National Geospatial-Intelligence Agency (NGA)



**Specific Requirements for GEOINT Future Capabilities Division (GFC) and GEOINT Enterprise Partner Engagement (GP)**

**Task Order (TO): 0015**

**Statement of Work (SOW)**

**06 September 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 Futures Capabilities Division (GFC) and GEOINT Enterprise Partner Engagement (GP) within the National Geospatial-Intelligence Agency’s (NGA) and GEOINT Enterprise (G) Directorate. 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

GFC is responsible for defining the requirements to successfully achieve end-to-end integration of all future GEOINT collection and ground capabilities. The division provides SE&I services that drive future GEOINT capabilities and inform resource decisions on behalf of the GEOINT functional manager. Independent user needs analysis, modeling optimal GEOINT Enterprise solutions, and advocating for National System for Geospatial-Intelligence (NSG) GEOINT needs in requirements and acquisition processes are critical to delivering timely quantitatively derived results, conclusions and recommendations to support senior level decision making.

GFC has three (3) functions:

* Collect, maintain and characterize validated and prioritized future GEOINT user needs from the NSG
* Provide objective, quantifiable, end-to-end assessments of NSG systems performance and mission effectiveness through modeling and simulation
* Develop NSG capability requirements documentation and support GEOINT systems acquisition development

GEOINT Enterprise Partner Engagement (GP) mission is to contribute to GEOINT Functional Management leadership and governance through in-depth knowledge and understanding of relationships, capabilities and engagement opportunities, to provide insight and situational awareness of the GEOINT community.

GP has four (4) functions:

* Leverage and enhance relationships with the NSG and its partners to include academia and industry.
* Maintain situational awareness and understanding of the GEOINT community’s capabilities, issues and priorities.
* Execute a Strategic Partner Engagement Program with the GEOINT community through deliberate, synchronized engagement.
* Advise the GEOINT Functional Manager, ADE and G leadership on community issues outside the core functions of any other single staff element.

## Scope

The Contractor shall perform SE&I and services work in accordance with the requirements specified in this TO. The Contractor shall provide end-to-end Modeling, Simulation, & Analysis (MS&A) development and execution in support of GFC. This includes gathering input/needs data in order to properly run MS&A tools; install and maintain new and existing MS&A tools on Government computer networks and stand-alone systems, and run MS&A tools to produce and provide quantitative analysis results in support of study activities and creation of requirements documents. A brief description of the engineering activities to be supported under this TO are as follows:

* **Enterprise Level Requirements Engineering.** The NEE contractor shall provide services to develop, document, decompose and allocate strategic requirements to establish and enable GEOINT Mission Solutions (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. The NEE contractor shall collaborate/support the NGA Segment Engineering (NSE) contractor in tracing System and Software Requirements Documents (SysRDs and SRDs) to Enterprise requirements.
* **Enterprise Integration Engineering (Cross Organization and Program Office).** The NEE contractor shall provide Cross Organization and Program Office integration services to ensure discrete program and project level solutions come together seamlessly to deliver comprehensive mission capabilities.
* **Enterprise Analysis and Assessment.** The NEE Contractor shall provide services to perform Capabilities-based Analysis, Business Engineering (Pre-Acquisition Engineering) and Analysis of Alternatives (AoA), Trade Studies, and Engineering Assessments.
* **Modeling, Simulation & Analysis (MS&A).** The NEE Contractor shall provide services to the Government for 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, Allied System for Geospatial-Intelligence (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.

## Compliance Documents

Refer to Base SOW.

## Reference Documents

Refer to Base SOW.

# Description of Work

## Requirements Engineering Support

The NEE Contractor shall perform systems engineering and integration activities associated with the GEOINT Enterprise Partner Engagement (GP) Office within (G), specifically related to the NSG Enterprise Request Framework (NERF) and the Request Management Team, as well as the NGA Service Component PMOs and IT Technical Requirements Team. The Contractor shall maintains consistency with the Agency’s requirements process and CIOT strategy while developing engineering artifacts, requirements documentation, and business cases. The contractor shall provide support to service NST’s and their IT Operations to ensure compatibility between Service Component IT Requirements and NGA IT systems, infrastructure, and services demonstrating an understanding of CIO-T, GP, and their respective NST components, NGA's governance and requirements processes enabling mission success, as well as identifying technical and programmatic areas requiring improvement thus streamlining technical practices and execution.

Requirements Engineering shall include the following, but is not limited to:

1. Ensure that Geospatial-Intelligence technical capabilities are delivered, operate and are available to users so they have the IT resources necessary to properly conduct their National Intelligence missions.
2. Capture and translate mission and customer requirements in order to transform them into capabilities.
3. Analyze and allocate requirements to system architecture components and oversee the development, testing, and validation of systems and services.
4. Coordinate the integration of systems and services into enterprise architecture applying a structured approach to the design and implementation of systems and processes.
5. Implement and execute strategic plans and programs in coordination with senior internal and external stakeholders.
6. Develop and maintain performance measures for capabilities and programs.
7. Lead technical exchange meetings with internal customers and technical stakeholders in the applicable Core Service Areas.
8. Document IT related concerns/issues/incidents, and perform change management and enterprise management.

## 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 MS&A 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.
6. Shall conduct assessments and evaluation in support of the development of future ground and space Statements of Capability (SOCs) in the development of Requirement Performance Metrics (RPMs)

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

The NEE Contractor shall provide support under MS&A using 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 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.

The MS&A support performed by the Contractor shall include the following, but is not limited to:

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 Concept of Operations (CONOPS) and technical roadmaps.
2. Conduct MS&A 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, data assessments, 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 Information Technology (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 MS&A 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 AoA materiel concepts and solutions to include actual and predicted performance metrics as directed by the Government,
22. Shall evaluate and provide recommendations on IT environments to ensure they are properly sized to meet 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 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 and dissemination 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, as needed for systems required to execute duties under this TO.
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, ExtendSim, 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 (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 facilitate and/or participate in the development and simulation of detailed scenarios/vignettes that capture the timeliness, area, and resolution, and other characteristics of GEOINT data and analytics required to achieve success in high priority intelligence problems.
34. Shall conduct performance quantification of proposed communication system architectures and associated ground systems.  Performance quantifications shall include, but are not limited to:
35. Design assumptions against test data
36. Performance impact of adding satellites to existing constellations to include collection fulfillment and ground architectures
37. SATCOM Ground Station design and location
38. SATCOM Gap Analysis
39. Message Latency for inclusion in design assumptions (How much time should my design anticipate sending and receiving critical messages?)
40. Impact of adversarial actions on communication systems
41. Shall utilize MS&A system(s) that share a common 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 TO performance (within 14 days). |
| 15 Days | * At least 25% of all staff eNom submitted and available for TO performance. |
| 30 Days | * At least 50% of all staff eNom submitted and available for TO performance. |
| 45 Days | * At least 75% of all staff eNom submitted and available for TO performance. |
| 60 Days | * 100% of all staff eNom submitted and available for TO performance. |

3.4.1.1 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.

3.4.1.2 Sensitive Compartmented Information Facility (SCIF)

Any Sensitive Compartmented Information Facility (SCIF) that will be utilized to perform SCI work at contract sites must be coordinated with the Contracting Officer (CO) and NGA Physical Security Team seven (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 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 TO period 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 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, Program Manager (PM) and Contracting Officer’s Representative (COR) and Technical Monitor (TM) within 10 calendar days of TO award.

### Weekly Meetings

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

### Quarterly Reviews

The Contractor shall conduct Quarterly Program Management Reviews (PMR) of the data generated in preparation of the Status Report to address monthly data and other pertinent management information. 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 TO (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. TO accounting data documentation
8. Report by TO 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 TO 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. TO 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 TO execution. This review shall be held with the PMO, CO and TO 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 TO 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/Subcontractor, 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.

### Monthly Activity Report (MAR)

The Contractor shall submit a technical monthly activity report (MAR) to the COR no later than the 15th of each month.

### 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** |
| --- | --- | --- | --- | --- | --- | --- |
| Quarterly Program Management Reviews | 001 | 3.5.3 | Award +120 Days | Quarterly | PM/CO/COR | 1 Electronic Copy to PMO Email Address Contractor Defined, Government Approved |
| Monthly Financial Report | 002 | 3.5.4 | Award +30 Days | Monthly | COR/TM | 1 Electronic Copy to PMO Email Address  Government Defined |
| Monthly Staffing Report | 003 | 3.5.5 | Award +30 Days | Monthly | COR/TM | 1 Electronic Copy to PMO Email Address  Government Defined |
| Monthly Activity Report | 004 | 3.5.7 | Award +30 Days | Weekly | COR/TM | 1 Electronic Copy to appropriate TM Email Address(es) Government Defined |
| Trip Reports | 005 | 7.0 | NLT 10 business days after return | As Required | COR/TM | 1 Electronic Copy to PMO Email Address and to appropriate TM Email Address(es)  Contractor Defined, Government Approved |
| Transition Plan | 006 | 3.4.2 | TO Proposal | Award +7 days, Award + 15 days | 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. | 007 | 3.0 | As Required | As Required | COR/TM | 1 Electronic Copy to PMO Email Address, or applicable Technical Monitor  Contractor Defined, Government Approved |
| Requirement Trace Reports | 008 | 3.0 | As Required | As Required | COR, TM & GPOC | 1 Electronic Copy to PMO Email Address, or applicable Technical Monitor  Contractor Defined, Government Approved |
| Digital Models, Digital representations | 009 | 3.0 | As Required | As Required | COR, TM, GPOC | Electronic delivery as defined by Government  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, ADF-E, Valley Forge, PA, 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 TO 0015:

**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 0015 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 TO 0015 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)

(U) Travel will be required and must be pre-approved by the COR. All travel shall be reimbursed based on costs incurred in accordance with the Federal Travel Regulations (FTR). Travel is anticipated in support of work requirements described in SOW sections identified in Table 1 - Anticipated Travel Requirements. The anticipated travel applies to all positions during the first year of award. Travel is set at Not-to-Exceed (NTE) amounts of $12,000 (RDT&E) under CLIN 0003 – 4003 and $8,000 (O&M) under CLIN 0007 – 4007 per year, totaling $20,000 per year.

# Appendix A: Anticipated Support Requirements

The requirements needed to adequately support the GFC TO 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.

**(O&M) – 6 FTE**

| **Position ID\*** | **Position Number** | **Location** | **Position Description  #** | **TO Section** | **FTE** | **Skill Level** | **Service Category** | **Job Title** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 01-15-GFC -OM- | 0001 | NCE or ADF-E | 1 | 3.3 | 1 | 4 – Expert | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15-GFC- OM- | 0002 | WMA | 2 | 3.3 | 1 | 3 – Senior | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15-GFC- OM- | 0003 | WMA | 2 | 3.3 | 1 | 3 – Senior | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15-GFC- OM- | 0004 | WMA | 3 | 3.3 | 1 | 2 – Mid | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15-GFC-OM- | 0005 | WMA | 7 | 3.3 | 1 | 1 – Junior | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15-GFC- OM- | 0006 | WMA | 7 | 3.3 | 1 | 1 – Junior | Engineering and Architecture | Modeling, Simulation & Analysis |

**(RDT&E) – 10 FTE**

| **Position ID\*** | **Position Number** | **Location** | **Position Description  #** | **TO Section** | **FTE** | **Skill Level** | **Service Category** | **Job Title** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 01-15-GFC- RD- | 0007 | KOP | 2 | 3.3 | 1 | 3 – Senior | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15- GFC-RD- | 0008 | KOP | 2 | 3.3 | 1 | 3 – Senior | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15- GFC-RD- | 0009 | KOP | 3 | 3.3 | 1 | 2 – Mid | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15- GFC- RD | 0010 | KOP | 3 | 3.3 | 1 | 2 – Mid | Engineering and Architecture | Modeling, Simulation & Analysis |
| 01-15- GFC-RD- | 0011 | NCE or ADF-E | 4 | 3.2 | 1 | 4 – Expert | Engineering and Architecture | Systems Engineer |
| 01-15- GFC- RD- | 0012 | NCE or ADF-E | 5 | 3.2 | 1 | 3 – Senior | Engineering and Architecture | Systems Engineer |
| 01-15- GFC-RD- | 0013 | NCE or ADF-E | 6 | 3.2 | 1 | 2 – Mid | Engineering and Architecture | Systems Engineer |
| 01-15- GFC- RD- | 0014 | NCE or ADF-E | 6 | 3.2 | 1 | 2 – Mid | Engineering and Architecture | Systems Engineer |
| 01-15- GP- RD- | 0015 | NCE | 5 | 3.1 | 1 | 3 – Senior | Engineering and Architecture | Systems Engineer |
| 01-15- GP- RD- | 0016 | NCE | 5 | 3.1 | 1 | 3 – Senior | Engineering and Architecture | Systems Engineer |

|  |
| --- |
|  |

**Appendix A Key:**

Signifies Critical Staffing Position

|  |  |
| --- | --- |
| **Characters** | **Description** |
| AA | Statement of Work Number |
| BB | TO Number |
| CC | Office |
| DD | Appropriation (OM=O&M, RD = RDT&E) |
| 1234 | 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 a degree based on the position requirements 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: Computer Programmer, Tech Writer, Software Quality Assurance Specialist

**Administration**

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

# Appendix B: Position Descriptions

**Position 1: Modeling, Simulation and Analysis Engineer (Expert)**

**Overall Assignment Description:**

Expert Modeling, Simulation and Analysis (MS&A) Engineers guide and conduct modeling, simulation and analysis activities in support of business stakeholders, analysts, and warfighters to define and analyze system and data requirements to support NGA business and mission processes to ensure timely and accurate GEOINT.

**Duties include:**

* Serves as MS&A team lead, overseeing work of Senior, Mid-, and Junior-level Contractor MS&A Engineers. This includes providing detailed tasking and guidance that ensures timely achievement of Government directed goals and milestones. Host regular (weekly, or as otherwise directed), tag up meetings that include all GFC NEE MS&A Contractors and at least one Government lead to 1) present accomplishments since last meeting, 2) raise questions and concerns and propose viable paths forward, and 3) propose accomplishments to achieve before next meeting to obtain Government approval.
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to Government leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.
* Provides technical expertise supporting GEOINT Overhead and Ground Architectures and associated phenomenology.
* Guides the development and use of complex models, tools and algorithms to identify trends and patterns in Big Data.
* Guides modeling of NGA’s architectures, requirements, and systems performance and considers NGA and NSG strategies and overall vision for the future of GEOINT. GEOINT Architectures include foreign, commercial and Government owned space-based collection systems; commercial and Government airborne collection systems; and all supporting ground systems.
* Guides the creation of models to support analysis of alternatives, performance trades, design trades and new capabilities and develops alternatives for deployment based on MS&A results in existing NSG architectures and cloud environments.
* Prepares deliverables that include collection and volumetric data gap analyses, utilization analyses, statistical and forecasting analyses, presentations, and written reports and recommendations. Draft deliverables must be reviewed by one other MS&A Contractor or qualified Government teammate before delivering to Government lead, at least 1 business day prior to due date.
* Plans and executes MS&A activities in support of GEOINT studies and assessments, performing data collection and preparation, model formulation and set-up, and execution of production runs or other model experimentation
* Analyzing alternatives to optimize performance and improve understanding of ground and overhead systems architectures and components
* Actively collaborates in the development and collections of future overhead and ground needs to ensure collected data is fit for purpose in performance and effectiveness modeling and simulation.
* Provide technical support to Government leads by proactively discovering and researching modeling and simulation improvements or concerns, and proposing approaches that the team can take to achieve or resolve them. Common areas for improvements / concerns include, but are not limited to algorithms, interfaces, inputs, outputs, and visualizations.
* Refer to Section 3.5: Modeling, Simulation and Analysis (MS&A) for a listing of expected work activities the MS&A Engineer would be required to support.

**Skills and Experience:**

Required:

* Master’s degree in Engineering, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Experience in Government or industry modeling, or leading others in the modeling of, large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience in developing, or leading others in the development of, tools using programming languages such as C, SQL, R, Visual Basic and Python
* Experience in the use of models, simulation, and visualization technologies in decision support roles.
* Experience with NTM, US Commercial or Foreign Partner GEOINT collection systems and related Key Performance Parameter benchmarks.
* Knowledge of the intelligence community and the geospatial intelligence mission
* Knowledge of applied statistics
* Experience with manipulating and maintaining large and complex databases
* Knowledge of tools development and use in cloud environments.

Desired:

* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Experience in machine learning.
* Experience in Operations Research.
* Knowledge of Structured Observation Management and Activity Modeling.
* Experience performing MS&A on solutions using Cloud-based technologies.
* Experience performing MS&A on solutions using structured and unstructured Big Data.
* Experience performing MS&A on solutions using Automation, Augmentation and Artificial Intelligence technologies.

**Position 2: Modeling, Simulation and Analysis Engineer (Senior-Level)**

**Overall Assignment Description:**

Senior-level Modeling, Simulation and Analysis (MS&A) Engineers guide and conduct modeling, simulation and analysis activities in support of business stakeholders, analysts, and warfighters to define and analyze system and data requirements to support NGA business and mission processes to ensure timely and accurate GEOINT.

**Duties include:**

* Guides the development and use of complex models, tools and algorithms to identify trends and patterns in Big Data.
* Provide guidance to authors and briefers on effective data visualization, narrative development, and decision support
* Frame and deconstruct problem sets, identify relevant data, and present actionable analysis.
* Writing scripts to ingest and analyze results of M&S runs using Data Visualization
* Researching current and future system architectures for studies & analysis and developing representative models to portray performance of architectures and their components
* Guides modeling GEOINT architectures, requirements, and systems performance and considers NGA and NSG strategies and overall vision for the future of GEOINT. Architectures include foreign, commercial and Government owned space-based collection systems; commercial and Government airborne collection systems; and all supporting ground systems
* Guides the creation of models to support analysis of alternatives, performance trades, design trades and new capabilities and develops alternatives for deployment based on MS&A results in existing NSG architectures and cloud environments.
* Guides data collection and preparation, model formulation and set-up, and execution of production runs or other model experimentation
* Data processing and visualization of large volumes of model inputs and outputs; detailed statistical analyses of model results
* Guiding, testing, updating and maintain tools and techniques for ingesting and processing input and output data.
* Guiding, testing, updating and maintain tools and techniques that integrate the various input/output data sets from multiple models and simulators.
* Identify and resolve functionality capability issues impeding correct display of evaluation results.
* Performing quantitative analysis of existing collection decks. Analyze, process and present results from orbit simulations, including imaging and communications statistics
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.
* Refer to Section 3.5: Modeling, Simulation and Analysis (MS&A) for a listing of expected work activities the MS&A Engineer would be required to support.

**Skills and Experience:**

Required:

* Bachelor’s degree in Engineering, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Experience in Government or industry modeling large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Knowledge of tools development and use in cloud environments.
* Demonstrated experience working with programming languages such as C, SQL, R, Visual Basic and Python
* Demonstrated understanding of the geospatial intelligence mission and the use of models, simulation, and visualization technologies in decision support roles.
* Experience with NTM, US Commercial or Foreign Partner GEOINT collection systems and related Key Performance Parameter benchmarks.
* Knowledge of applied statistics
* Experience with manipulating and maintaining large and complex databases

Desired:

* Master’s degree in Engineering, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Machine learning experience.
* Experience in Operations Research.

**Position 3: Modeling, Simulation and Analysis Engineer (Mid-Level)**

**Overall Assignment Description:**

Mid-level Modeling, Simulation and Analysis (MS&A) Engineers conduct modeling, simulation and analysis activities in support of business stakeholders, analysts, and warfighters to define and analyze system and data requirements to support NGA business and mission processes to ensure timely and accurate GEOINT.

**Duties include:**

* Assists Government with the development and use of complex models, tools and algorithms to identify trends and patterns in Big Data.
* Building and running models to include EO, SAR, Commercial and Foreign collection systems; developing and producing conditional probability tables as model inputs
* Building and running models on all ground, and ground supporting systems to include communications; developing and producing conditional probability tables as model inputs
* Building and updating models and analysis tools within standard modeling software environments such as ExtendSim, Netica, MS Excel, SPSS and/or MATLAB
* Data processing and visualization of large volumes of model inputs and outputs
* Performs data collection and preparation, model formulation and set-up, and execution of production runs or other model experimentation
* Supports developing models NGA’s architectures, requirements, and systems performance and considers NGA and NSG strategies and overall vision for the future of GEOINT.
* Supports creating models to support analysis of alternatives, performance trades, design trades and new capabilities and develops alternatives for deployment based on MS&A results in existing NSG architectures and cloud environments.
* Support data exploration and visualization of historical and forecast performance and other data
* Building, testing, updating and maintain tools and techniques for ingesting and processing input and output data.
* Building, testing, updating and maintain tools and techniques that integrate the various input/output data sets from multiple models and simulators.
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.
* Refer to Section 3.5: Modeling, Simulation and Analysis (MS&A) for a listing of expected work activities the MS&A Engineer would be required to support.

**Skills and Experience:**

Required:

* Bachelor’s degree in Engineering, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Experience in Government or industry modeling large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience working with programming languages such as C, SQL, R, Visual Basic and Python
* Understanding of applied statistics
* Experience with manipulating and maintaining large and complex databases

Desired:

* Graduate degree in Operations Research, Statistical Analysis, or other higher level mathematics
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Demonstrated understanding of the geospatial intelligence mission and the use of models, simulation, and visualization technologies in decision support roles.
* Experience with NTM, US Commercial or Foreign Partner GEOINT collection systems and related Key Performance Parameter benchmarks.
* Mid-level Operations Research skills to accompany Systems Analysis and better represent the breadth and depth of the required MS&A interface.

**Position 4: 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.
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to Government leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.

**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 working 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.

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
* Extensive work 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.
* Demonstrated expertise in photogrammetry, remote sensing, image science, information sciences, geographic information systems, geomatics, or related fields.

**Position 5: 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
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to Government leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.

**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 working 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.

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.
* Documented work 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 expertise 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 6: 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.
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to Government leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.

**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 working 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 working 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 7: Modeling, Simulation and Analysis Engineer (Junior-Level)**

**Overall Assignment Description:**

Junior-level Modeling, Simulation and Analysis (MS&A) Engineers conduct modeling, simulation and analysis activities in support of business stakeholders, analysts, and warfighters to define and analyze system and data requirements to support NGA business and mission processes to ensure timely and accurate GEOINT.

**Duties include:**

* Assists Government with the development and use of complex models, tools and algorithms to identify trends and patterns in Big Data.
* Building and running models to include EO, SAR, Commercial and Foreign collection systems; developing and producing conditional probability tables as model inputs
* Building and running models on all ground, and ground supporting systems to include communications; developing and producing conditional probability tables as model inputs
* Building and updating models and analysis tools within standard modeling software environments such as ExtendSim, Netica, MS Excel, SPSS and/or MATLAB
* Data processing and visualization of large volumes of model inputs and outputs
* Performs data collection and preparation, model formulation and set-up, and execution of production runs or other model experimentation
* Supports developing models NGA’s architectures, requirements, and systems performance and considers NGA and NSG strategies and overall vision for the future of GEOINT.
* Supports creating models to support analysis of alternatives, performance trades, design trades and new capabilities and develops alternatives for deployment based on MS&A results in existing NSG architectures and cloud environments.
* Support data exploration and visualization of historical and forecast performance and other data
* Building, testing, updating and maintain tools and techniques for ingesting and processing input and output data.
* Building, testing, updating and maintain tools and techniques that integrate the various input/output data sets from multiple models and simulators.
* Exhibits transparency by sharing all salient facts relevant to the task at hand. Routinely provides honest and frank feedback to leads on the achievability of desired deliverables within proposed timeframes.
* Communicates unexpected setbacks quickly, and proposes mitigation actions. Incorporates lessons learned in future planning.
* Arrives on time and prepared to actively participate in all meetings.
* Refer to Section 3.5: Modeling, Simulation and Analysis (MS&A) for a listing of expected work activities the MS&A Engineer would be required to support.

**Skills and Experience:**

Required:

* Bachelor’s degree in Engineering, Computer Science, Information Technology, Management Information Systems, or related STEM degree program.
* Experience in Government or industry modeling large complex System of Systems or Service Oriented Architecture/Cloud environments.
* Experience working with programming languages such as C, SQL, R, Visual Basic and Python
* Understanding of applied statistics
* Experience with manipulating and maintaining large and complex databases

Desired:

* Graduate degree in Operations Research, Statistical Analysis, or other higher level mathematics
* Working knowledge of Model Based Systems Engineering, processes, tools and languages.
* Demonstrated understanding of the geospatial intelligence mission and the use of models, simulation, and visualization technologies in decision support roles.
* Experience with NTM, US Commercial or Foreign Partner GEOINT collection systems and related Key Performance Parameter benchmarks.
* Junior-level Operations Research skills to accompany Systems Analysis and better represent the breadth and depth of the required MS&A interface.