

**ATTACHMENT J-1**  
**STATEMENT OF WORK**  
**For**  
**SPECIALIZED ENGINEERING SERVICES TASKS FOR SOFTWARE,**  
**AVIONICS AND INTEGRATION**

**1.0 Scope**

The Contractor shall provide systems engineering support to the Marshall Space Flight Center (MSFC) Science and Mission Systems, including but not limited to, Exploration and Space Operations Programs and Projects Office. The Contractor shall provide support for, but not limited to, the development of / support to the Exploration Systems Mission Directorate (ESMD) and Space and Launch Vehicle Systems products, tasks and activities.

The Contractor shall provide management, systems engineering and development support in the following areas for the program or project offices such as, but not limited to, System Engineering and Integration (SE&I) and Space Systems and Launch Vehicle Systems:

1. **Modeling & Simulation (M&S) Integrated Management**
2. **Development of Parametric Program Model and Support Infrastructure**
3. **Development of High-Fidelity, Time-Based Program Model and Support Infrastructure**
4. **Development of Program Models and Support Infrastructure for Distributed Systems Integration**
5. **M&S Verification and Validation Services**
6. **Integrated M&S Capability, Planning, Development and Implementation**
7. **Program Planning and Organizational Development Support**
8. **Software and Avionics Integration Support**
9. **Test and Verification Development and Support**
10. **Interface Management Development and Support-**

The Contractor shall participate in various Technical Working Group (TWG) meetings, interface with projects and functional offices and participate in monthly reviews and / or telecons to collect the required information for supporting these task processes.

**2.0 Task Order Management and Reporting**

**A. Contractor Management**

The Contractor shall provide the planning, coordination, technical direction, and surveillance of the activities necessary to assure disciplined performance of work

and timely application of resources for the accomplishment of all tasks issued under the order. The Contractor shall be responsible for maintaining communication with each supported organization and alerting the Contracting Specialist immediately of any problems that would prevent meeting established milestones.

## **B. Data Requirements Descriptions (DRDs)**

The contractor shall report and document this work and fulfill the requirements of associated Data Requirement Descriptions (DRD's) as outlined in Data Procurement Document (DPD) 1228 (Attachment J-2). The contractor shall determine the data restriction that applies to each data deliverable and mark or transmit the data restriction in accordance with section 2.3.3 of the Data Procurement Document.

1. The Contractor shall prepare and submit a Monthly Status Report in accordance with DRD 1228MA-001. Any presentation, reports, analyses or technical memorandum that is developed during the execution shall be pre-coordinated with the Task Order Monitor and final copies provided to the Task Order Monitor.

The Contractor shall provide NASA with necessary information on project progress to allow the Government to monitor product assurance, identify significant problems, and implement corrective action as applicable based on the Contractor's performance.

The Contractor shall develop and maintain a Work Breakdown Structure (WBS) defining all task elements contained in this Task Order and in accordance with established GSA rates per hours worked.

2. The contractor shall prepare and deliver a Badged Employee and Remote IT User Listings in accordance with DRD 1228MA-002
3. The Contractor shall prepare and deliver a Contractor Employee Clearance Document in accordance with DRD 1228MA-003.
4. The Contractor shall prepare and deliver submit a Position Risk Designation for Non-NASA Employees in accordance with DRD 1228MA-004.
5. The Contractor shall prepare a Contract Information Security Program Plan (CITSPP) that documents how the Contractor will be responsible for information and IT security in accordance with DRD 1170CD-001.
6. The contractor shall establish and implement an industrial safety, occupational health, and environmental program that (1) prevent employee fatalities, (2) reduce the number of incidents, (3) reduce the severity of

employee injuries and illnesses, and (4) protects the environment through the ongoing planning, implementation, integration and management control of these programs in accordance with DRD 1228SA-001. The SHE Plan shall address each of the following MSFC SHE core program requirements in detail that are applicable to the contracted effort:

- a. Management leadership and employee involvement.
  - b. System and worksite analysis.
  - c. Hazard prevention and control.
  - d. Safety, health and environmental training.
7. The contractor shall report mishaps and safety statistics to the MSFC Industrial Safety Office in accordance with DRD 1228SA-002. The contractor shall submit direct to the NASA Incident Reporting Information System (IRIS) or shall use the forms listed in section 15.4 of DRD 1228SA-002 or electronic equivalent to report mishaps and related information required to produce the safety metrics.

### **3.0 Technical Requirements**

The contractor shall be responsible for information and information technology (IT) security when physical or electronic access to NASA's computer systems, networks, or IT infrastructure is required or when NASA information is stored, processed, generated or exchanged with NASA or on behalf of NASA, regardless of where the information resides.

All data files and reports electronically delivered shall comply with Technical Standard 1194.21 of the Rehabilitation Act of 1973, Section 508.

Tasks shall be defined as follows:

#### **3.1 ESMD M&S Integrated Management Support – Closed April 2010**

##### ESMD Development of Parametric Program Model and Support Infrastructure:

The Contractor shall provide engineering modeling, software development and computer networking expertise to support the Integrated Program Model (IPM) by performing the following tasks:

- Capture, document and maintain all program Integrated Program Model (IPM) requirements.
- Support the continued development of the IPM as captured in the IPM requirements documents.
- Develop, for CxP SE&I M&S team, IPM plans and revise as required.
- Provide technical briefings, demonstrations and training of the IPM.

- Coordinate with NASA organizations and designated support Contractors to facilitate the development of the IPM by attending Technical Working Groups, providing or collecting data, and providing or collecting models and simulations.
- Use their expertise in these systems to provide expert advice in the development of the IPM and how to integrate the elements of the model.
- The Contractor shall support the architecture and collaborative infrastructure development.
- The Contractor shall provide expertise needed to facilitate the development of Vignette collaborative technologies.
- The Contractor shall support assessments and definition of an integration frameworks required by the overarching integrated M&S exploration activities by performing planning, development and implementation tasks.
- The Contractor will provide studies and analysis in developing and integrating spreadsheet-based analytical models across the spectrum of Systems Engineering tasks as they are applied to ESMD projects.
- The Contractor shall also support the integration of existing and future models and simulations necessary to perform design analyses and system test and verification. This effort will support the continued development and evolution of the ESMD M&S effort across the program lifecycle.

ESMD M&S VV&A Services:

The Contractor shall provide M&S Verification, Validation and Accreditation (VV&A) and model integration and development support to the NASA Project Manager (or delegate) with the following specific responsibilities:

- Provide expertise to support the planning, development and implementation of CxP SE&I VV&A processes for the ESMD DIO and the CxP SE&I M&S Offices.
- Assist SAVIO in maturing the VV&A process by capturing feedback to update CxP SE&I documentation.
- Provide inputs to a formalized Accreditation Process and M&S Risk Assessment Methodology.
- Identify and assist in planning VV&A Training, Education and Socialization needs for a successful implementation of the VV&A processes at the ESMD and CxP levels.
- Assist in promoting the VV&A concepts, principles and practices through the development of briefings, white papers and other materials to communicate across stakeholder communities by participating in conferences and workshops.
- Provide technical support and input to develop required documentation in the form of briefing materials to support this activity.

Organizational and Event Planning Support

The Contractor shall provide planning and control coordination, and organizational development support to ESMD management by performing the following tasks:

- Support planning and coordination (including site selection, communication with attendees, on-site capabilities requests, etc.) of large, multi-organizational events conducted in support of ESMD DIO strategic planning and analysis.
- Support execution (including preparation, meeting support, onsite coordination with service providers, minutes and notes development, etc.) of large, multi-organizational events conducted in support of ESMD DIO strategic planning and analysis.

### **3.2 CxP SAVIO Modeling, Simulation and Test Support – Closed June 2009**

#### CxP M&S Integrated Management:

The Contractor shall provide this support to the NASA Project Manager with the following specific responsibilities:

- Prepare and update Project Plans and Project Agreements under the direction of the Project Manager. Coordinate all information between various Subcontractors and orchestrate a weekly and monthly as needed, forums for staff discussions.
- Prepare, present, and submit progress reports as required by the Task Order.
- Track and review actions related to the project and assist in their closure.
- Prepare and coordinate input to ESMD, CxP and Software & Avionics Integration Office (SAVIO) schedules.
- Coordinate weekly SAVIO staff meetings and update status briefings.
- Review VV&A Plans and Accreditation memos and provide recommendations to the CxP SAVIO.
- Provide reviews, assessment guidance and recommendations to the CxP SAVIO on M&S project management, engineering, and integration documentation.
- Provide guidance and recommendations to the CxP SAVIO on project management activities to include project plan development, Earned Value Management implementation, metrics utilization, risk management, and requirements management.
- Lead the development and maintenance of an integrated CxP SAVIO schedule and coordinate its incorporation into the CxP SE&I Integrated Schedule.
- Provide guidance and recommendations on the preparation and maintenance of project planning and control documentation required by the CxP SAVIO (e.g. policies, strategies, implementation plans, requirements, Risk Management Plan and Reporting, metrics).

#### CxP Development of Parametric Program Model and Support Infrastructure:

The Contractor shall provide engineering modeling, software development and computer networking expertise to support the Integrated Program Model (IPM) by performing the following tasks:

- Capture, document and maintain all program Integrated Program Model (IPM) requirements.
- Support the continued development of the IPM as captured in the IPM requirements documents.
- Develop, for CxP SE&I M&S team, IPM plans and revise as required.
- Provide technical briefings, demonstrations and training of the IPM.
- Coordinate with NASA organizations and designated support Contractors to facilitate the development of the IPM by attending Technical Working Groups, providing or collecting data, and providing or collecting models and simulations.
- Use their expertise in these systems to provide expert advice in the development of the IPM and how to integrate the elements of the model.
- The Contractor shall support the architecture and collaborative infrastructure development.
- The Contractor shall provide expertise needed to facilitate the development of Vignette collaborative technologies.
- The Contractor shall support assessments and definition of an integration frameworks required by the overarching integrated M&S exploration activities by performing planning, development and implementation tasks.
- The Contractor will provide studies and analysis in developing and integrating spreadsheet-based analytical models across the spectrum of Systems Engineering tasks as they are applied to ESMD projects.
- The Contractor shall also support the integration of existing and future models and simulations necessary to perform design analyses and system test and verification. This effort will support the continued development and evolution of the ESMD M&S effort across the program lifecycle.

CxP Development of High-Fidelity, Time-Based Program Model and Support Infrastructure:

The Contractor shall provide engineering modeling, software development, and computer networking expertise to support the Distributed Space Exploration Simulation (DSES) by performing the following tasks:

- Develop and maintain the CLV HLA federate
  - Continue to upgrade and maintain the ARTEMIS CLV federate software to incorporate new interfaces and functionality as required supporting DSES federation objectives.
  - Upgrade federate software to maintain consistency with latest ARTEMIS releases.
  - Develop interfaces and integrate with KSC Ground Operations federate in support of DSES end-to end federation simulation.
  - Continue to maintain the MAVERIC CLV federate as required to support demonstrations.
- Perform federate and federation testing

- Perform comparisons of HLA federate to baseline ARTEMIS to insure proper implementation.
- Perform comparisons of CLV federate with other DSES federates to insure consistency of implementation of basic dynamics and environments.
- Support testing of end-to-end DSES federation as new capabilities, interfaces, and upgrades are incorporated.
- Continue to maintain the MAVERIC CLV federate as required to support testing.
- Participate in network requirements development and maintenance to support near-term and long-term DSES project milestones.

Development of Program Models and Support Infrastructure for CxP DSIL:

The Contractor shall provide modeling and simulation expertise to support the Distributed Systems Integration Lab (DSIL), a follow-on to the DSES/DSNet activities, by performing the following tasks:

- Provide planning, design and development expertise to support CxP in the buildup of the Distributed Systems Integration Lab (DSIL).
- Perform trade studies to define simulation standards, requirements, interfaces, software middlewares, and architectures to support DSIL design and development.
- Coordinate with CxP to define the content and schedule for simulators and emulators to be exchanged among the CxP Elements and for the DSIL buildup.
- Define the M&S content required to support integrated testing activities.
- Participate in the M&S Working Group to coordinate the needed M&S content and the availability and need dates for testing.
- Assist work to provide definition of modeling and simulation standards and the model and data repository requirements for the elements SIL.

CxP Integrated M&S Capability, Planning, Development and Implementation:

The Contractor shall provide Configuration Management Process Development, M&S Systems Engineering Environment and Integrated Management expertise to support the CxP SE&I SAVIO in performing the following:

- Scope the tasks, nominal plans, timelines, and risks and thereafter provide those inputs for estimation of ROM costs required to scale this integrated M&S capability prototype for a phased agency-level implementation, and subsequent CxP operations employing multiple NASA centers and support Contractor capabilities.
- Participate in new development, and/or augmentation of existing, M&S capabilities to support the CxP SE&I processes.
- Perform prioritization of M&S needs relative to major milestones goals and objectives.

- Identify existing M&S capabilities and align with M&S Integrated Management needs, as well as identifying gaps and prioritizing gap-filler needs.
- Identify and define the M&S products needed to support system milestones and system review activities.
- Align M&S products with system lifecycle phases and milestones.
- Perform analysis to determine the operational and organizational impacts of M&S assimilation into the system lifecycle.
- Participate in the development and management of the CxP Modeling and Simulation Support Plan (MSSP) that depicts how and when models and simulations are integrated, used and transitioned from concept exploration through system lifecycle. Produce MSSP for the CxP Systems Design Review.
- Support the development of organizational roles & responsibilities, training, and implementation schedules and metrics necessary to implement operational M&S strategies for CxP.
- Provide outlines for implementation of activities for M&S development, M&S use, configuration management, and M&S tool and analyst accreditation.
- Define and develop M&S Configuration Management and Data Management requirements for CxP. Document processes and procedures to govern the stakeholders, ensure consistency of practices in management of M&S inputs and generated data. Assist CxP SE&I Office in the implementation of adopted processes.
- Support the development and operations of M&S databases. Set the requirements for the databases, assist with the development and evaluation, and operate the databases to support M&S environment intended to capture M&S metadata across CxP.
- Generate metrics guidance associated with the Integrated Management of M&S. Collect and report metrics based on information gathered in an M&S Database (MSDB) and Technical Data Sheets (TDS) analyzed.
- Support a collaborative environment for M&S Management addressing connectivity of tools, databases and portals. (i.e. Cradle, MSDB, Vignette, WindChill, etc.)
- Participate in the development and implementation of management processes as required by NASA M&S Standard (NASA-STD-7009).

#### Associated Products

The Contractor shall provide technical support and input in the refinement and development of the following documentation:

- CxP M&S Integrated Management Implementation Plan (CxP70074)
- CxP M&S Support Plan (CxP70075)
- CxP M&S Requirements (CxP70076)
- Draft MSDB Requirements and Specification

- ESMD M&S Policies and Strategies Document
- CxP Recommended Practices Guide

CxP M&S VV&A Services:

The Contractor shall provide M&S Verification, Validation and Accreditation (VV&A) and model integration and development support to the NASA Project Manager (or delegate) with the following specific responsibilities:

- Provide expertise to support the planning, development and implementation of CxP SE&I VV&A processes for the ESMD DIO and the CxP SE&I M&S Offices.
- Assist SAVIO in maturing the VV&A process by capturing feedback to update CxP SE&I documentation.
- Provide inputs to a formalized Accreditation Process and M&S Risk Assessment Methodology.
- Identify and assist in planning VV&A Training, Education and Socialization needs for a successful implementation of the VV&A processes at the ESMD and CxP levels.
- Assist in promoting the VV&A concepts, principles and practices through the development of briefings, white papers and other materials to communicate across stakeholder communities by participating in conferences and workshops.
- Provide technical support and input to develop required documentation in the form of briefing materials to support this activity.

**3.3 CxP SE&I ATA Application Development and Integration Support – Closed May 2009**

The Contractor shall provide M&S Systems Engineering Environment and Integrated Management expertise to support the CxP SE&I Analysis Trades and Architecture (ATA) organization in performing the following:

- Participate in new development, integration with ICE, and/or augmentation of existing analysis planning and integration capabilities to support the CxP SE&I processes.
- Support the continued development and maintenance of the Constellation Analysis Integration Tool (CAIT) based upon stakeholder requirements, IT management direction and analysis community inputs.
- Support a collaborative environment for SE&I (includes ATA and M&S) Management addressing connectivity of tools, databases and portals. (i.e. Cradle, MSDB, Vignette, WindChill, etc.)

**3.4 CxP PP&C Application Development and Integration Support – Closed August 2009**

The Contractor shall provide M&S Systems Engineering Environment and Integrated Management expertise to support the CxP Program Planning and Control (PP&C) organization in performing the following:

- Participate in new development, integration with ICE, and/or augmentation of existing SE&I application capabilities to support the CxP SE&I processes.
- Support the continued development and maintenance of the Constellation Analysis Integration Tool (CAIT) based upon stakeholder requirements, IT management direction and analysis community inputs.
- Support a collaborative environment for SE&I (includes ATA and M&S) Management addressing connectivity of tools, databases and portals. (i.e. Cradle, MSDB, Vignette, WindChill, etc.)

**3.5 SIP Activity – Closed June 2009**

**3.6 CxP PP&C Offsite Management Support – Closed September 2008**

**3.7 CxP SAVIO Lead (Front Office Support) – RESERVED**

**3.8 CxP SAVIO SW Group/IA Support – Closed May 2009**

**3.9 IS - Application Integration & Development**

The Contractor shall provide M&S Systems Engineering Environment and Integrated Management expertise to support the CxP Information Systems Office in performing the following:

- Participate in new development, integration with ICE, and/or augmentation of existing SE&I application capabilities to support the CxP SE&I processes.
- Support the continued development and maintenance of the Constellation Analysis Integration Tool (CAIT) based upon stakeholder requirements, IT management direction and analysis community inputs.
- Support a collaborative environment for CxP SE&I information systems connectivity of tools, databases and portals. (i.e. Cradle, Data Aggregator, MSDB, Vignette, WindChill, etc.)

**3.10 SAVIO Staff PMBS Support - Closed April 2010**

**3.11 SAVIO IPM Support – Closed June 2009**

**3.12 SAVIO DSIL/IMSim Support – Closed May 2010**

**3.13 SAVIO M&S VV&A Support – Closed June 2010**

**3.14 SAVIO KMST Support – Closed June 2010**

### **3.15 MSFC Integrated Test & Verification Support**

The contractor shall provide systems engineering expertise and experience toward the development of the Initial Capability System Integration Plan (IC SIP) for Constellation Program (CxP). This work shall result in:

- A framework to capture the incremental build up of HW/SW as CxP lays out the plan to becoming Fully Operational for Initial Capability
- A set of guidelines that requirements owners can use to establish boundaries for what is included in the SIP.
- Routine status on how the SIP effort is progressing.
- Recommendations and lessons learned on how best to proceed and where the teams focus should be as we progress, given the desired outcome.
- Serving as an expert in integration planning of large complex architectures.

The contractor shall provide systems engineering expertise and experience to perform the duties of SE&I ITVO Systems Automation Focal to address integration needs across CxP IT&VO.

- Provide support for the development of the SIP view of the IMS
- Provide leadership and support for the development, and support the Information Systems team in the development of electronic access to SIP and other authoritative source data. Products include requirements and concept of operations for implementation
- Provide development support to the system integration expert, chief engineer, for the SIP activity.
- Support the SIP lead in developing the vision and plan for development and execution of Systems Integration Planning.
- Provide Support for the development of the PDR products associated with the IC SIP.
- Engage in project System Integration Planning.
- Support the integration of Program SIP to Project SIP products.
- Identify and ensure resolution of disconnects between project and Program planning, objectives, configuration, etc.
- Monitor schedule, objectives/agenda, organize participation and participate, as necessary, in TIMs.
- Coordinate with mission integration leads in providing mission objectives focus to project integration.

### **3.16 L2 Primo Book Manager Support**

The Contractor shall provide inputs to the development of review products such as, but not limited to, CLV Upper Stage (US) Element Requirements Document (ERD), CaLV Systems Requirements Documents (SRD), CLV SRD, CLV First Stage ICD, First Stage to Upper Stage IDD and CLV to Ground Systems (GS) IRD. The Contractor shall participate in technical

reviews of the documents and disposition any comments received from the reviews. The Contractor shall interface with the SIGs, the CxP Office and complete Section 3 in preparation for major reviews. The Contractor shall support the Cradle inputs, linking and publishing of the data products. The Contractor shall perform book manager responsibilities for the Ares-I to Ground Operations IRD.

The Contractor shall provide inputs to the development of review products such as, but not limited to, CxP Master Integrated Verification Plan and First Stage to Upper Stage Verification Requirements. The Contractor shall participate in technical reviews of the documents and disposition any comments received from the reviews. The Contractor shall interface with the SIGs, the CxP Office and complete Section 4 in preparation for major reviews. The Contractor shall support the Cradle inputs, linking and publishing of the data products. The Contractor shall review CxP Architecture.

The Contractor shall provide expertise in the use of Cradle Toolset for capturing database inputs, documents management, requirements and verification linking and tracking, and functional flow block diagram generation. The Contractor shall provide general expertise in the operation and administration of the Cradle application and assist book managers and other Systems Engineering personnel in the use of Cradle to support generation of data products for CxP reviews.

### **3.17 MSFC SAVIO Information Architecture**

### **3.18 MSFC SAVIO Software**

The Contractor shall provide Systems Engineering expertise to support M&S Verification, Validation, and Accreditation (VV&A) for Constellation Program Level 2 with the following specific responsibilities:

- Identification and description of the process for integrating credibility assessments of analysis results (using M&S) which support critical decisions into existing program processes.
- Critical uses are based upon M&S used for analyses which support Level II verification for credit (aligned with the SIP), analysis which supports mitigation of hazards (integrated with the safety analysis), and the CoFR process.
- As part of this effort, the VV&A team will work with CxP IT&V, SR&QA, and Project Representatives to:
  - Focus on the most critical uses of M&S (Verification for credit, CoFR, safety mitigations)
  - Focus on the credibility of the results from analysis (generated by M&S) to be used for critical decisions

- Work with the CxP stakeholders (principally IT&V & SR&QA) and project stakeholders on how to integrate “credibility” records & assessments into the verification process
- Provide technical support and input to develop required documentation in the form of briefing materials to support this activity.

**3.19 MSFC SAVIO SW Integration – Closed August 2010**

**3.20 MSFC IS Systems Engineering – Closed July 2010**

**3.21 MSFC Space Launch Systems Program Support**  
*(Authorization to proceed with this subtask will be provided by the Contracting Officer in written direction.)*

Information Systems Applications Integration and Development

The Contractor shall provide M&S Systems Engineering Environment and Integrated Management expertise to provide support for the integration and development of systems engineering applications, such as, but not limited to:

- Participate in new development, integration with the integrated collaborative environment, and/or augmentation of existing SE&I application capabilities to support the program-level SE&I processes.
- Support the continued development and maintenance of the program analysis integration tool based upon stakeholder requirements, IT management direction and analysis community inputs.
- Support a collaborative environment for program SE&I information systems connectivity of tools, databases and portals. (i.e. requirements management, data aggregation, modeling and simulation management, Vignette, WindChill, etc.)

Integrated Test and Verification Support

The contractor shall provide systems engineering expertise and experience toward the development of Systems Integration products. This task shall include, but not limited to:

- A framework to capture the incremental build up of HW/SW in accordance with the program capability development plans
- A set of guidelines that requirements owners can use to establish boundaries for what is included in Systems Integration.
- Routine status on how the SIP effort is progressing.
- Recommendations and lessons learned on how best to proceed and where the teams focus should be as we progress, given the desired outcome.
- Serving as an expert in integration planning of large complex architectures.

The contractor shall provide systems engineering expertise and experience to perform the duties of integrated test & verification systems automation focal

to address integration needs across the program's integrated test and verification organization.

- Provide support for the development of the test and verification integration products
- Provide leadership and support for the development of electronic access to systems integration products and other authoritative source data. Products include requirements and concept of operations for implementation
- Provide development support to the system integration expert, chief engineer.
- Provide support for the development of the design review products associated with incremental integration.
- Engage in project System Integration Planning.
- Support the integration of Program products to Project products.
- Identify and ensure resolution of disconnects between project and Program planning, objectives, configuration, etc.
- Monitor schedule, objectives/agenda, organize participation and participate, as necessary, in TIMs.
- Coordinate with mission integration leads in providing mission objectives focus to project integration.

#### Interface Control Book Manager Support

The Contractor shall provide inputs to the development of review products such as, but not limited to, Launch Vehicle Systems Requirements Documents (SRDs), Launch Vehicle Element Requirements Document (ERDs), Launch Vehicle System and Element Interface Control Documents (ICDs). The Contractor shall participate in technical reviews of the documents and disposition any comments received from the reviews. The Contractor shall interface with the Program Office and complete Section 3 in preparation for major reviews. The Contractor shall support inputs to the program's requirements management tool, linking and publishing of the data products. The Contractor shall perform book manager responsibilities for IRDs.

The Contractor shall provide inputs to the development of review products. The Contractor shall participate in technical reviews of the documents and disposition any comments received from the reviews. The Contractor shall interface with the Program Office and complete Section 4 in preparation for major reviews. The Contractor shall support inputs to the program's requirements management tool, linking and publishing of the data products. The Contractor shall review Launch Vehicle Program Architecture.

The Contractor shall provide expertise in the use of the requirements management toolset for capturing database inputs, documents management, requirements and verification linking and tracking, and functional flow block diagram generation. The Contractor shall provide general expertise in the operation and administration of the requirements management application and

assist book managers and other Systems Engineering personnel in the use of the requirements management toolset to support generation of data products for program reviews.

Modeling and Simulation Verification, Validation and Accreditation (VV&A) Support

The Contractor shall provide Systems Engineering expertise to support Model and Simulation (M&S) Verification, Validation, and Accreditation (VV&A) with the following specific responsibilities, but not limited to:

- Identification and description of the process for integrating credibility assessments of analysis results (using M&S) which support critical decisions into program SE&I processes.
- Coordination, development, and documentation of program-level plans and requirements necessary to ensure program compliance with appropriate Agency requirements, including NPR 7150.2A Software Engineering and NASA STD-7009 Models and Simulations
- Coordination and development of plans, schedules and documentation to support the management, prioritization, and reporting of M&S which are required to support critical program-level decisions, including the M&S V&V and credibility assessment planning and status.
- Provide technical support and input to develop required documentation and briefing materials to support this activity.
- Monitor, schedule, prepare objectives/agenda, organize participation and participate, as necessary, in TIMs.

#### **4.0 Travel**

The contractor shall travel as requested to accomplish each technical requirement. Any travel must be approved by the Contractor Officer's Technical Representative (COTR) or task order technical monitor, prior to travel.

The contractor's monthly report shall contain travel detail to include travel destination, dates of travel, number of people who traveled, and purpose of the travel.

#### **5.0 Materials**

No materials are currently required for this order. However, this may change based on the customer's requirements as directed by the Contractor Officer's Technical Representative (COTR) or task order technical monitor. Any materials being purchased must be approved by the Contracting Officer prior to purchase.

#### **6.0 Reserved**

#### **7.0 Personnel Skill Levels**

The Contractor shall provide skills at a level to perform the subtasks in this order.

## **8.0 Technical Milestones and Deliverables**

Specified under Section 2.B of the SOW; any additional deliverables for specific subtasks are specified under Section 3.0.