise architecture.

Interface / Service Definition activities the contractor shall support in the performance of this Task Order include, but are not limited to:

1. Assist the government in advancing the enterprise from a point-to-point interface environment to a services-oriented/API-oriented environment where it makes sense and as directed.
2. Define and mature system and service interfaces and the interactions across the NGA, NSG ASG, USG, commercial and foreign partner baselines.
3. Ensure that the detailed interface definitions are consistent with the defined enterprise architecture.
4. Conduct analysis to identify Industry best practices, standards and management of service oriented, cloud and API environments.

## Enterprise Integration Engineering (Cross Organization and Program Offices)

The Contractor shall provide support under the Enterprise Integration Engineering (Cross Organization and Program Office) requirement to assist the Government with the integration of program and project solutions that cut across organization boundaries, Program Offices budget programs, development contracts and sensor segments; and therefore; requiring a corporate approach to integration ensuring the multiple parts come together seamlessly to deliver integrated solutions consistent with technical roadmaps defining the path to the To-Be Architecture. It shall include interface/service definition support (both internal and external to the agency) to recommend, develop, document, and implement the necessary interfaces to achieve the NGA vision described in the GEOINT CONOPS 2022 (to include future CONOPS) and CIO-T Strategy 2022 (and future strategies). Enterprise Integration Engineers also work with Program Offices Engineers to integrate and synchronize individual program, segment, and project solutions across the enterprise and ensure enterprise epic completion.

Enterprise Integration Engineering includes support for, but is not limited to, the enterprise integration engineering activities that follow.

### Enterprise Coordination of Integration Support

The NEE contractor shall provideIntegration services aligning the planned, in-work and delivered capabilities, programs, projects, systems, segments and services ensuring that all the parts successfully connect and operate together. Enterprise Coordination shall support the NGA Government POCs with enterprise program integration activities. These programs have integration responsibilities that span the NGA, NSG, ASG, USG, Mission Partner, commercial, and foreign partner enterprise. For example, Sensor Programs where NGA works with numerous NGA and IC partner programs, segments, and projects to plan for the receipt and use of various sensor phenomenology data across the tasking, collection, processing, exploitation and dissemination (TCPED) paradigm and IC ITE services. Enterprise coordination will collaborate with the NGA, NSG, ASG, USG, Mission Partner, commercial and foreign entities to insure integration agreements and licenses are in compliance with governance documents.

Enterprise Coordination of Integration activities the contractor shall support in the performance of this Task Order include, but are not limited to:

1. Support the government with integration across the NGA, NSG, ASG, USG, commercial and foreign partner enterprise ensuring alignment of architecture, requirements and as-built capabilities, services and features are in compliance with all license and sharing agreements.
2. Ensure integration across program, segment and project plans, technical roadmaps, and schedules to achieve the delivery of capabilities and effectivities.
3. Maintain technical roadmaps against strategic epic planning scope and completion dates. Re-baseline roadmaps in response to changing agency guidance and strategies.
4. Ensure integration of solution engineering across time horizons from year of budget execution through the Future Year Defense Program (FYDP and beyond).
5. Support government oversight of program development and coordination of CONOPS, technology roadmap planning, architecture development, cross segment / cross Agency interface definitions, requirements definition, decomposition, allocation to and development by programs, segments, and projects, and enterprise-level verification and validation, transition to operations and retirement activities.
6. Support integration across the planned, in-work, and delivered services related to sensor integration programs, ensuring that all the “parts” connect, operate together successfully, and are consistent with enterprise plans and strategies.
7. Support integration activities and interactions with the IC, external agencies and the DoD to include sensor and platform acquisition, related ground architecture development efforts, and sensor acquired ground components necessary for consumers of the resultant data and information, and military organizations.
8. Support end to end system integration and acceptance necessary for Major System Acquisitions (MSAs).
9. Support program, segment, and project level technical reviews, preform technology readiness assessments, and attend Technical Exchange Meetings (TEMs) to assess enterprise integration challenges.
10. Review system integration documentation for accuracy, completeness, and harmony with enterprise integration efforts. Coordinate needed changes with appropriate program, segment, and project offices.
11. Support the transition of new services and capabilities to operations and identify gaps in toolsets and automation used to test and deliver those services and capabilities. Identify gaps or new needs for automated test capabilities to address incoming capabilities.
12. Provide developers guidance and recommendation on service virtualization, and service APIs for enterprise systems.
13. In collaboration with Enterprise Risk Management, performed on the NGA Foundational Engineering Contract, identify enterprise-level risks, opportunities and issues associated with enterprise integration and assist in risk mitigation.

### Enterprise Integration and Modernization Support

The NEE contractor shall provideservices supporting the on-going Program Office and CAP/SAP modernization efforts for the Analytic Services environment, Exploitation Services environment, Foundation GEOINT environment, Mission System Resiliency, IT Infrastructure, and GEOINT Needs and Collection System Management services.

The contractor shall support Enterprise Integration and Modernization activities of this Task Order to include, but are not limited to:

1. Provide engineering, integration, and architecture analysis to support modernization efforts that incorporate standards-based, Commercial Off the Shelf (COTS) technology (e.g. ESRI’s ArcGIS) as the platform for both server and desktop components. Ensure alignment with the To-Be Architecture. Provide expertise to application development and create digital models/representation/documentation as appropriate to assist NGA modernization initiatives.
2. Provide engineering, integration, and architecture analysis to support enhanced integration between NGA, NSG and all international partners.
3. Support the execution of pilots to inform the Analytic and Exploitation Environment, Structured Observation Management (SOM) with regard to Activity Based Intelligence (ABI) and Object Based Production (OBP) systems development, and the transition capabilities to operational systems of record. Assist with Analytic and Exploitation Environment integration summits and leadership and integration meetings with key stakeholder organizations.
4. Support the government modernization efforts by defining the interfaces between programs and pilots to ensure a cohesive workflow.
5. Support the identification, planning, design, development and integration of Automation, Artificial Intelligence and Augmentation (AAA) technologies into the modernization efforts.
6. In support of AAA, conduct TEMs, Design Reviews, Deep Dives, and Requirements Analysis sessions to review and decompose requirements to ensure they support enterprise-level mission needs and requirements.
7. Develop solutions using AAA technologies to modernize GEOINT Needs and Collection Management leading to the successful implementation of GEOINT Broker concepts and legacy component retirement.
8. Support the modernization efforts in using AAA to automate tipping, cueing and collection management across the GEOINT architecture, on all security domains and mission geographic locations in all data repository environments (on and off premise and in the cloud).
9. Support the review and assess current NGA processes and tools for planning, executing, and monitoring NGA’ s modernization initiatives in Collaboration with Systems Engineering Processes & Tools NGA Foundational Engineering contractor.
10. Support pilot program execution to inform modernization systems development and service integration. Support engineering activities during development to ensure correctness and completeness of requirements. Capture changes in the Enterprise Architecture, Solution Architectures and Enterprise Requirement repositories and digital models/representations. Support the transition to an operational capability.
11. Develop and maintain integration project plans and schedules for each Modernization effort to make certain that program, project, and/or segment requirements and schedules are aligned and baselined to ensure end-to-end system integration.
12. Support Foundation GEOINT Mission initiatives by integrating the numerous efforts across the Source Foundation GEOINT office (SF) domains (e.g. Aeronautical, Maritime, Human Geography, Geomatics), Research (R) (e.g. Enterprise Engine’s Machine Learning), and the efforts within the CIO-T Program Integration office.
13. Support the Enterprise System Resiliency efforts working with NSG, ASG, and other mission partners as applicable by providing engineering and integration expertise.
14. Support the Governments enterprise wide Compartmented/Special Access Program (CAP/SAP) modernization and data integration into the NSG, ASG and applicable systems. Coordinate with mission partners to engineer solutions that meet required security standards for CAP/SAP data storage and processing authorization.
15. Support the IT Infrastructure Modernization efforts working with NSG, ASG, and other mission partners as applicable by providing engineering and integration expertise.
16. Plan for the delivery of capabilities and features across programs to enable program/project alignment with each other, and defined effectivities. Establish the basic cadence for the enterprise and synchronize non-agile functions with programs using an agile cadence.
17. Use Model-Based Systems Engineering (MBSE) tools and methodologies to support ongoing enterprise integration and modernization efforts.

## Enterprise Analysis and Assessment

The NEE contractor shall provide support to Capabilities-based Analysis, Business Engineering (Pre-Acquisition Engineering), Analysis of Alternatives (AoAs), Trade Studies, and Engineering Assessments. Resources applied against this effort shall assist the Government in establishing structured processes and methodologies facilitating Capabilities-based Analysis, Business/Pre-Acquisition Engineering, and AoAs, Trade Studies and Engineering Assessments.

### Capabilities-based Analysis

The NEE contractor shall provideservices to analyze NGA’s legacy systems and the capabilities and services they provide and develop well-defined and executable Legacy System Retirement Plans (LSRPs) for the smooth transition of the capabilities and services enduring, new or other systems or retirement as appropriate.

Capabilities-based Analysis activities the contractor shall support in the performance of this Task Order include, but are not limited to:

1. Support top-down, enterprise coordination and planning to retire legacy entities into receiving entities (future providers).
2. Perform legacy system retirement analyses to ensure conformance to evolving solutions and enterprise architectures and enterprise integration.
3. Collaborate with Capability Analysis and Pre-Acquisition Engineering Activities and recommend time-phased retirement of legacy systems.
4. Coordinate legacy system retirements through appropriate governance authorities, Program Management Office (PMOs) and Business/Product Owners.
5. Support the retirement of legacy systems and capabilities by developing retirement and transition plans and their associated change artifacts to ensure the coordinated deactivation and disposal of hardware, software, and documentation, ensuring no unplanned capability impacts.
6. Ensure legacy system retirements are consistent with the GEA and To-Be Architecture and meet the needs in the GEOINT ECD, SOCs, and CDDs, to ensure there is no detrimental impact to cost, performance, schedule and mission outcomes.
7. Perform analysis on requirements for retiring systems to ensure enduring requirements are identified and allocated to to-be architecture service groups and Program Offices.
8. Inform governance authorities, PMOs and Business/Product Owners on “priority” decisions such that necessary retirement activities are addressed in program/segment/project schedules and the necessary release bandwidth for retirement-enabling services is in place.
9. Use Model-Based Systems Engineering (MBSE) methods and tools to model transition capabilities and services to new systems.

### Business Engineering (Pre-Acquisition Engineering)

The NEE contractor shall provide services for the decomposition of enterprise business architecture into defined business processes and solutions architectures for the planning of IT program acquisitions for new GEOINT systems and services delivering operational capabilities.

Support the upfront engineering and transformation of the enterprise architecture to ensure acquisitions meet NGA’s mission requirements and required capabilities to include, but not limited to:

1. Develop and present decision quality analysis in detailed report and/or summary briefing format that presents decision makers with salient facts about performance, requirements satisfaction, risks, cost/benefit analysis, security and schedule/timeline implications (among other relevant factors) to allow for effective, informed decision making.
2. Develop User Concept of Operations (CONOPS) on GEOINT initiatives by engaging with the NGA, NSG, ASG, USG, commercial and foreign partner user communities to describe the vision as to how the members will operate in future timeframes. These documents will be published to provide an operational framework to define new capabilities, manage operations, modify business practices, and support planning and programming activities in the near and mid-term.
3. Perform analyses to provide insight into enterprise wide development and delivery initiatives to include unplanned duplication across contract functions to inform acquisition strategy ensuring affordability, efficiency, and effectiveness.
4. Decompose Enterprise business architectures into defined business processes as requested by the Government.

### AoAs, Trade Studies and Engineering Assessments

The NEE contractor shall provide services to perform AoAs, trade studies comparison and engineering assessments of the operational effectiveness, suitability, risk, lifecycle costs, technology maturity, satellite and sensor integration, security and other critical factors of system, software, service, methodology choices impacting the GEOINT mission. These analyses, studies and assessment activities are closely linked to and are an integral part of determining sound courses of action/acquisition strategies for Capabilities-base Analysis and Pre-Acquisition Engineering. The contractor shall leverage the Modeling, Simulation and Analysis Team to identify, request and evaluate data used for AoAs, trade studies and engineering studies.

AoAs, Trade Studies and Engineering Assessments shall include the following, but is not limited to:

1. Plan and conduct in-depth AoA, trade study comparison, and engineering assessments/studies. These assessments must take into consideration the operational effectiveness, suitability, risk, lifecycle costs, technology maturity, security and other critical factors of systems, software, services, and methodology choices which impact the NGA mission.
2. Conduct in-depth verification and validations, and adjudication of recommendations in previously completed AoAs, trade studies, and engineering studies.
3. Establish standards across NGA Enterprise for performing AoAs, trade studies, and engineering assessments by creating templates, scripts and process flows to simplify the execution of some of the common repeatable tasks.
4. Recommend tools and techniques to easily compare, overlay, ingest and merge AoA, trade study, and engineering study data across the enterprise.
5. Use Model-Based Systems Engineering (MBSE) methods and tools to model alternatives used in engineering assessments, AoAs and trade studies.

## Modeling, Simulation & Analysis (MS&A)

The NEE Contractor shall provide support under Modeling, Simulation & Analysis (MS&A) using Model-based Systems Engineering (MBSE) methods and industry best practices. MS&A captures the knowledge, hypotheses, assumptions and conclusions of an intelligence problem in a format useful to both humans and machines. MS&A activities shall include the building, maintaining and use of software and/or digital representations of satellite and system architectures, subsystems, services, and components across the NGA, SAGE (CAP/SAP), NSG, ASG, USG, Mission Partner, commercial and foreign partners’ architectures. MS&A support shall also be utilized to depict/simulate enterprise and sub-level architectures to model/test performance and new concepts for future GEOINT architectures (i.e., ground, airborne, overhead). The MS&A activity shall conduct performance analysis, determine mission testing requirements, and provide/recommend measures of effectiveness (MOE) for new and existing capabilities to meet GEOINT and intelligence analysts’ needs. The Contractor shall initiate communications to ensure Modeling, Simulation & Analysis (MS&A) activities and results are collaborated/coordinated with engineering activities conducted in NEE, NGA Segment Engineering (NSE), NGA Foundational Engineering (NFE), and NGA Digital Engineering (NDE) contracts.

MS&A shall support, but is not limited to, the following MS&A activities:

1. Conduct and deliver assessments and recommendations on performance engineering and analysis throughout phases of the Systems Engineering Lifecycle.  Recommendations shall inform decisions related to current and future enterprise architectures (As-Is and To-Be), current and future capabilities, budgeting, proposed CONOPS and technical roadmaps.
2. Conduct Modeling, Simulation and Analysis to simulate, forecast and assess proposed activities/initiatives on emerging trends and disruptive forces that will impact and set the direction for the GEOINT To-Be Architecture.
3. Shall identify where changes may be beneficial and/or efficiencies gained.  As information technology environments and capabilities evolve, outcomes of MS&A will need to consider and assess the impacts of such changes.  Assessments shall include, but are not limited to:
4. Technology advancements and performance improvements in collection systems (Impact on collection capabilities and ground architecture)
5. Systems and applications resident inside and outside of IC ITE.
6. Automation of tasks and capabilities and resultant impact on architecture.
7. Automation of exploitation, incorporating adhoc tipping and cueing into planned collection decks and resultant impact on architecture.
8. New capabilities to support Activity Based Intelligence (ABI) and advanced analytics.
9. Impacts of machine learning and performance issues caused by big data, such as ever increasing sources of GEOINT content from multiple providers.
10. Impacts on communications and data transport systems within architectures and overall architectural timeliness and responsiveness.
11. Shall develop MS&A performance and mission effectiveness algorithms, methodologies, and programs needed to support NGA, NSG, ASG, USG, Commercial and Foreign Partner studies when needed.  Verify that MS&A performance and mission effectiveness algorithms, methodologies, and programs can run in any computing environment available to support MS&A tools and activities (e.g., IC ITE, COE, NGA cloud, stand-alone networks, thick clients, etc.).
12. Shall interface with external NSG, ASG, USG, Commercial and Foreign Partners to obtain necessary input data, assumptions and dependencies required for accurate MS&A performance and mission effectiveness analysis. Apply MS&A programs, algorithms, tools, and databases owned and/or used by NSG, ASG, USG, Commercial and Foreign Partners as applicable in studies development.
13. As directed by the government, shall perform Enterprise-level (“big picture”) performance and mission effectiveness analysis and deliver assessments and recommendations which inform/influence future enterprise architecture designs, capabilities, and roadmaps.
14. Shall perform comprehensive data collection and leverage enterprise collection capabilities (i.e., transactional performance data, capacity data) to provide accurate input data for MS&A performance and mission effectiveness analysis activities and high-confidence recommendations.
15. Shall conduct MS&A performance and mission effectiveness analysis throughout all phases of the Systems Engineering Lifecycle. Results, findings, and recommendations are key inputs to strategic guidance formation, integrated strategy planning, integrated solutions planning, and integrated execution.
16. Shall perform MS&A performance and mission effectiveness analysis activities, assessments, and prediction of IT services and performance to meet mission requirements with consideration for data characteristics (format, utilization, integrity, persistence), current/projected IT environment (services, protocols, bandwidth, speed, reliability, architecture), and applicable laws/policies/standards (security, interoperability).
17. Shall perform MS&A performance and mission effectiveness analysis on commercially available services and products and recommend which ones should be included into enterprise baselines.  MS&A shall include the evaluation of proposed solution strategies; identify project performance requirements and provide recommendations to divestment/acceleration decisions and cost estimation/evaluation.
18. Shall provide site specific modeling, simulation and analysis to support engineering activities.
19. Shall develop capacity impacts to include modeling of predictive impacts.
20. Shall conduct MS&A performance and mission effectiveness analysis to support requirements definition.  Analysis results should support possible updates to performance-based requirements for architectures, systems, subsystems, components, and applications, and evaluate potential RFC and ECP impacts.
21. Shall support AoA assessments through MS&A performance and mission effectiveness analysis of alternative materiel concepts and solutions to include actual and predicted performance metrics as directed by the government,
22. Shall evaluate and provide recommendations on information technology environments to ensure they are properly sized to meet current and future mission capacity and required performance.
23. Shall quantify “as-is” mission performance/capacity/CONOPS, drive forensic analysis and performance optimization, and enable operational research and data-backed analysis which deliver assessments and recommendations to significantly improve NGA’s ability to operate, plan, and evolve the NGA, NSG, ASG, and mission partners’ architectures.
24. Shall perform variable-fidelity end-to-end MS&A spanning GEOINT categories, current/future NSG/ASG source/destination services and NGA/external/cloud IT resources to inform current and future architectures and CONOPS.
25. Shall perform and report results on operational performance tests, “what if” analysis, and future epoch simulations spanning; data collection data processing, data movement, management, protection, storage, discovery, and exploitation services.
26. Shall migrate, maintain and operate required tools in IC ITE, C2S or Government Cloud unless otherwise directed.  Provide systems administration support through Web Services and LINUX.
27. Shall ensure MS&A’s use of IC ITE complies with ODNI CIO and NGA rules, standards, directives, and instructions.
28. Shall develop algorithms, codes and databases needed for studies using, but not limited to Microsoft Office Excel, Microsoft Office Access, Oracle, SQL using Visual Basic, R, Python, C++, C##, and JAVA for MS&A focus areas.
29. Shall utilize machine learning to optimize MS&A analytical processes
30. Shall modify, operate, run or help procure MS&A programs, tools, and databases on stand-alone networks and thick clients as directed by the Government.  (This is often necessary when conducting MS&A on SAP programs.)
31. Shall integrate MS&A programs, tools, foundational data, and databases in IC ITE with mission partners also developing and running MS&A programs, tools, and databases in IC ITE. (i.e. systems logs, performance logs)
32. Shall provide comparisons of alternative enterprise architectures against high priority intelligence problems as directed by the government.
33. Shall conduct performance quantification of competing communication system architectures and associated ground systems.  Performance quantifications shall include, but are not limited to:
34. Design assumptions against test data
35. Performance impact of adding satellites to existing constellations to include collection fulfillment and ground architectures
36. SATCOM Ground Station design and location
37. SATCOM Gap Analysis
38. Message Latency for inclusion in design assumptions (how much time should my design anticipate sending and receiving critical messages?)
39. Impact of adversarial actions on communication systems
40. Shall utilize MS&A system(s) that share a commons data schema where work can be shared across all NGA supported mission areas such as overhead, Tactical, and ground.

## Transition

### Transition Plan

As part of the transition, the contractor shall provide a staffing plan detailing the onboarding of all personnel identified in Appendix A. The plan shall describe the contractor employee names, company, clearance information, polygraph information, and dates of submittal into e-Nom.

The Contractor shall comply with the guidance in the table below.

**Table 1:Transition Availability**

| **Calendar Days After Award** | **Contractor Personnel** |
| --- | --- |
| 7 Days & 14 Days | * All Key Personnel eNomination Requests (eNom) submitted (within 7 days) and available for task order performance (within 14 days). |
| 15 Days | * At least 25% of all staff eNom submitted and available for task order performance. |
| 30 Days | * At least 50% of all staff eNom submitted and available for task order performance. |
| 45 Days | * At least 75% of all staff eNom submitted and available for task order performance. |
| 60 Days | * 100% of all staff eNom submitted and available for task order performance. |

3.6.1.1 Security Onboarding

The Contractor’s key personnel and any other personnel requiring access to classified systems shall have active Top Secret and be Sensitive Compartmented Information (TS/SCI) eligible at contract award.

To minimize the risk of a delay in supporting transition startup, the Contractor’s Security Office shall use the NGA eNomination system to nominate employees for personnel security clearances, facility badges, and system access. Upon security clearance approval, the Contractor shall schedule their personnel for clearance briefing and badges with the appropriate office(s) at NGA.

3.6.1.2 Sensitive Compartmented Information Facility (SCIF)

Any SCIF(s) that will be utilized to perform SCI work at contract sites must be coordinated with the CO and NGA Physical Security Team 7 days after award to ensure NGA authorization and accreditation is granted for NEE work to be performed in the contractor SCIF. Note: All SCI work performed at a Contractor site must be performed in either an NGA accredited Sensitive Compartmented Information Facility (SCIF) or an Other Government Agency (OGA) SCIF that has either a Memorandum of Agreement (MOA), Memorandum of Understanding (MOU), Joint Use Agreement or Co-Use Agreement with NGA for this effort.

### Transition Closeout

The Contractor shall support transition to another Contractor as directed by the Government (commencing 30 Days before the end of the contract). The Contractor shall review and transition knowledge and relevant information concerning enterprise engineering, architecture, and integration and standard operating procedures. The Contractor shall provide at a minimum the following items by the end of the contract in accordance with Government direction:

* Hardware and software development documentation that provides a comprehensive detailed description of the current operational baseline for each security domain. The documentation will at a minimum, contain the following: systems architecture, CM, software configuration, COTS integration, and capture of the hardware and software architectures.
* Operating system and application software with annotated source code for each security domain, including software under current development or test that is yet to be deployed. The Contractor shall provide the software in an industry standard format such as Microsoft TFS.
* Operational system data and database information, both current and historical, including user account data, metadata catalogs, stored imagery and products, system diagrams, and knowledge bases.

The Contractor shall conduct an organized transfer of Government-furnished equipment (GFE), Government-furnished property (GFP), and Government-furnished information (GFI), to include manufacturer maintenance agreements and software licenses as directed by the CO. The Contractor shall generate a report containing the final disposition of all NGA property.

The Contractor shall support the decommissioning and disposal of all Information Technology (IT) systems as directed by the Government. The Contractor shall follow NGA’s Decommissioning Disposal Review (DDR) process that is specific for hardware and software. The Contractor shall follow all processes in the DDR checklist for hardware and software, including maintenance of a Property Book to keep hand receipts, review signatures, and other acceptance criteria.

## Deliverables

The following sub-sections describe each of the Contract Data Requirements List (CDRL) documents required in support of this contract. A brief summary of these CDRLs is also shown in table form in the CDRL Matrix of this document.

### Kick-Off Meeting

The contractor shall schedule a kick-off meeting with the CO, PM and COR and TM within 10 calendar days of task order award.

### Monthly Meetings

A monthly telecom will be held with the CO, PM, and COR, to discuss status. The monthly telecoms will be held throughout the entire performance. The Contractor shall provide an agenda, identify any issues and document action items.

### Program Management Reviews

The contractor shall conduct Program Management Reviews (PMR) of the data generated in preparation of the Status Report to address monthly data and other pertinent management information, as requested. The review shall include Government requested information and shall include, but is not limited to:

1. Contract management reporting
2. Task progress and Funding Status Report
3. Control of the contractual task order (dollars and labor hours) and distribution
4. Projected changes in manpower and redistribution based on customer organization needs, manpower and recruiting summary
5. Security issues
6. Contractual action items
7. Task order accounting data documentation
8. Report by task order element of hours/rates by discipline and skill level and by labor category
9. Comparison of proposed travel costs to actual travel costs for each task order element
10. Comparison of total contract funding to invoiced services
11. Any special interest items requested by the Government or provided at the contractor’s initiative
12. Task Order Requirements Review (as needed)

These reviews may also address, in general, the efforts, challenges, problems, and accomplishments of contractor personnel in the respective task areas. The contractor shall provide the PMR agenda and briefing slides three (3) business days prior to the meeting and PMR minutes within five (5) calendar days following the meeting. Government program and contract management may require other compilations of data to ensure adequate insight into the task order execution. This review shall be held with the PMO, CO and task order COR.

### Monthly Financial Report (MFR)

The Monthly Financial Report (MFR) shall provide a summary of all program activity. The report will have specific content by task order and with contract expenditures, rates, and estimated cost at complete (EAC).

### Monthly Staffing Report (MSR)

As part of the Monthly Staffing Report (MSR), the contractor shall provide one (1) electronic softcopy of an updated staffing report. The MSR supports the tracking of contractor’s proposed personnel (i.e., designated position number or identifier, Prime/Sub-contractor, name, labor category, start/end date, office, geographical location, and other fields of information as may be determined at a later date). A template for the MSR will be provided.

### Activity Report (MAR)

The contractor shall submit a technical activity report (MAR) to the COR within ten business days, as requested.

### Technical Exchange Meetings (TEM)

The contractor shall schedule and support technical exchange meetings to collaborate and coordinate technical planning. The contractor shall record and submit minutes from the meetings.

### CDRL Matrix

The CDRL Deliverable List, shown in the table below is a list of all Contractor-provided deliverables that shall be met throughout the contract. All deliverables will be submitted in formats compatible with Adobe or Microsoft Office products. Softcopy delivery (via e-mail, etc.) is the preferred method of exchange for electronic copies. Deliveries will be made to the PM, CO, COR and/or Alternate COR (ACOR) as specified in the table below.

| **CDRL Title** | **CDRL #** | **SOW Section** | **First Submission** | **Updates** | **Delivered to** | **Format and number of deliverables** |
| --- | --- | --- | --- | --- | --- | --- |
| Monthly Financial Report | 001 | 3.7.4 | Award +30 Days | Monthly | COR/TM | 1 Electronic Copy to PMO Email Address  Contractor Defined, Government Approved |
| Monthly Staffing Report | 002 | 3.7.5 | Award +30 Days | Monthly | COR/TM | 1 Electronic Copy to PMO Email Address  Government Defined |
| Activity Report | 003 | 3.7.6 | Award +30 Days | As Requested | COR/TM | 1 Electronic Copy to appropriate TM Email Address(es) Contractor Defined, Government Approved |
| Transition Plan | 005 | 3.6.2 | Award + 7 days | As Required | PM/CO/COR | 1 Electronic Copy to PMO Email Address  Contractor Defined, Government Approved |
| Reports, Briefings, Evaluations, Technical Assignments, Transition Plan,  Minutes, White Papers Etc. | 006 | 3.0 | As Required | As Required | COR/TM | 1 Electronic Copy to PMO Email Address, or applicable Technical Monitor  Contractor Defined, Government Approved |

## Labor

Refer to Appendices A and B for estimated number of staff, overall description of work, duties, skills and education.

# General Provisions

## Primary Place of Performance

The primary place(s) of performance for this Task Order are NCE, NCW, and Washington Metropolitan Area (WMA) (Contractor facility). Other work locations will be considered if conducive to the effective performance of work. Possible examples of justified alternative work locations include primary locations of corporate SCIF, Lab or test/demonstration facilities. The contractor shall receive prior written approval for the alternative work location from the COR.

See the listing in Appendix B: Position Descriptions

## Government Furnished Property (GFP)

The Government will provide the following GFP for Task Order 0010:

**Hardware:** Hardware will be provided by the Government. For Contractors located at the Government site (on-site), this includes access to thin client COE and SBU networks; unclassified and classified VoIP phones, and printers.

For Contractors located at the Contractor-provided site (off-site), this includes (at a minimum): High side/classified/COE: thin clients, monitors, VoIP phones, printers, plotters and VTCs.  Note for Contractors located at the Contractor-provided site (off-site): This does NOT include unclassified equipment (phones, computers, etc.). The costs associated with these needs are the responsibility of the Contractor.

**Tools/Software:** Any tools/software required by the Contractor, not currently identified will have to go through the NGA Software Whitelist Assurance Process (SWAP) for approval prior to being placed on any NGA systems. The Contractor will be expected to use the provided tools/software to execute the TO 0010 SOW requirements until such time any new tools/software are approved and available for operational use on NGA systems.

For both on-site and off-site, the Government will provide a standard profile of Office productivity tools that includes Microsoft Office, Adobe Reader and 7-Zip file manager.

**Data:** The Government will provide access to all available NGA data to support the requirements of the Task Order 0010 SOW.

**Access:** The Government will facilitate access to Government facilities (to include badges) provided that the need for the access is validated and the security requirements of the contract are met. If other personnel security accesses are required, the Government will provide the sponsorship for additional accesses. The Government will provide access to information and data, relative to the tasks required to include sponsoring classified network connectivity.

## Foreign Contacts

Refer to the Base SOW.

# Security

Refer to the Base SOW.

# Key Personnel

The positions highlighted in blue in Appendix A are Key Personnel, subject to the Key Personnel clause included in the base contract.

# Travel and Other Direct Costs (ODCs)

Refer to the Base SOW section 9.3 and Section H.4 in the Base contract.

The Contractor and/or its Subcontractor personnel may be required by NGA/TIP to engage in consultations with government personnel from other Countries. These consultations may necessitate special travel needs due to safety and security concerns. When directed and approved by TIP government and the COR, the Contractor shall stay at the hotel arranged by the U.S. Embassy or as directed by TIP even when the hotel rates exceed daily per diem for the travel destination. Travel is not to exceed $100K per year.

# Appendix A: Anticipated Support Requirements

The requirements needed to adequately support this Task Order are listed in the table below. Position description information for government-defined labor is provided in Appendix B. The location column indicates the primary work location for contractor personnel.

**Government Defined**

| **Position ID\*** | **Location** | **Position Description  #** | **TO Section** | **FTE** | **Skill Level** | **Service Category** | **Job Title** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 01-10-TIP-01-0001 | WMA | 7 | 3.2, 3.3, 3.4 | 1 | 1–Junior | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0002 | WMA | 1 | 3.2, 3.3, 3.4, 3.5 | 1 | 2–Mid | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0003 | WMA | 1 | 3.2, 3.3, 3.4 | 1 | 2–Mid | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0004 | NCE | 1 | 3.2, 3.3, 3.4 | 1 | 2-Mid | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0005 | WMA | 1 | 3.2, 3.3, 3.4 | 1 | 2-Mid | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0006 | NCE | 7 | 3.2, 3.3, 3.4, 3.5 | 1 | 1-Junior | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0007 | WMA | 7 | 3.2, 3.3, 3.4 | 1 | 1-Junior | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0008 | WMA | 1 | 3.2, 3.3, 3.4 | 1 | 2-Mid | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0009 | WMA | 3 | 3.2, 3.3, 3.4, 3.5 | 1 | 4-Expert | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0010 | WMA | 3 | 3.2, 3.3, 3.4, 3.5 | 1 | 4-Expert | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0011 | WMA | 3 | 3.2, 3.3, 3.4 | 1 | 3-Senior | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0012 | WMA | 1 | 3.2, 3.3, 3.4 | 1 | 3-Senior | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0013 | NCE | 3 | 3.2, 3.3, 3.4 | 1 | 4-Expert | Engineering and Architecture | Systems Engineer |
| 01-10-TIP-01-0014 | WMA | 4 | 3.2, 3.3, 3.4 | 1 | 4-Expert | Engineering and Architecture | Systems Integrator |
| 01-10-TIP-01-0015 | WMA | 4 | 3.2, 3.3, 3.4 | 1 | 4-Expert | Engineering and Architecture | Systems Integrator |
| 01-10-TIP-01-0016 | NCE | 5 | 3.1 | 1 | 4-Expert | Engineering and Architecture | Systems Architect |
| 01-10-TIP-01-0017 | WMA | 6 | 3.2, 3.3, 3.4 | 1 | 3-Senior | Engineering and Architecture | Systems Integrator |
| 01-10-TIP-01-0018 | WMA | 8 | 3.2, 3.3, 3.4 | 1 | 2-Mid | Engineering and Architecture | Systems Integrator |
| 01-10-TIP-01-0019 | WMA | 1 | 3.3, 3.4, 3.5 | 1 | 2-Mid | Engineering and Architecture | Systems Engineer |

|  |
| --- |
|  |

**Appendix A Key:**

Signifies Critical Staffing Position

AA-BB-CCCC-12-3456 (First two Columns of Table)

|  |  |
| --- | --- |
| **Characters** | **Description** |
| AA | Statement of Work Number |
| BB | Task Order Number |
| CCCC | Organization Code Position Supports |
| 12 | Organization Number |
| 3456 | Position Number |

Skill level definitions for each service category are defined as follows. While the experience requirements for each level are the same across each service category, the associated labor rates may not be. Unless otherwise stated in Appendix B, default to the table below anytime the word “experience” is used in a position description to verify the number of years required.

|  |  |
| --- | --- |
| **Skill Level** | **Total Experience** (in years) |
| 4 - Expert | 18+ |
| 3 - Senior | 12+ to 18 |
| 2 - Mid | 6+ to 12 |
| 1 - Junior | 0 to 6 |

Experience may be substituted for academic degrees on a case-by-case basis with approval by the

Contracting Officer, Contracting Officer’s Representative (COR), and Government Point-of-Contact

(GPOC).

These lists of job titles should be considered a sample and are not all inclusive.

**Senior Management**

Sample job titles may include, but are not limited to: Program Manager, Technical Lead Integrator, Business Process Manager, Functional Specialist Advisor

**Engineering and Architecture**

Sample job titles may include, but are not limited to: Integration Engineer, Software Engineer, Enterprise Architect, Data Architect, Data Scientist, Data Modeler, Cyber Security Engineer, Systems Analyst, Systems Architect, Systems Engineer, Systems Integrator, Network Systems Engineer, Cloud Architect, Cloud Engineer, Human System Integrator

**IT Engineering**

Sample job titles may include, but are not limited to: Configuration Manager, Computer Programmer, Tech Writer, Software Quality Assurance Specialist, Schedule Analyst

**Administration**

Sample job titles may include, but are not limited to: Database Administrator, Web Administrator

# Appendix B: Position Descriptions

**Position 1**: Systems Engineer (Mid-Level)

**Overall Assignment Description:**  Mid-level Systems Engineers employ a multi-discipline approach to requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies to ensure timely and accurate GEOINT.

**Duties include:**

* Conducts requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies.
* Conducts planning, analysis/traceability of user requirements, architectures traceability, procedures, and problems to automate or improve existing systems and review cloud service capabilities, workflow, and scheduling limitations.
* Develops solutions designs based on analysis of requirements and new technology and mentor Junior Engineers in developing these skill sets.
* Assists the Government in the capture and translation of mission and customer requirements/needs into systems/capability requirements and solutions.
* Supports the analyses and allocation of requirements to systems architecture components and executing programs.
* Assists the Government in performing systems integration activities.
* Assists with Analysis of Alternatives (AoAs), Course of Actions (CoAs), Trade Studies, and Engineering Assessments.
* Assists the Government in strategic technical planning, project management, performance engineering, risk management and interface design.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Bachelor’s degree in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Mid-level experience in government or industry in relevant work areas including: DoD/IC Acquisition Process, Requirements Process, PPBES Process or system engineering of large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Mid-level experience system engineering experience in government or industry.
* Experience communicating and collaborating both within and external to organization.

Desired:

* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Working knowledge of Software Development Frameworks.
* INCOSE Associate System Engineering Professional (ASEP) certification.
* Documented work experience in the field of geospatial intelligence.
* Membership or active participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Working knowledge of photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.

**Position 2**: Systems Engineer (Senior- Level)

**Overall Assignment Description:**  Senior-level Systems Engineers guide engineering teams in taking a multi-discipline approach to requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies to ensure timely and accurate GEOINT.

**Duties include:**

* Guides Mid-level and Junior-level system engineers performing requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies.
* Guides the planning, analysis/traceability of user requirements, architectures traceability, procedures, and problems to automate or improve existing systems and review cloud service capabilities, workflow, and scheduling limitations.
* Guides Mid-level and Junior-level system engineers developing solutions designs based on analysis of requirements and new technology.
* Assists the Government in the capture and translation of mission and customer requirements/needs into systems/capability requirements and solutions.
* Supports the analyses and allocation of requirements to systems architecture components and executing programs.
* Assists the Government in performing systems integration activities.
* Conducts Analysis of Alternatives (AoAs), Course of Actions (CoAs), Trade Studies, and Engineering Assessments.
* Assists the Government in strategic technical planning, project management, performance engineering, risk management and interface design.
* Operates at the level of integrating multiple systems, services, processes, and interfaces within a Major Systems Acquisitions across organizational and agency boundaries.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Bachelor’s degree in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Senior-level experience in government or industry in relevant work areas including: DoD/IC Acquisition Process, Requirements Process, PPBES Process or system engineering of large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience with and strong understanding of systems engineering lifecycle.
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Master’s degree in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Working knowledge of Software Development Frameworks.
* INCOSE Certified System Engineering Professional (CSEP) certification.
* Experience in the field of geospatial intelligence.
* Licensure as a professional engineer.
* Membership or leadership participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Demonstrated knowledge in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.

**Position 3**: Systems Engineer (Expert)

**Overall Assignment Description:**  Expert Systems Engineers assist in leading engineering teams in taking a multi-discipline approach to requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies to ensure timely and accurate GEOINT.

**Duties include:**

* Assists the Government in directing requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies.
* Assists with the planning, analysis/traceability of user requirements, architectures traceability, procedures, and problems to automate or improve existing systems and review cloud service capabilities, workflow, and scheduling limitations.
* Advises the Government on proposed changes to the solutions designs based on analysis of requirements and new technology.
* Assists the Government in the capture and translation of mission and customer requirements/needs into systems/capability requirements and solutions.
* Supports the analyses and allocation of requirements to systems architecture components and executing programs.
* Assists the Government in performing systems integration activities.
* Assist in leading Analysis of Alternatives (AoAs), Course of Actions (CoAs), Trade Studies, and Engineering Assessments.
* Assists the Government in strategic technical planning, project management, performance engineering, risk management and interface design.
* Provides expert advice to the Government in the areas of relating vision, strategy, plans, needs, requirements, and process and capability developments.
* Operates at the level of integrating multiple Major Systems Acquisitions across organizational, agency, department, and governmental/national boundaries.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.
* Oversees and coordinates the work of Senior-, Mid-, and Junior-level contractor Systems Engineers.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Master’s degree in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Expert experience in government or industry in relevant work areas including: DoD/IC Acquisition Process, Requirements Process, PPBES Process or system engineering of large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience with and strong understanding of systems engineering lifecycle.
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Doctorate in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Software Development Framework certification.
* INCOSE Expert System Engineering Professional (ESEP) certification.
* Licensure as a professional engineer.
* Membership or leadership participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Experience in the field of geospatial intelligence.
* Experience engineering solutions using Cloud-based technologies.
* Experience engineering solutions using structured and unstructured Big Data.
* Experience engineering solutions using Automation, Augmentation and Artificial Intelligence technologies.
* Experience in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.

**Position 4**: Systems Integrator (Expert)

**Overall Assignment Description:**  Expert Systems Integrators support the Government by leading and overseeing the integrity of the NSG/ASG systems-of-systems enterprise. They lead and oversee planning, implementation approaches, testing, documenting, and maintaining solutions for total cloud services, systems or subsystems using defined processes and tools. They provide end-to-end system development life cycle support to the program.

**Duties include:**

* Assists with leading and performing systems integration activities across the NSG, ASG and Federal Agencies to ensure timely and accurate GEOINT.
* Assists with leading and overseeing a total systems perspective including a technical understanding of relationships, dependencies and requirements of cloud services, infrastructure and security domains.
* Assists with overseeing the preparation of engineering plans and site installation technical design packages.
* Oversees the work of Senior-, Mid-, and Junior-level contractor Systems Integrators.
* Refer to Section 3.3: Enterprise Integration Engineering (Cross System and Segment) for a listing of expected work activities the Integration Engineer position would be required to support.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Master’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Expert system integration experience in government integrating large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Membership or leadership participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Experience in the field of geospatial intelligence.
* Experience integrating solutions using Cloud-based technologies.
* Experience integrating solutions using structured and unstructured Big Data.
* Experience integrating solutions using Automation, Augmentation and Artificial Intelligence technologies.
* Experience in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.

**Position 5**: System Architect (Expert)

**Overall Assignment Description:**  Expert System Architects assist in leading the design and development of solutions for complex applications problems, API design, data services, platform services, cloud services and infrastructure services to meet user requirements and align to strategic goals and the Enterprise Architecture.

**Duties include:**

* Assists Government in directing system architects in the design, development, maintenance, and documentation of solution architectures ensuring traceability to the Enterprise architecture and Enterprise requirements.
* Assists with the analysis of user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations.
* Advises the Government on proposed changes to the solutions architecture design based on analysis of requirements and new technology.
* Oversees and coordinates the work of Senior-, Mid-, and Junior-level System Architect contractors.
* Refer to Section 3.1: Strategic, Enterprise, and Solutions-level Architecture Engineering for a listing of expected work activities the System Architect position would be required to support.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Master’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Expert experience in government or industry in relevant work areas including: Enterprise Architecture, Solution Architecture, Data Architecture, Department of Defense Architecture Framework (DoDAF), or Intelligence Community’s (IC) Program Architecture Guidance (PAG).
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Federated Enterprise Architect Certifications: Certified Enterprise Architect
* National Defense University, College of Information and Cyberspace, Enterprise Architecture Certification

**Position 6**: Systems Integrator (Senior)

**Overall Assignment Description:**  Senior Systems Integrators support the Government by leading and overseeing the integrity of the NSG/ASG systems-of-systems enterprise. They lead and oversee planning, implementation approaches, testing, documenting, and maintaining solutions for total cloud services, systems or subsystems using defined processes and tools. They provide end-to-end system development life cycle support to the program.

**Duties include:**

* Assists with leading and performing systems integration activities across the NSG, ASG and Federal Agencies to ensure timely and accurate GEOINT.
* Assists with leading and overseeing a total systems perspective including a technical understanding of relationships, dependencies and requirements of cloud services, infrastructure and security domains.
* Assists with overseeing the preparation of engineering plans and site installation technical design packages.
* Oversees the work of Senior-, Mid-, and Junior-level contractor Systems Integrators.
* Refer to Section 3.3: Enterprise Integration Engineering (Cross System and Segment) for a listing of expected work activities the Integration Engineer position would be required to support.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Bachelor’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Senior-level system integration experience in government integrating large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Master’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Experience in the field of geospatial intelligence.
* Membership or leadership participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Experience in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.

**Position 7**: Systems Engineer (Junior-Level)

**Overall Assignment Description:**  Junior-level Systems Engineers employ a multi-discipline approach to requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies to ensure timely and accurate GEOINT.

**Duties include:**

* Assists Mid-Level engineers and the Government in requirements engineering, solutions engineering, scheduling, reliability, resiliency, services development, integration, test and evaluation, maintainability and analysis across the National System of Geospatial-intelligence (NSG), Allied System of Geospatial-intelligence (ASG) and Federal Agencies.
* Assists in planning, analysis/traceability of user requirements, architectures traceability, procedures, and problems to automate or improve existing systems and review cloud service capabilities, workflow, and scheduling limitations.
* Assists in develop solutions designs based on analysis of requirements and new technology.
* Assists the Government in the capture and translation of mission and customer requirements/needs into systems/capability requirements and solutions.
* Supports the analyses and allocation of requirements to systems architecture components and executing programs.
* Assists the Government in performing systems integration activities.
* Assists with Analysis of Alternatives (AoAs), Course of Actions (CoAs), Trade Studies, and Engineering Assessments.
* Assist the Government in strategic technical planning, project management, performance engineering, risk management and interface design.

**Skills and Experience:**

Required:

* Bachelor’s degree in Systems Engineering or in related technical or scientific fields such as engineering, physics, mathematics, operations research, engineering management, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Junior-level experience system engineering experience in government or industry.

Desired:

* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Working knowledge of Software Development Frameworks.
* INCOSE Associate System Engineering Professional (ASEP) certification.
* Documented work experience in the field of geospatial intelligence.
* Membership or active participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Working knowledge of photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.

**Position 8**: Systems Integrator (Mid)

**Overall Assignment Description:**  Mid Systems Integrators support the Government by leading and overseeing the integrity of the NSG/ASG systems-of-systems enterprise. They lead and oversee planning, implementation approaches, testing, documenting, and maintaining solutions for total cloud services, systems or subsystems using defined processes and tools. They provide end-to-end system development life cycle support to the program.

**Duties include:**

* Assists with leading and performing systems integration activities across the NSG, ASG and Federal Agencies to ensure timely and accurate GEOINT.
* Assists with leading and overseeing a total systems perspective including a technical understanding of relationships, dependencies and requirements of cloud services, infrastructure and security domains.
* Assists with overseeing the preparation of engineering plans and site installation technical design packages.
* Refer to Section 3.3: Enterprise Integration Engineering (Cross System and Segment) for a listing of expected work activities the Integration Engineer position would be required to support.
* Ability to solve complex problems, lead a team(s) and work independently and proactively with minimal supervision.

**Skills and Experience:**

Required:

* Bachelor’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Mid-level system integration experience in government integrating large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience communicating and collaborating both within and external to organization, to include with senior executives and leaders.

Desired:

* Master’s degree in Computer Science, Information Technology, Management Information Systems, or related STEM degree program. Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Experience in the field of geospatial intelligence.
* Membership or leadership participation in any of the following professional organizations:
  + ACSM
  + ASCE
  + ASPRS
  + OGC
  + SAREM
  + USGIF
* Experience in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.
* Demonstrated knowledge of the current NSG/ASG and NRO enterprises.