GSMO TASK ORDER

Task No: 47
Modification: 04
Task Name: Applied Science Strategic Planning.
Task Period of Performance: 3/1/2012 to 11/30/2015
Modification Period of Performance: 12/1/2014 to 11/30/2015
GSMO SOW Reference: 2.2.

I. Task Order History

Description of current modification (Modification 0): Initial Task Order for Task #47.

Mod #	Start	End	Brief Description
0	3/1/2012	2/28/2013	Initial task order statement of work.
1	8/1/2012	2/28/2013	Provide support for development of the Annual Report and conduct a study on Applications test bed practices
2	2/28/2013	2/28/2014	Extend period of performance
3	12/1/2013	11/30/2014	Extend period of performance
4	12/1/2014	11/30/2015	Extend period of performance

1.0 PURPOSE

The purpose of this task is to provide program planning, analysis, technical studies/analyses, special issue research and organization support to the NASA Headquarters Earth Science Division and its programs.

2.0 SCOPE OF WORK

The scope of work includes developing program planning documents, performing trade studies and technical analyses, strategic communications, organization planning and analysis, and conducting studies and business implementation analyses and research to support execution of program goals. Further activities may be required within the overall scope.

3.0 APPLIED SCIENCES PROGRAM SUPPORT

The Applied Sciences Program (ASP) requires a level of on-going support in planning and execution of the program. The Contractor will conduct research and analyses for key ASP-identified issues, provide program strategy and management recommendations, support communications planning and development, and develop materials to support improvement in program operations and management. The Contractor will work with the ASP Program Director, ASP program staff, external ASP stakeholders, principal investigators, and others as identified by the ASP Program Director. ASP is involved in a number of interagency and international committees and working groups, including a number of leadership positions in these groups.

3.1 Technical Writing and Organizational Support

3.1.1 Provide technical writing, review and editing for program plans and documents; Evaluate existing plans/documents and provide recommended revisions based on program environment and direction

3.1.2 Support planning and facilitation of meetings or workshops with HQ program staff, staff from NASA Centers and key stakeholders as requested; Assist with developing agenda and materials, defining breakout sessions, facilitating workshop and documenting results

3.1.3 Provide recommendations to Program Director on program strategy and changes to support program goals and desired direction

3.2 Program Planning and Management Support and Implementation

3.2.1 Assist in planning and documenting actions and implementation steps to accomplish program goals and objectives; Provide recommendations for program actions and approach (e.g. REDD planning)

3.2.2 Support development of program documents and plans; Provide recommendations for inclusion in program plans

3.2.3 Assist in the development and implementation of strategic program management approaches (e.g. program measures, program reviews); Provide recommendations and support for implementation and on-going management as requested

3.2.4 Develop background and educational material for use by program staff and principal investigators on key program approaches and changes (e.g. benefit/ impact analysis and valuation, program measures, etc.)

3.2.5 Provide recommendations for program management, and support documentation and conduct of program management processes as requested

3.2.6 Provide support for development of the Annual Report.

3.3 Conduct Studies and Analyses

3.3.1 Conduct studies and analyses of projects and program issues to support program management and decision making.

3.3.2 Assess program and portfolio level issues and provide recommendations for program implementation

3.3.3 Conduct ad-hoc analyses and research on program issues and specific projects (e.g. socioeconomic benefit analysis, scientific heritage, challenges in the project ARL advancement)

3.3.4 Provide background reports on focused issues and best practices for program consideration and use with external groups

3.3.5 Conduct a study on Applications test bed practices.

3.4 Strategic Communications Support

3.4.1 Develop communications material and support planning to optimize communications with program stakeholders as requested

3.4.2 Provide recommendations on communications efforts and approach including development of key messages and methods of communicating to key audiences/stakeholders

3.5 Interagency Support

3.5.1 Support special studies and events for interagency committees and working groups, particularly US Group on Earth Observations, as requested. Assist with developing agenda and materials, analyses, background papers, and task tracking.

3.5.2 Develop communications materials as requested to support NASA leadership positions

3.6 Mobile Application Support

3.6.1 Provide ideas and suggestions for mobile application options, develop applications, and shepherd through internal approval processes.

3.6.2 Conduct design work, content creation, and IT development for mobile applications to support creative communications as requested.

4.0 TRAVEL

Travel required to provide support under this task will be approved by the TM or designee.

5.0 PROJECT DELIVERABLES:

The following deliverables will be provided under this task order.

- Contract Status or Activity Report in accordance with contract instructions
- Monthly Progress Reports
- Informal Biweekly Progress Reports with task leads or designees

6.0 WORK LOCATION:

The primary location for the required support described in this task is at NASA Headquarters, though some work may be performed remotely. A work space at NASA Headquarters may be provided for contractor staff.

Statement of Work

Technical Support for NWS User-System Readiness
for
GOES-R and Other Environmental Satellite Missions

Document Date: September 10, 2012

Task Order Period of Performance:
October 1, 2012 through March 31, 2013

Introduction and General Description of Task

The engineering support provided under this task will assist the National Weather Service (NWS) prepare its IT systems for receipt, processing, and dissemination of GOES-R data. It includes support to ensure NWS meets its GOES-R, NPP, and JPSS readiness goals in an integrated manner.

The United States National Oceanic and Atmospheric Administration (NOAA) NWS provides weather, hydrologic, and climate forecasts and warnings for the nation— including its territories, adjacent waters and ocean areas— for the protection of life and property and for the enhancement of the national economy. Near-real-time imagery and derived products from weather satellites are vital for the execution of the NWS mission. NOAA is building the next generations of geostationary and polar-orbiting weather satellites. The Geostationary Operational Environmental Satellite-R Series (GOES-R), the Suomi National Polar-Orbiting Partnership (NPP) Data Exploitation (NDE), and the Joint Polar Satellite System (JPSS) programs are delivering substantially enhanced spacecraft, ground segments, and environmental product suites in the 2012-2017 time frame. Meanwhile, other environmental satellite missions (e.g., MetOp)— important supplements to GOES and POES— offer NWS-required products that will exert influence on the NWS information technology (IT) infrastructure.

This document describes a set of ground-system readiness objectives and deliverables, toward which NWS is working and the contractor will support, for the NWS Integrated Dissemination Program (IDP), specifically the Ground Readiness Project (GRP).

Background and High-Level Objectives

NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) is the principal provider of environmental satellite information to NWS and many other users. NESDIS provides

GOES and POES information, plus products from domestic and international supplemental missions. In order for the full benefit of current and future environmental satellite capabilities to be realized, NWS is in the midst of coordinated multi-year planning and development activities intended to ensure its IT infrastructure is augmented on time to connect to (and support data loads from) NESDIS satellite ground systems of the GOES-R/NPP/JPSS era. The combined data load from these satellite missions will be markedly higher than the corresponding load from legacy missions. Furthermore, new data formats, communications protocols, and access technologies will be exploited to improve user access to satellite data and for cost efficiencies. NWS readiness for these major upcoming environmental spacecraft upgrades will require a coordinated effort across numerous NWS offices and programs, and the NWS GRP (within IDP) is spearheading this activity.

Between February 2008 and September 2012, NWS completed much of the planning, analysis, requirements, and design work related to its GOES-R readiness. The Ground Readiness Project orchestrated and oversaw initial prototyping of Advanced Weather Interactive Processing System (AWIPS) software to handle GOES-R imagery. National Centers for Environmental Prediction (NCEP) built out its key network, connected to NESDIS, in preparation for GOES-R. Plans for a new GOES-R-era NWS IT architecture were developed and updated. The NESDIS NDE group and NWS Ground Readiness staff completed initial NPP-related network and software development. This NPP work has direct relevance (e.g., potential re-use) for GOES-R. Objectives under this task are intended to build upon and extend this work.

Some components of the NWS environmental-satellite-related IT infrastructure are shared with non-satellite hydrometeorological data. For example, certain NWS networks disseminate environmental satellite products along with weather radar and numerical weather prediction model information. The NWS Ground Readiness Project has critical associations and dependencies with multiple major NOAA activities, including the GOES-R Ground Segment Project, the NDE Team, the National Weather Service Telecommunication Gateway (NWSTG) within the Telecommunication Operations Center (TOC), AWIPS, NCEP, and the Doppler radar dual polarization project. Consequently, successful execution of these technical activities has demanded— and will continue to demand— close technical and programmatic coordination with these related activities. Thus, an important aspect of this task concerns technical facilitation and coordination, referred to as technical integration.

As noted above, NWS preparations for GOES-R and other upcoming missions have been concentrated in the ground readiness area. This upcoming period, early Fiscal Year (FY) 2013, will place decreasing emphasis on requirements and continued emphasis on later-stage development activities such as test planning, coordination/facilitation of software development, network installations/upgrades, and (for NPP) deployment of software to the NWS operational field sites.

This task has four elements, described below as Subtasks 1-4. The four subtasks will be executed systematically to successfully meet the above-described high-level objectives.

Subtask 1. Engineering Support for GOES-R Readiness

Under this subtask, the contractor will provide engineering support to further prepare NWS for GOES-R. The primary NWS systems/organizations impacted by this work are AWIPS, TOC, and

NCEP. However, due to the cross-organizational nature of the NWS Ground Readiness initiative, the contractor will support the NWS Integrated Dissemination Program, and this support will necessitate knowledge of the World Meteorological Organization's (WMO), Global Information System Centres (GISC) requirements. A key area of emphasis under this subtask will be the direct GOES-R/AWIPS interface for imagery.

Under this subtask, the contractor will interact with the appropriate GOES-R and NWS technical and management staff to advance all systems toward GOES-R readiness on a plan and at a pace consistent with the GOES-R and NWS Integrated Master Schedules (IMSs).

The contractor will support all phases of systems engineering under this subtask including (but not limited to) requirements/design/architecture updates, development/implementation, testing, deployment, troubleshooting and documentation. Under this subtask, the contractor will be responsible for resolving (or tracking the resolution of) multidisciplinary issues spanning hardware, software, communications/routing, data formats, data-exchange protocol, metadata, storage and IT security. Although a broad range of activities will be supported under this subtask, particular areas of emphasis during FY 2013 will be GOES-R test planning, the establishment of networks for testing, coordination of NWS development activities, and planning and executing transition-to-operations plans.

Support will continue to be provided to GOES-R Integrated Product Teams (IPTs), GOES-R Working Groups (WG), tiger teams or splinter groups as directed by the Government. The primary goal of this support will be to advance NWS systems and projects toward a state of GOES-R readiness, keeping pace with the routine workings of these teams. This support will involve assisting in the preparation for these meetings (i.e., scheduling appropriate staff, conference rooms, and other resources), active participation in the meetings themselves, administrative support to the meeting (e.g., keeping track of NWS action items), remaining abreast of each group's current topics, and resolving (or facilitating the resolution of) action items in a manner that is acceptable to both the GOES-R Ground Segment Project and NWS. The primary teams to be supported include: the GOES-R/AWIPS IPT, the Product Distribution and Access (PDA) IPT, the Telecommunications IPT, the Data Engineering Working Group (DEWG), the GOES-R IT Security Working Group, the Environmental Satellite Processing and Distribution System (ESPDS) PDA Transition to Operations Working Group, GOES-R Consumer System Readiness Working Group, the Integrated Test and Verification Working Group, and the OPSNet-OSPO WAN network group. The members of these groups sometimes form temporary tiger teams or splinter groups to concentrate on specific issues or topic areas, and contractor support of these smaller teams will be required under this subtask. The contractor will be responsible for participating and contributing to Ground Readiness meetings and deliverables including but not limited to identifying AWIPS development/test plans, readiness schedule, risk and budget information, and also including coordination with the AWIPS Data Delivery project.

The contractor will responsible for incorporating relevant information from all of the above-mentioned activities into appropriate GOES-R, Ground Readiness, and NWS documents (e.g., the deliverables below). Deliverables under this subtask include (but are not limited to):

Deliverable Number	Description	Approximate Due Date
1	NWS updates to the *GOES-R Ground Segment to AWIPS Interface Control Document (ICD)*, and ancillary documents	March 15, 2013 (or as directed for interim updates)
2	NWS inputs to the *GOES-R Ground Segment to Telecommunications ICD* (and ancillary documents)	March 15, 2013 (or as directed for interim updates)
3	NWS inputs to *GOES-R Metadata Model* that conforms to NOAA metadata standards (e.g., ISO 19115-2)	March 15, 2013 (or as directed for interim updates)
4	Participation in GOES-R review(s)	As scheduled
5	NWS inputs to GOES-R-related test plans for NCEP, TOC/NWSTG, AWIPS (and other systems, as directed)	As needed
6	NWS inputs to GOES-R-related test procedures for NCEP, TOC/NWSTG, AWIPS (and other systems, as directed)	As needed
7	NWS review and input to GOES-R-related test reports for NCEP, TOC/NWSTG, AWIPS (and other systems as directed)	As needed
8	Inputs and updates to NWS ground readiness and integrated dissemination architecture documentation, or to other technical documents to reflect GOES-R plans and interdependencies between GOES-R and NWS dissemination systems	Ongoing/as needed
9	NWS review and input to *GOES-R/AWIPS Interconnection Security Agreement (ISA)* and *Service Level Agreements (SLA)*	As needed
10	Ground readiness input to ad hoc NOAA agreements, such as related to network usage practices or interface operation	As needed
11	Schedule and risk information (provided by the contractor for analysis and possible inclusion into GRP or IDP project documents).	Ongoing/as needed
12	GOES-R-related input to the Task Summary Briefings, described in the Deliverables section, later in this document.	March 1, 2013

All non-incidental documentation will be captured and stored for later retrieval on the GRP portal (e.g., the network shared drive).

Subtask 1 Travel – This subtask may entail travel by one technical staff person to a GOES-R review outside of the Washington DC metropolitan area. For the purposes of cost estimation, assume the duration of each review will be three business days, including travel time. In addition occasional (generally fewer than two per month) GOES-R meetings will be held in the Washington DC metropolitan area (i.e., local travel). In general, these local meetings will be no longer than one day.

Subtask 2: Engineering Support for NPP Readiness

Under this subtask, the contractor will support preparations for NPP related to the NWS IT infrastructure and major NWS systems including but not limited to NCEP, TOC/NWSTG and AWIPS. The primary focus of this engineering support will be for AWIPS. Related projects whose NPP readiness the contractor will either support or with which the contractor will integrate include (but are not limited to) NWS dissemination projects and the WMO GISC. Work under this subtask will also include NWS analysis and planning for the Joint Polar Satellite System (JPSS).

Under this subtask, the contractor will interact with the appropriate NESDIS (in general, NDE project staff) and representatives of the corresponding NWS systems/programs/projects to advance all systems toward NPP readiness on a plan and at a pace consistent with the GOES-R, NPP and NWS Ground Readiness Project's Integrated Master Schedules (IMSs).

The contractor will support all phases of systems engineering under this subtask including (but not limited to) requirements analysis and development, design/architecture, implementation, testing, deployment, troubleshooting and documentation. Under this subtask, the contractor will be responsible for resolving (or tracking the resolution of) multidisciplinary issues spanning hardware, software, communications/routing, data formats, data-exchange protocol, metadata, storage and IT security. Although a broad range of activities will be supported under this subtask, a particular area of emphasis during FY 2013 will be NPP post-launch development, testing, and roll-out of NPP functionality across NWS for use in operations.

Support will be provided to NPP teams, such as the NDE/AWIPS Working Group, the NDE/NCEP Working Group, test planning and coordination groups, tiger teams or splinter groups as directed by the Government. The primary goal of this support will be to advance NWS systems and projects toward a state of NPP readiness, keeping pace with the routine workings of these teams. This support will involve assisting in the preparation for these meetings (i.e., scheduling appropriate staff, conference rooms, and other resources), active participation in the meetings themselves, administrative support to the meeting (e.g., keeping track of NWS action items), remaining abreast of each group's current topics, and resolving (or facilitating the resolution of) action items in a manner that is acceptable to both the NDE project and NWS.

Support will include convening and facilitating meetings for detailed test planning, test execution, development coordination, and problem resolution. Under this subtask, the contractor will also support meetings related to NWS preparations for JPSS. These meetings, possibly in conjunction with other NWS Ground Readiness, GOES-R, and/or NPP meetings, are expected to concentrate on planning. However, the contractor may be directed to conduct requirements update, NWS IT design/architecture modifications, technical inputs to Ground Readiness budget-projection revisions or other updates based on these JPSS meetings and analyses. This subtask also includes coordination with the AWIPS Data Delivery project.

The contractor will be responsible for incorporating relevant information from all of the above-mentioned activities into appropriate NDE/NPP, Ground Readiness, and NWS documents (e.g., the deliverables below). Deliverables under this subtask include (but are not limited to):

Deliverable Number	Description	Approximate Due Date(s)
1	NWS inputs to NDE to NCEP/NWSTG/AWIPS Test Plans	For Phase 5: November 9, 2012; Others: as needed, on or before March 22, 2013
2	NWS inputs to NDE to NCEP/NWSTG/AWIPS Test Procedures	For Phase 5: November 9, 2012; Others: as needed, on or before March 22, 2013
3	NDE to NCEP/NWSTG/AWIPS Test Reports	For Phase 5: January 4, 2013; Others: as needed, on or before March 22, 2013
4	NWS Input to NPP Metadata	February 15, 2013
5	NWS Updates to NDE/AWIPS ICD	February 22, 2013 (Interim) March 15, 2013 (Final)
7	NWS Inputs to ESPC/NCEP ICD (if exercised)	February 15, 2013
8	NWS Inputs to ESPC/NWSTG ICD (if exercised)	February 15, 2013
9	NWS review and input to *ESPC/AWIPS Interconnection Security Agreement (ISA)* and any associated MOA(s).	As needed
10	Inputs and updates to ground readiness architecture representations or other technical documents to reflect NPP and JPSS plans, and their interdependencies with NWS dissemination systems.	Ongoing/as needed
11	Schedule and risk information provided for input to applicable NWS project documents (e.g., IMS updates and risk identification for inclusion by PMO group in GRP documents)	Ongoing/as needed
12	NPP-related input to the Task Summary Briefings, described in the Deliverables section, later in this document.	March 1, 2013

All non-incidental documentation will be captured and stored for later retrieval on the GRP portal (e.g., the NWS network shared drive).

Travel
Local Travel – Occasional (generally fewer than two per month) NDE or NPP meetings will be held in the Washington DC metropolitan area. In general, these meetings will be no longer than 1-2 days.

Subtask 3. Engineering Support for Requirements including NWSTG Re-architecture Readiness and NESDIS/PDA/CDS Readiness

The ESPDS PDA system will be NESDIS's next generation data-provider system for NWS's satellite data consumer systems. This system will provide expanded data discovery and access methods, relevant to several NWS projects and systems. In addition to the sustainment of conventional data-access methods (such as file transfer protocols), the PDA is expected to support web services and other technologies that will enable NOAA to make better use of its information technology expenditures (e.g., network bandwidth).

During earlier phases of the NWS Ground Readiness Project, the concept of Centralized Distribution Services (CDS) was developed. CDS is a set of requirements or functionality that chiefly includes environmental satellite data access, processing, distribution, and end-user services. Once implemented, CDS functionality could be distributed amongst various NOAA systems, including the PDA, AWIPS, the rearchitected NWSTG, and perhaps others.

Under this task, CDS requirements analysis, validation, and allocation will be brought to completion. By "allocation" it is meant that all CDS requirements will be assigned to a target system (for implementation). Under this subtask, the contractor will regularly interact with the appropriate NESDIS project staff (e.g., ESPDS/PDA) and representatives of the corresponding NWS systems/programs/projects (e.g., AWIPS, NWS integrated dissemination, NWSTG, NCEP). The goal will be to ensure that all CDS requirements remain allocated to systems under development (or are accepted as un-met requirements). Under this subtask, the contractor will be responsible for any systems engineering related to CDS (unless that systems engineering responsibility has been accepted by another project or program, in which case the contractors role will be systems engineering support and coordination).

Support will include interaction with the NWS AWIPS Data Delivery project and the Integrated Dissemination Program, as these activities have in common an emphasis on developing web-services-type interfaces with systems such as PDA. This support will include requirements allocation for both the CDS to the PDA as well as requirements validation for the NWSTG Re-architecture. This could include supporting or assisting in prototyping activities aimed at demonstrating prospective PDA/AWIPS web services interfaces, or similar interfaces related to comparable NWS requirements (e.g., aviation weather requirements).

Support under this subtask will include test planning, which will include documentation review and comment, and active participation in collaborative meetings with NESDIS staff aimed at settling upon and documenting the details of ESPDS/PDA tests.

Support under this subtask will include supporting integrated work teams covering topics such as (though not limited to) interface development, prototype development, test planning and execution, transition to operations, and IT security. This support will include between-meeting review, analysis and update of specifications that document NESDIS/NWS organizational responsibilities and information needed to secure and operate PDA/NWS interfaces.

Support under this subtask may include planning and support of the transition of products access/distribution from NESDIS's legacy systems to PDA. This activity will be from the perspective of the NWS side of the interface (i.e., NWS as a consumer of NESDIS products, migrating operational data flows from NESDIS's heritage systems to the PDA).

The contractor will also deliver those necessary and relevant artifacts necessary for the NWS Integrated Dissemination Program to fully integrate all aspects of CDS/PDA into an overall dissemination strategy. At this time, those artifacts are not entirely known but should be either modifications of current artifacts or the presentation of already-accumulated information in different formats. This could potentially include population of transaction tables, maps and other data-related information which would be used in a full portfolio management program.

Requirements for the NWSTG rearchitecture will be brought to completion. However, some residual requirements maintenance and update is anticipated, especially during the early portion of the period of performance.

Deliverables under this subtask include (but are not limited to):

Deliverable Number	Description	Approximate Due Date(s)
1	CDS/PDA Requirements	December 14 , 2012 (Final CDS requirements)
2	NWSTG Re-architecture Requirements	Ongoing (December 21, 2012 for near-final requirements)
3	NWS review/coordination of inputs to PDA to NCEP/NWSTG/AWIPS Test Plans	March 22, 2013 (or as needed)
4	NWS review/coordination inputs to PDA to NCEP/NWSTG/AWIPS Test Procedures	March 22, 2013 (or as needed)
5	NWS Input to PDA Metadata	February 15, 2013 (or as needed)
6	NWS review/coordination inputs to PDA/AWIPS ICD	March 8, 2013 (or as needed)
7	NWS review and input to PDA/NWS security documentation, slides, papers.	As needed
8	Inputs and updates to NWS Ground Readiness and Dissemination architecture or other technical documents to reflect ESPDS/PDA plans and their interdependencies with NWS dissemination systems	Ongoing/as needed
9	Updates to NWS Architecture Documents to reflect ESPDS/PDA plans	Ongoing/as needed
10	Schedule and risk information provided to NWS for inclusion in applicable PMO materials (e.g., IMS updates and risk identification)	Ongoing/as needed

Deliverable Number	Description	Approximate Due Date(s)
11	CDS, PDA, and NWSTG Re-architecture PDA-related input to the Task Summary Briefings, described in the Deliverables section, later in this document.	March 1, 2013

All non-incidental documentation will be captured and stored for later retrieval on the shared portal (e.g., the NWS network shared drive).

Travel
Local Travel – Occasional (generally fewer than two per month) PDA meetings will be held in the Washington DC metropolitan area. In general, these meetings will be no longer than 1-2 days.

Subtask 4. Engineering Support for Enterprise Infrastructure and Dissemination Integration

The NWS Ground Readiness Project is directly tied to various NWS dissemination projects and enterprise infrastructure efforts, principally the IDP. Continued technical integration support is thus needed to ensure ground readiness efforts remain technically coordinated— *internally* across subtasks and *externally* with other dissemination services and enterprise infrastructure projects. The contractor will provide senior-level support under this subtask to advance high-level dissemination services and enterprise infrastructure efforts.

Engineering support under this subtask will ensure that GOES-R and NWS Ground Readiness and dissemination services activities are outwardly integrated with other projects and with governance structures across NOAA. The contractor will thus ensure or facilitate the compatibility of governance with NOAA oversight bodies and boards whose purview includes dissemination activities. This subtask will ensure that Ground Readiness activities are integrated in the sense that individual development efforts are consistent and adequately coordinated with other (related) activities, and compliant with accepted standards or protocols. Support under this subtask will include the proactive analysis of development and test plans during their formulation, heading off potential complications or disconnects before they materialize. It will also involve the rigorous and in-depth assessment of alternative candidate architectures and technologies, with the goal of recommending suitable, cost-saving solutions for Ground Readiness development and related dissemination services initiatives.

Under this subtask, the contractor will develop, assess, and update NWS Ground Readiness and dissemination services artifacts, technical plans and progress to ensure the efforts are integrated (e.g., ensure consistency in content and schedule across NWS's GOES-R, NPP, and JPSS activities underway at disparate locations within NWS). Work under this task will not be merely administrative in nature, but will provide a depth of technological insight into the involved projects(s). Other examples of support provided under this subtask include:

- specific software and hardware planning/tracking/resolution
- test planning/coordination

- ensuring identification/documentation of network end points, and the responsible individuals and organizations
- ensuring identification/documentation of bandwidth allocations, transfer protocols, exchange formats and security controls
- reviewing specifications and documents to confirm the material is clear and complete (adding and amending content where necessary)
- ensuring network endpoint details (e.g., the necessary OPSNet spreadsheets) are populated to a level of completeness to enable the actual pricing and ordering of telecommunication circuits and associated network hardware
- ensuring the CDS requirements and design (noted in subtask 3, above)— especially those potentially affecting PDA, AWIPS, NWS integrated dissemination and other NOAA initiatives— are specified in a manner that is technically and temporally consistent and compatible with any/all affected NOAA activities
- ensuring the planned interfaces related to CDS functionality are defined and documented, and transitioned toward implementation by each respective project working with the NCEP, NWSTG, AWIPS and NWS dissemination technical teams
- developing (or assist in the development) of work plans, making sure integrated work teams (e.g., ad hoc technical tiger teams) are apprised of relevant information
- informing affected personnel of opportunities to participate in integrated teams, remaining abreast of other group's technical plans and progress in this area, and ensuring such relevant information is communicated to the Program management.
- updating design/architecture/project diagrams, tables and visualizations
- leading/facilitating presentation-type technical reviews of Ground Readiness and dissemination services-related projects or initiatives, including logistical support (e.g., ensuring materials are prepared and appropriate individuals are aware and available), and technical support (e.g., analysis of presented material, the provision of independent in-depth technical assessments of presented materials, and the formulation of recommendations for completion/closure of any unresolved issues)

The gathering, analysis, and review of information under this subtask will require the cooperation of various NWS organizations. The Office of Science and Technology Government staff will ensure this cooperation takes place so that the technical interchanges needed for the generation of this task's deliverables (e.g., architecture diagrams or test plans documents) can occur.

Deliverables under this subtask include (but are not limited to):

Deliverable Number	Description	Approximate Due Date(s)
Current, Mid-Term and Long-Term NWS Architecture Diagrams and Documentation		
1	Quarterly updates of the NWS ground readiness/dissemination architecture diagrams (includes: facilitation of formal reviews and approval using defined Governance process) (Architecture diagrams should be detailed and comprehensive)	Ongoing/Quarterly (first quarterly submission on December 31, 2012; second quarterly submission on March 31, 2013)

Deliverable Number	Description	Approximate Due Date(s)
2	Updated Technical Design Document that articulates the current, mid-term and long-term NWS architecture diagrams to include detailed descriptions of each data/systems. Document to be updated and formally reviewed with architecture diagrams	Ongoing/Quarterly (first quarterly submission on December 31, 2012; second quarterly submission on March 31, 2013)
Technical Integration Management Input and Ongoing Cost Savings Analysis		
3	Written assessments from technical analyses, as described previously under this subtask. Includes but is not limited to: Update of agreement to distribute data via the NCEP/COPC network for NPP and GOES-R era (i.e., extension of existing agreement to cover new data types such as GOES-R).	Ongoing, as requested February 22, 2013
4	Written Summaries from technical reviews (e.g., independent assessments), as described previously under this subtask.	Ongoing
5	Products from technical reviews (e.g., assessments and briefing materials, as described previously under this subtask).	Ongoing
6	Quarterly Bandwidth Analysis Updates (Satellite, Radar and Model data) (Word Document). Documentation of bandwidth estimates must align and map to the Architecture Diagrams as well as the budget WBS.	Ongoing
7	Ongoing review and updates, as requested by Government, of NWS Ground Readiness and Dissemination Services technical artifacts.	Ongoing
8	Input to the Task Summary Briefings, described in the Deliverables section, later in this document.	March 1, 2013

Travel
Local Travel – Occasional (generally fewer than two per month) meetings will be held in the Washington DC metropolitan area. In general, these meetings will be no longer than 1-2 days.

High-Level Reporting and Deliverables – Task Summery

Project Management:

- The contractor shall develop and maintain a project schedule in MS Project format. The contractor must submit the project schedule to the project team for review, validations, and signature within one week of task start date. The government will have 5 business days to provide comments to the contractor. The contractor shall make recommended changes within 5 business days.

- The Contractor shall conduct weekly status meeting to discuss work accomplished during the week, including a list of all activities, status of each assignment, problems encountered, action taken, planned activities for the upcoming period, individuals responsible for each activity, and any problems anticipated during the upcoming period. Based on this meeting, meeting minutes will be developed to include but not limited to, action items etc.

Reporting

1. Weekly status reports will be prepared by the contractor and delivered in soft copy to the management team within three business days of the conclusion of the reporting period. These weekly reports will focus on work completed and planned by the contractor on this task, including work breakdown amongst staff. Work descriptions of contractor progress will be clearly differentiated from descriptions of related ongoing work done by others.
2. Project management team will be reported to on an as-directed basis.
3. Less formal status reports will be provided orally (e.g., at weekly status meetings). These status meetings provide clear communication on matters such as work completed, task status, unresolved issues, risk or problem areas, and plans for upcoming work.

Deliverables

General Comments on Task Deliverables
Delivered materials will not be merely summary in nature, but will also include— directly or by reference— the original, specific and detailed material that formed the basis for the major task findings and conclusions. This will include documentation reviewed, reports exchanged, spreadsheets, quantitative analyses, relevant meeting minutes kept or accessed, emails, and interview notes. Feedback from Government review of delivered materials will be incorporated. This material will be a compilation, organized such that specific items can be readily accessed, as noted under deliverable item 4, below. All of the information and materials gathered, developed and delivered under this task will be the property of the Government, solely. The use and/or further dissemination of all such information/materials/deliveries will be at the Government's sole discretion.

1. Each subtask lists deliverables (tabulated with each subtask, above).

2. Other miscellaneous task deliverables will document significant work done or progress made on all subtasks above. These deliverables include such items as architectural drawings, system requirements and design documentation, development schedules (linked to GOES-R and NDE schedules), identification of risks associated with work areas, test plans, test procedures, interface descriptions, technical papers/summaries, data format analyses, technology assessments and recommendations, and resource/staff and cost estimates.

3. Task Repository – All deliverables will be saved in a repository available to the Government. Materials will be organized and indexed for ease of access. This repository can utilize a shared (network) storage device, but may migrate to a more-sophisticated collaboration tool.

4. Task Summary Briefings – This task will include two summary briefings, where task progress, findings, conclusions, artifacts will be summarized in briefing-package form. These task summary briefings will cover the salient analyses/findings/conclusions from all four subtasks. The briefings will be presented in two forums: NWS Headquarters and the GOES-R Ground Segment Project (at NASA Goddard Space Flight Center). The briefings will be presented in the final month of the task, approximately March 2013, with specific details negotiated and scheduled one month in advance.

Location of Work

The majority of this work will be conducted, on site, at the NWS Headquarters, within the OS&T:

NOAA NWS Headquarters
Silver Spring Metro Center 2 (SSMC2)
1325 East West Highway
Silver Spring, MD 20910

Travel Summary

Travel for each subtask is summarized in each subtask section, above.

Period of Performance

The period of performance for this work is from October 1, 2012 through March 31, 2013.

Appendix A – Acronyms

CDS	Centralized Distribution Services
DEWG	Data Engineering Working Group
GISC	Global Information System Centres
GOES	Geostationary Operational Environmental Satellite
GRP	Ground Readiness Project
IDP	Integrated Dissemination Program
IMS	Integrated Master Schedule
IPT	Integrated Product Team
IT	Information Technology
JPSS	Joint Polar Satellite System
NASA	National Aeronautics and Space Administration
NCEP	National Centers for Environmental Prediction
NDE	NPP Data Exploitation
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NPP	Suomi National Polar-orbiting Partnership
NWS	National Weather Service
NWSTG	National Weather Service Telecommunications Gateway
OS&T	Office of Science and Technology
PDA	Product Distribution and Access
POES	Polar-orbiting Operational Environmental Satellite
WG	Working Group
WIS	WMO Information System
WMO	World Meteorological Organization

GSMO TASK ORDER

Task No:	**#49**
Modification:	4
Task Name:	FPD Strategic Planning
Task Period of Performance:	4/1/12 to 9/30/14
Modification Period of Performance:	12/1/13 to 9/30/14
GSMO SOW Reference:	2.1, 2.2

I. Task Order History

Description of current modification (Modification 0): This is the initial task order statement of work for FPD Strategic Planning.

Mod #	Start	End	Brief Description
0	04/01/2012	11/30/2012	Initial task order statement of work.
1	12/01/2012	11/30/2013	Modification is to extend the period of performance on the task through 11/30/2013. No change in task scope.
2	08/27/2013		Administrative modification.
3	10/31/2013		Administrative modification.
4	12/01/2013	09/30/2014	10-month extension to the period of performance without any noted change to the scope of work.

II. Background

Support to the Flight Projects Directorate (FPD) strategic planning initiatives.

III. Scope of Work

A. Requirements

- The Contractor shall assist in conducting the ongoing Flight Projects Directorate Business Change Initiative Action Teams to include coordinating inputs from SME's, identification of key themes and issue resolution as well as identifying best practices in the Change Management Body of Practice.
- The Contractor shall assist in executing a standardized process for conducting action teams based upon SME input and the results of the individual action team's insight.
- The contractor shall provide documentation of improvements across teams and assist with incorporating improvements into existing operating guidelines.
- The Contractor shall provide assistance on general high level project management and strategic support to assist in the development of top level Project Management Strategic improvement processes.

- The Contractor shall provide general ongoing support for strategic planning on taking action team results and implementing them across the entire Flight Projects Directorate.
- The Contractor shall assist on an as needed basis in conducting specialized studies on topics identified by the Code 400 Deputy Director for Planning and Business Management.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

V. Material Procurement

None.

VI. Travel Support

None.

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Weekly Action & Status Report	

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**050**
Modification:	0
Task Name:	Joint Polar Satellite Series, Flight Vehicle Test Suite Development
Task Period of Performance:	3/18/2012 to 3/17/2013
Modification Period of Performance:	N/A
GSMO SOW Reference:	Section 2.3.2.10

I. Task Order History

Description of current modification (Modification 0): This is the initial task order statement of work for JPSS FVTS Development of task. Also, make sure table below is updated accordingly by adding rows and dates for each modification}.

Mod #	Start	End	Brief Description
0	3/18/2012	3/17/2013	Initial task order statement of work.

II. Background

The Joint Polar Satellite Systems (JPSS) is a Program managed at the Goddard Space Flight Center in Greenbelt, Md. NOAA is responsible for the JPSS program and is the primary customer. NASA is the program's procurement agent. Data and imagery obtained from JPSS will increase the timeliness, accuracy and cost-effectiveness of public warnings and forecasts of climate and weather events, reducing the potential loss of human life and property. The JPSS Program is a new NASA program, and supports the satellite development, launch, and operations of the NOAA weather satellites. Over the next decade, NASA plans to launch multiple polar orbiting satellites into low earth orbit.

The NPOESS Preparatory Project (NPP) launched in October, 2011. The JPSS Flight Project is responsible for elements of the NPP such as the Instruments, and consequently the Flight Software Technical Oversight of Maintenance. The JPSS-1 mission is due to launch in November, 2016 and will be a spacecraft bus clone with the same instrument compliment. This task will provide the [redacted] and support for the development of the instrument, spacecraft and ground interface simulators.

III. Scope of Work

The Contractor shall lead the Simulator Development activities; providing technical review and oversight of spacecraft, instrument and ground interface simulations.

A. Requirements

- A.1. The contractor shall provide inputs to System, subsystem and interface requirements.
- A.2. The contractor shall develop Assembly, Integration, Verification and Validation Plan Inputs
- A.3. The contractor shall provide schedule inputs.
- A.4. The contractor shall review and provide comments on contract deliverables.
- A.5. The contractor shall assess and provide inputs on system, subsystem and element risks.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. The Task Monitor shall concur with the materials list prior to procurement.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

Specifically, the contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame	Approximate Time Frame
BATC -Boulder, CO	2 days	Bi-Monthly
RTN - Denver, CO	2 days	Bi-Monthly
El Segundo, CA	2 days	Quarterly
Fort Wayne, IN	1 days	Quarterly
Los Angeles, CA	2 day	Quarterly

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	System, subsystem and interface requirements inputs	7/31/2012
3	Assembly, Integration, Verification and Validation Plan Inputs	11/30/2012
4	Schedule inputs	Weekly
5	Contract deliverable review	3/17/2013
6	System, subsystem and element risks input	Monthly

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**#51**
Modification:	0
Task Name:	LRO Engineering Data Analysis Support
Task Period of Performance:	11/15/2012 to 4/30/2013
Modification Period of Performance:	
GSMO SOW Reference:	3.7

I. Task Order History

Description of current modification (Modification 0): This is the initial task order statement of work for the LRO Engineering Data Analysis Support task.

Mod #	Start	End	Brief Description
0	05/14/2012	9/30/2012	Initial task order statement of work.
1	11/15/2012	04/30/2013	CASSIE Enhancements

II. Background

The Space Science Mission Operations (SSMO) Project Office provides oversight of spacecraft and operations for all space science missions supported by NASA Goddard Space Flight Center (GCFC). This work will support the Lunar Reconnaissance Orbiter (LRO), which is operated out of building 32 at NASA GSFC and utilizes the Integrated Test and Operations System (ITOS) telemetry and command system.

III. Scope of Work

The Contractor shall provide tools and analysis skills to support the LRO mission. The main purpose of the task is to set up the software systems needed for this analysis, provide expertise in identifying regular analysis procedures in support of LRO sustaining engineering, and to transfer that expertise to LRO operations personnel.

A. Requirements

A.1. The contractor shall set up an instance of CASSIE running on the CNE with ability to run pages, plots, and reports on real-time and playback data utilizing a web-based (or similar) interface and getting the data to the user's computer
A.2. Ensure CASSIE has backup telemetry storage
A.3. Enhance CASSIE to verify thermal and power modeling post maneuver utilizing model from SSMO/AETD engineers
A.4. Develop a LRO status page that can be accessed in the LRO MOC or from the CNE after consultation with SSMO.
A.5. Unpack LRO command history mnemonics
A.6. Brief update to documentation and training

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

The contractor will be allowed access to the LRO operations facility in building 32 and other SSMO areas as needed in order interface, install, and test software as necessary as well as provide analytical support.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. The Task Monitor shall concur with the materials list prior to procurement.

The acquisition of the CASSIE satellite analysis system for LRO engineering data analysis is considered a material procurement.

VI. Travel Support

No travel is associated with this Task Order.

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	CASSIE Backup Storage	January 8, 2013
2	LRO Command Mnemonics Unpack	January 30, 2013
3	CASSIE on CNE	February 27, 2013
4	LRO Status Page	February 27, 2013
5	CASSIE Power Model Verification	March 15, 2013
6	CASSIE Thermal Model Verification	March 30, 2013
7	Training	April 15, 2013
8	Updated Documentation	April 30, 2013

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	052 Mod 09	
Task Name:	Mission and Instrument Operations Facility Development & Support	
Period of Performance:	06/04/2012 – 03/31/2016	
Mod Period of Perf:	04/27/2015 – 03/31/2016	
GSMO SOW Reference:	2.1	Systems Engineering
	2.3.1	Facility Engineering
	2.3.2	Ground System
	2.3.2.9	Information Technology Support
	2.3.3	Operations Products
	2.4	Integration and Test

I. Task Order History

Mod #	Start	End	Brief Description
0	06/04/2012	05/31/2013	Initial task order statement of work.
1	01/08/2013		Correction to task end date provided in Mod 0 SOW
2	03/25/2013	02/28/2014	Activation of SPOCC- and NGIMS-specific subtasks
3	11/11/2013	10/31/2014	Addition of NICER support subtask
4	12/09/2013	11/30/2014	Addition of ICESat-2/ATLAS and DSCOVR subtasks
5	05/12/2014	04/30/2015	New Work on Subtasks 1, 2, 3, and 6
6	06/23/2014	04/30/2015	Travel on Subtask 2 and New Work on Subtask 4
7	08/11/2014	05/31/2015	New work on Subtask 4 and Subtask 6
8	12/22/2014	11/30/2015	New work on Subtasks 5 and 6; addition of Subtask 7
9	04/27/2015	03/31/2016	New work on Subtasks 2 and 3

This Task Order mod represents Mod 09 to Task Order (TO) 052, Mission and Instrument Operations Facility Development & Support. TO 052 implements requirements for support in the deployment of instrument-specific operations centers, science operations centers, and backup command & control centers within the multi-mission Science & Planetary Operations Control Center (SPOCC) in GSFC Bldg. 32. The task also encompasses non-mission-specific support to ensure that the SPOCC facility infrastructure provides satisfactory accommodations for its tenant missions.

The initial TO (Mod 0) consisted only of work in support of the deployment and testing of the backup Mission Support Area (bMSA) for MAVEN. Mod 01 consisted of a correction to an error in the original task end date. Mod 02 formalized the request to modify the

interim power system configuration in the bMSA to provide full redundancy, as well as a request for additional travel related specifically to MAVEN that was not originally anticipated with Mod 0. Specific work was also added for the first time in Mod 02 to both the NGIMS and SPOCC "placeholder" subtasks whose purposes were described but not funded in the original Task Order. Mod 03 initiated a fourth subtask for TO 052 to perform work in support of the Neutron star Interior Composition Explorer (NICER) instrument. Mod 04 defined two (2) new subtasks for TO 052 to perform work in support of new science mission ops centers to be deployed within the SPOCC for the ICESat-2 ATLAS instrument and DSCOVR mission instruments. Mod 05 added new work and procurements on Subtasks 1, 2, 3, and 6. Mod 06 added travel on Subtask 2 and new work on Subtask 4. Mod 7 added new work on Subtask 4 and Subtask 6. Work pending on Mod 7 and previous mods should be continued and completed as described in the modified Statement of Work (SOW) specific to each mod. Mod 8 added new work on Subtasks 5 and 6 and initiated Subtask 7. Mod 9 requests new work on Subtasks 2 and 3.

II. Background

Previous mods to this task contained: a) Work supporting deployment of a backup Mission Support Area (bMSA) for emergency command and control of the Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft in the timeframe of the Mars Orbit Insertion (MOI) maneuver, in the event that the primary MSA at Lockheed Martin were to become temporarily inoperable; b) Work to deploy an Instrument Team Facility (ITF) to host command planning and science data processing functions for the MAVEN Neutral Gas and Ion Mass Spectrometer (NGIMS) developed for MAVEN by the GSFC Planetary Environments Laboratory (Code 699); c) Work for the establishment of 40GigE capability for the Science and Engineering Network (SEN) within the SPOCC facility; d) Work in support of the Neutron star Interior Composition Explorer (NICER) instrument; e) Work to support deployment of the Deep Space Climate Observatory (DSCOVR) Science Operations Center (DSOC); f) Work in support of the deployment of the Instrument Support Facility (ISF) for the Advanced Topographic Laser Altimeter System (ATLAS) on-board the Ice, Cloud, and land Elevation Satellite-2 (ICESat-2); and g) Work in support of data ingest in the DSOC received from the Command and Data Acquisition Station (CDAS).

This task mod (09) adds new labor to the NGIMS Subtask (Subtask 2), and new labor and materials to the SPOCC Subtask (Subtask 3).

III. Scope of Work

The specific new support required on Subtasks 2 and 3 is described in the SOW Requirements sub-section below.

A. Requirements

NGIMS Subtask .002

Additional labor is required to support the on-going operations of the MAVEN NGIMS instrument Team Facility (ITF) hosted by the SPOCC. This support is anticipated to be required to continue at approximately the same level [redacted] at which it is currently being supported. The work includes:

- Support of NGIMS instrument operations
- Support of NGIMS science data processing
- Generation of products for archival in the Planetary Data System (PDS)
- Interfacing with the MAVEN Science Operations Center (SOC) at the Laboratory for Atmospheric and Space Physics (LASP)
- Interfacing with MAVEN operations personnel at the Lockheed Martin spacecraft development facility
- Extra instrument operations support for MAVEN Deep Dip Campaigns and other special activities
- Attending meetings and telecons involving other members of the NGIMS team, LASP, and Lockheed Martin
- Travel for support of the Project Science Group (PSG) / Quarterly Status Review (PSR) meetings
- Travel for support of the Instrument Operations Working Group meeting that is anticipated to be held annually during the mission lifetime starting later in 2015

The travel encompassed by the last two bullets above is anticipated to include one person in specific timeframes and to specific destinations as described below.

The Contractor will be required to support travel to the Laboratory for Atmospheric and Space Physics (LASP) in Boulder, Colorado, the location of the MAVEN centralized Science Operations Center, and to the Space Sciences Laboratory (SSL) at Berkeley, California to support Project Science Group (PSG) and Quarterly Status Reviews (QSR) meetings in support of MAVEN/NGIMS operations. One additional trip for an Instrument Operations Workshop at the spacecraft development and operations facility is also planned. The specific trips are as follows:

- June 2015, for 2 - 3 days (PSG/QSR meeting in Boulder, Colorado)
- September 2015, for 2 - 3 days (PSG/QSR meeting in Berkeley, California)
- December 2015 for 2 - 3 days (QSR/PSG meeting in Boulder, Colorado)
- March 2016 for 2 - 3 days (QSR/PSG meeting in Berkeley, California)
- 2 - 3 days (Instrument Operations Workshop in Denver, Colorado)

SPOCC Subtask .003

The new work on Subtask 03 consists of the purchase of new software and hardware components and the labor required for their procurement, deployment, and set-up.

- CONSOLE MODULES: In order to accommodate additional missions in the SPOCC, the Government had planned for the installation of additional modular console units to create an additional work area. The capacity of the facility has now been reached and so there is a need to implement the planned reconfiguration.

- SPOCC LICENSE RENEWALS: These are required to maintain software and hardware products with up to date releases and remedial maintenance of hardware and components. Software is required to be up to date, and requires vendor-supplied patches to mitigate vulnerabilities that may be identified by NASA IT Security scanning.

  Renewal is required for the existing license and vendor contracts on the following products:
  - RAID INC: SPOCC RIONET VM Environment
  - VMWare: SPOCC RIONET VM Environment
  - Barracuda: SPOCC RIONET VM VPN Appliance
  - VEEAM: Renewal of SPOCC RIONET and SEN VM Environments
  - DELL: Support of SPOCC SEN VM Hardware

- RACK AND POWER INFRASTRUCTURE: As SPOCC continues to support additional missions, additional rack space is required in the server room. This necessitates the purchase of a Rack, Power Distribution Units, and associated cabling and shelves. In order to power the rack, new circuits will be required to be installed. A cart and monitor for the server room are also required.

Note: *Prior to finalizing any procurement activity, the Contractor will inform the Task Monitor of any revisions to the cost estimate and/or to the delivery/deployment plan.*

B. Management Reporting

The Contractor shall continue to provide monthly status reports and reviews on the technical, cost, schedule and operational performance of the task in accordance with the WBS to adequately describe the activities of the task to the Task Monitor. Reporting shall encompass activity on each of the Subtasks on this Task Order.

The Contractor shall perform Technical Management of task resources. The Contractor shall plan, manage, and execute task activities in coordination with the Task Monitor. Informal Technical Reporting shall include verbal briefings by the Contractor to the Task Monitor on a weekly basis and/or as needed. As stated in the SOW Requirements sub-section above, prior to finalizing any procurement activity, GSMO personnel shall inform the Task Monitor of any revisions to the cost estimate and/or delivery/deployment plan.

Formal Management Reporting shall consist of preparation and delivery of brief managerial and technical status reports delivered by email that will include:

- 533
- Technical, managerial, and schedule status summary
- Budget planning data as required

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

Government-furnished facilities associated with this Task Order and all subordinate subtasks reside primarily in Building 32 Room C101 and Room C101c at NASA's Goddard Space Flight Center (GSFC). The focal point of the activity will be inside Room C101c which is the SPOCC facility, and in the adjacent SPOCC Equipment Room that is accessible through the SPOCC but is within the primary computing facility, Room C101.

Personnel interactions, interfacing and associated work will occur within the Government-furnished facilities associated with this Task Order and described above. The Contractor will be required to interact with the Task Monitor for planning and guidance on requirements of the task and task activities. The Contractor will also be required to interface with other mission representatives to define and understand mission-specific requirements and to perform the necessary work.

V. Material Procurement

The Government has identified equipment that will need to be procured by the Contractor in order to sustain the mission support infrastructure of the SPOCC, or to perform other work associated with this Task Order mod. In some instances the

utilization of excess equipment or leveraging of other equipment already in the SPOCC may be able to satisfy the requirements, thereby eliminating the need for new procurements. As indicated elsewhere in this Task Order SOW associated with this Task Mod (09) as well as all others, prior to finalizing any procurement activity the Task Monitor will be informed of the revised cost estimate and delivery/deployment plan.

VI. Travel Support

Travel requirements for this mod, Mod 09, are described above in Section III under the NGIMS Subtask, Subtask 03.

VII. Deliverables

The Contractor shall provide the deliverables described in Section III above in support of this Task Order. Deliverables are confined to the procurement of the described equipment and the management reports described in Section III, part B.

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**54**
Modification:	4
Task Name:	ESMP Mission Operations Review Support
Task Period of Performance:	May 15, 2012 to December 31, 2015
Modification Period of Performance:	January 1, 2015 to December 31, 2015
GSMO SOW Reference:	2.1 Systems Engineering

I. Task Order History

Description of current modification: one year extension of task order statement of work for ESMP Missions Operations Review Support,.

Mod #	Start	End	Brief Description
0	05/15/2012	02/28/2013	Initial task order statement of work.
1	03/01/2013	02/28/2014	One year extension of task order statement of work.
2	03/04/2013		Administrative modification
3	01/01/2014	12/31/2014	Add LI-SAR project scope, and one year extension of task order statement of work.
4	01/01/2015	12/31/2015	One year extension of task order statement of work.

II. Background

The Earth Systematic Missions Program ESMP) is the designated program management office for flight, ground, and Earth Science Data and Information System (ESDIS) activities at the Goddard Space Flight Center (GSFC) as part of the NASA-HQ Earth Science Division (ESD) within the Science Mission Directorate (SMD). The ESM Program is responsible for the management and coordination of all systematic Earth observation missions and mission projects as well as coordination and support to NASA's ESD. The charter document for this Program is the Program Commitment Agreement (PCA) for ESM which addresses the Earth Systematic Missions Program's role in supporting the ESD, which has the lead role in fulfilling the Agency's strategic goal, "Study Earth from space to advance scientific understanding and meet societal needs." The ESM Program currently has Projects led by GSFC, LaRC, and JPL in pre-formulation, formulation, implementation and operations.

III. Scope of Work

The Contractor shall provide a Senior Mission Operations Expert (SMOE) to support the ESMP JPL-led Project Reviews, under the direction of the ESMPO Mission Managers (MMs) and working with the ESMP Systems Engineering Working Group (SEWG) to ensure that all mission support elements and the flight team are designed, tested, verified and ready to accomplish the objectives of the Mission being reviewed.

A. Requirements

A.1. The Contractor shall attend reviews and provide feedback on presentations and presentation materials.

A.2. The contractor shall attend any special TIMS, working groups or weekly meetings.

A.3. The contractor shall review operations-related documents. This includes, but is not limited to, the Flight Operations Plan, Operations Agreements, Configuration Management Plan, Ground System Requirements, Users Guides, V&V plans, etc.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order.

VI. Travel Support

The contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame
7 Trips to JPL to Support SMAP, SWOT and NI-SAR Project reviews	Approximately March, April, May, July, September, October, and November 2014 (subject to change)

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Trip reports delivered to the Mission Managers	2 weeks after each trip

End of Task Order Statement of Work

GSMO TASK ORDER

Task No: 55
Modification: 10
Task Name: SSMO System Engineering Support
Task Period of Performance: May 15, 2012 to July 31, 2016
Modification Period of Performance: August 01, 2015 to July 31, 2016
GSMO SOW Reference: 3.1

I. Task Order History

Description of current modification (Modification 10): This is a modification of the task order statement of work for the SSMO System Engineering Support task.

Mod #	Start	End	Brief Description
0	05/15/2012	05/15/2013	Initial task order statement of work
1	05/16/2013	04/30/2014	System engineering analysis and CASSIE enhancement
2	07/25/2013		Administrative Mod
3	05/01/2014	07/31/2014	No Cost Extension
4	07/15/2014		Administrative Mod
5	08/01/2014	08/31/2014	No Cost Extension
6	08/01/2014	07/31/2015	System engineering analysis and LRO Slew Verification Tool
7	12/01/2014	08/31/2015	SDO & LRO Battery Analysis and SDO Systems Engineering and STEREO Behind Failure Review Board Support
8	03/01/2015	02/29/2016	Adding DSCOVR Specific Support
9	06/11/2015		Administrative Mod
10	08/01/2015	07/31/2016	Added Power Support and Specified Travel

II. Background

The Space Science Mission Operation (SSMO) Project requires Systems Engineering support for assessing on-orbit performance of the missions and to identify, prioritize, and monitor tasks to help ensure mission success. The System Engineer will work with members of the Flight Operations Team (FOT), the spacecraft engineering team, the instrument engineering team, the Principal Investigator (PI), and others as required. The System Engineer will advise and make recommendations to the Mission Directors (MD).

Subtask 1: The system engineering support is for all missions under the SSMO

project
Subtask 2: The system engineering support is for the Fermi Gamma-ray Space Telescope (FGST)
Subtask 3: Spacecraft Analysis, Spacecraft Battery Analysis, and Solar Dynamics Observatory
(SDO) Systems Engineering Support
Subtask 4: STEREO Behind Failure Review Board (FRB) Support
Subtask 5: DSCOVR Systems Engineering Support

III. Scope of Work

Subtask 1
The contractors shall provide expert system engineering in the analysis and resolution identification of the problems encountered for all the missions under the SSMO project. The contractor shall provide expertise in identifying regular analysis procedures in support of LRO sustaining engineering and transfer that expertise to the LRO operating personnel.

Subtask 2
The Contractor shall provide expert FGST system engineering in the analysis and resolution identification of problems encountered.

Subtask 3
The Contractor shall provide expert SDO systems engineering in the analysis and resolution identification of problems encountered. In addition, the contractor shall provide in-depth spacecraft battery modeling and engineering support as needed. Lastly, the contractor shall provide spacecraft systems engineering support as needed.

Subtask 4
The Contractor shall provide expert systems engineering support as requested by the Task Monitor to support the STEREO Behind Failure Review Board (FRB).

Subtask 5
The Contractor shall provide expert systems engineering support as requested by the Task Monitor to support DSCOVR.

Subtask 6
The Contractor shall provide conference/journal quality technical papers as requested by the Task Montor and optionally present papers at a conference as requested by the Task Monitor or submit papers to technical journals as requested by Task Monitor as a means of sharing technical knowledge to the public.

A. Requirements

Subtask 1

A.1. The contractor shall have space flight experience
A.2. The contractor shall have knowledge of spacecraft subsystems, such as, GN&C, thermal, power, and communication
A.3. Maintain LRO CASSIE.
A.4. The contractor shall assist in the analysis and resolution of issues detected in the weekly or long term trending reports as required.
A.5. The contractor shall provide analyses and recommendations to assure best engineering solutions/practices are implemented.
A.6. The contractor shall assist the Projects with the execution of the Anomaly Management process and participate in project directed anomaly assessments, investigations and resolution as appropriate.
A.7. The contractor shall support the identification and characterization of existing and emerging system levels risks, and participate in the development and implementation of mitigation plans.
A.8. The contractor shall be proactive in looking for anomalies and enhancements.
A.9. The contractor shall support development and deployment of the LRO Slew Verification Tool as directed by the task monitor.
A.10. The contractor shall provide power system expertise as directed by the task monitor.

Subtask 2

A.1. The contractor shall assist in the analysis and resolution of issues detected in the weekly reports as required.
A.2. The contractor shall provide analyses and recommendations to assure best engineering solutions/practices are implemented.
A.3. The contractor shall assist the FGST Project with the execution of the Anomaly Management process and participate in the FGST project directed anomaly assessments, investigations and resolution as appropriate.
A.4. The contractor shall support the identification and characterization of existing and emerging system level risks, and participate in the development and implementation of mitigation plans.

Subtask 3

A.1. The contractor shall assist in the analysis and resolution of issues detected in the weekly reports as required.
A.2. The contractor shall provide analyses and recommendations to assure best engineering solutions/practices are implemented.
A.3. The contractor shall assist the SDO Project with the execution of the Anomaly Management process and participate in the SDO project directed anomaly assessments, investigations and resolution as appropriate.
A.4. The contractor shall support the identification and characterization of existing and emerging system level risks, and participate in the development and implementation of mitigation plans.
A.5. The contractor shall assist in the analysis and development of battery models and performance as directed.

Subtask 4

A.1 The contractor shall provide systems engineering support as requested for the

STEREO Behind FRB.

Subtask 5

A.1. The contractor shall provide expert systems engineering support as requested by the Task Monitor for the DSCOVR mission.

Subtask 6

A.1 The contractor shall author conference/journal quality papers as requested by the Task Monitor, travel to conferences as requested by Task Monitor, or publish journal articles as requested by the Task Monitor.

A.2 The contractor shall present LRO momentum analysis and ACE fuel analysis at two conferences in 2015.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

The contractor will be allowed access to the LRO operations facility in building 32 and other SSMO areas as needed in order interface, install, and test software as necessary as well as provide analytical support.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order.

The acquisition of the CASSIE satellite analysis system for LRO engineering data analysis is considered a material procurement.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

Specifically, the contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame
AAS Conference, Vail, Colorado	August 2015
ISSFD Conference, Munich, Germany	October 2015

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**56**
Modification:	8
Task Name:	DSCOVR Ground System Systems Engineering Support
Task Period of Performance:	5/15/2012 to 12/31/2014
Modification Period of Performance:	1/1/2014 to 12/31/2014
GSMO SOW Reference:	2.1, 2.2

I. Task Order History

Description of current modification (Modification 8): Extend Period of Performance through 12/31/2014

Mod #	Start	End	Brief Description
0	5/15/2012	12/31/2012	Initial task order statement of work.
1	7/26/2012		Administrative mod
2	7/1/2012	12/31/2012	Vendor replanning modification. Replanning labor costs from July and August 2012 to September 2012 through December 2012.
3	1/1/2013	9/30/2013	Extend period of performance through September 2013. Update deliverables.
4	3/15/2013	9/30/2013	Add trending system support.
5	10/1/2013	12/31/2013	Extend period of performance through December 2013
6	6/13/2013		Administrative mod
7	11/4/2013		Administrative mod
8	1/1/2014	12/31/2014	Extend period of performance through December 2014

II. Background

DSCOVR is a satellite mission to L1 (the first LaGrange libration, or neutral gravity point between the Earth and the Sun) used to collect Space Weather data for NOAA. DSCOVR is an effort to refurbish and launch the former Triana spacecraft.

III. Scope of Work

GSFC requests that GSMO provide contractor support for the ground data systems segment for the DSCOVR mission, specifically for ground segment systems engineering, to cover the period of performance from up through December 31, 2014.

The contractor should understand the needs of operating a spacecraft on-orbit in order to develop the requirements and the design of the DSCOVR ground system. The contractor should supply a person experienced with the previous Triana ground segment activities and should have knowledge of the Triana ground segment architecture and interfaces.

A. Requirements

During the period of performance, the contractor shall provide engineering support for the development of the DSCOVR Science Operations Center (DSOC) design.
The contractor shall support all of the following areas: DSOC systems engineering; facility and network engineering, requirements engineering; and mission reviews and DSOC-level reviews. This list includes the following review(s) at these approximate date(s):

- Ground System Systems Mission Operations Review (GS MOR) – NET January, 2014

The contractor shall support the development of any of the ground system documents identified by the NASA DSCOVR Ground System and Operations Lead that are needed to support the design and review of DSOC system architecture and facilities. This work shall include interfacing with the internal and external teams to support the creation or modification of these documents and facility design.
The contractor shall lead/contribute to the development of the Ground System Development Plan along with routine updates to the plan as required.

The contractor shall support the definition and updates to the ground system development schedule.

The contractor shall interface with NOAA and each external element to the DSOC to define and document interfaces and products.

The contractor shall assist and coordinate routine ground system status meetings; these include, but are not limited to:

- Technical Interchange Meetings (TIMs) with external elements
- Regularly scheduled GS Status Meetings and GS Core team Meetings
- Working Group meetings as identified to support the generation of review materials or to support the development/modifications of documentation

The contractor shall use the project configuration management methodologies related to the Configuration Change Review (CCR) or Engineering Change Review (ECR) process.

The anticipated launch date is January 13, 2015.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. The Task Monitor shall concur with the materials list prior to procurement.

VI. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Ground System GDSOC Development Schedule (initial)	Completed
2	Ground System DESOC Development schedule updates	Monthly
3	Ground System GDSOC Development Plan (draft) - COMPLETED	April 1, 2013
4	Contribute to Ground System Development Plan	Completed
5	Operations Concept Document – inputs to the next revision	Completed
6	Ground System SRR/SDR charts	2 weeks prior to review
7	Trending System Assessment	Completed
8	Initial Trending System for I&T	July 1, 2013
9	DSOC material in support of GS SDR	Jun 15,2013
10	Work Status	Weekly, Wednesday
11	Financial Status (533s)	Monthly
12	DSOC support of GS MOR	January, 2014
13	DSOC test plan initial	March, 2014
14	GRT 1 support materials	February 2014
15	GRT 2 support materials	June 2014
16	GRT 3 support materials	August 2014

GSFC DSCOVR Science Operations Center [GDSOC]

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**57**
Modification:	6
Task Name:	DSCOVR Embedded Simulation Support
Task Period of Performance:	08/01/2012 to 09/30/2014
Modification Period of Performance:	10/01/2014 to 03/31/2015
GSMO SOW Reference:	2.3.2.10

I. Task Order History

Description of current modification (Modification 6):

This is the sixth modification of statement of work for Independent Test Capability Embedded Simulation and DSCOVR Operational Simulator and OPIS software support.

Mod #	Start	End	Brief Description
0	08/01/2012	07/31/2013	Initial task order statement of work.
1	05/01/2013	04/30/2014	Amend task order statement of work to extend task period of performance and add support for the planning, development, test, deployment and end-user training of the DSCOVR Operational Simulator
2	08/01/2013	04/30/2014	Amend task order statement of work to add support for the development, test and deployment of a PPC 601 Simics model for the DSCOVR Operational Simulator
3	11/1/2013	04/30/2014	Amend task order statement of work to add support for 1.) the development, test, and delivery of a Sun Sparc 1 Emulator to host the Greenhills compiler and 2.) the independent analysis of the GDS to spacecraft Timing Problem.
4	03/15/2014	09/30/2014	Extend period of performance to 09/30/2014 for support and maintenance of DSOVR MTS
5	04/18/2014	09/30/2014	Changed Task Monitor (Justin Morris to Tom Jackson)
6	10/01/2014	03/31/2015	Extend period of performance to 03/31/2015 for support and maintenance of DSOVR MTS. Also, added low level support for OPIS

II. Background

The NASA Goddard Dynamic Simulator (GDS) has been used on many missions such as :SDO, GPM, LRO, MMS, and most recently DSCOVR. Each deployment of the GDS requires customization of the software. In the case of DSCOVR, the GDS has been incorporated into an environment hosting the GDS, SIMICS, ITC Server software and ITOS ground system software. The aforementioned software must interface together to create an application called the MOC Training Simulator (MTS). The MTS runs under a Linux operating system.

The OPIS project is a balloon experiment flying a processor. The software on this OPIS processor also executes on a Linux environment.

This task order includes the development of an MOC Training Simulator (MTS) for the DSCOVR project and software support for the OPIS project.

III. Scope of Work

The Contractor shall support the MTS and OPIS software development efforts.

A. Requirements

A.1. The contractor shall provide support for the development and test of embedded software simulation environments for projects supported by the ITC development team (e.g. JWST IV&V Simulation and Test environment)
A.2. The contractor shall work in-conjunction with the ITC development team to design and implement the simulator software according to IV&V/ITC development processes
A.3. The contractor shall support meetings as requested by the ITC development team in regards to simulation and test development
A.4. The contractor shall utilize the ITC development and configuration management resources (ITC Subversion for source code development and tests; Atlassian products for issue tracking and documentation)
A.5. The contractor shall support the planning, development, test, deployment and end-user training of the DSCOVR Operational Simulator.
A.6. The contractor shall plan, develop, test, integrate and deploy a PPC 601 model and COMM card model to the DSCOVR Operational Simulator.
A.7. The contractor shall plan, develop, test, and deliver a Sun Sparc 1 Emulator capable of hosting the Greenhill compiler for spacecraft command load generation. The Sun Sparc 1 Emulator shall be integrated by Omitron into the DSCOVR MOC.
A.8. The contractor shall independently analyze and make recommends regarding the GDS to spacecraft timing anomaly.
A.9. The contractor shall provide software support for the MTS and OPSI software development and maintenance efforts

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

Government furnished software includes:
- Account and access to Subversion source code repository and Atlassian products (issue tracking system)

There are no Government furnished facilities or equipment associated with this Task Order.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. The Task Monitor shall concur with the materials list prior to procurement.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

Specifically, the contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Commented Source Code (ITC Subversion Repository)	Weekly check-ins
2	Unit tests for each source code module	Weekly check-ins
3	Design Documentation	As requested
4	Sun Sparc 1 Emulator (Qty 3)	Task Award + 30 days
5	Sun Sparc Emulator Design Specification (& Source Code) (Qty 1)	Task Award + 60 days
6	Sun Solaris License (Qty 3)	Task Award + 90 days

End of Task Order Statement of Work

GSMO TASK ORDER

Task No: 58
Modification: 7
Task Name: SSMO Library Services
Task Period of Performance: 08/15/2012 through 05/31/2015
Modification Period of Performance: 12/01/2014 through 05/31/2015
GSMO SOW Reference: 3.6, 3.7

I. Task Order History

This is the task order Statement of Work (SOW) for SSMO Library Services for task #58.

Mod #	Start	End	Brief Description
0	08/15/2012	07/31/2013	Initial SOW
1	02/11/2013	09/30/2013	Implement the document scanning solution and provide tape backup storage for HST in B25. Extend period of performance through 9/30/13.
2			Change RA
3	10/01/2013	03/31/2014	Perform pilot efforts and evaluation plans concerning the emerging Mission Services Library (MSL). Extend period of performance through 03/31/2014.
4	04/01/2014	09/30/2014	Extend period of performance and continue to investigate the HST TMIS replacement (determine if replacement should be implemented). Migrate SSMO library database tool to Alfresco MSL.
5	10/01/2014	11/30/2014	No Cost Extension
6	10/10/2014		Change TM
7	12/01/2014	05/31/2015	Six month task extension to complete bulk scan of remaining SSMO documentation onto Alfresco-based MSL. Also investigate transition to Alfresco Open Source Licensing.

II. Background

This Task Order (TO) Statement of Work (SOW) defines the work required to provide library and related services for Space Science Mission Operations (SSMO) Project (code 444).

III. Scope of Work

The Contractor shall support a library consolidation and maintenance effort for SSMO projects in the GSFC building 3/14 complex as outlined in the requirements section of this SOW.

A. Requirements

A.1. The contractor shall identify the rooms in GSFC buildings 3/14 that will be used, either currently or for future library use. (completed)
A.2. The contractor shall propose and implement a shelf space configuration and/or re-configuration plan to support current and estimated future needs of library space. (completed)

A.3. The contractor shall identify and move HST materials currently stored at the Lockheed Martin Building in Greenbelt, MD. They should work closely with the HST contractor to relocate HST materials in a timely manner. (completed)
A.4. The contractor shall Identify appropriate SSMO materials housed in B3/S024 or other project-used areas to be incorporated into the consolidate library room(s). NOTE: it is important to recognize that GSMO task #41 supports the current SSMO library services. It is planned that eventually the work supported on that task relating to library support and maintenance be fully migrated to this task.
A.5. The contractor shall provide an indexing process so that all stored items can be properly catalogued (for searching purposes).
A.6. The contractor shall develop and execute a process/schedule to put all electronic media onto a dedicated server.
A.7. The contractor shall propose a process/plan to electronically scan all hardcopy documents and migrate them onto the server. (completed)
A.8. The contractor shall provide a plan and schedule for approval of these task requirements prior to implementation.
A.9. The contractor shall implement the document scanning solution.
A.10. (deleted).
A.11. The contractor shall assess the state of HST and SSMO hard copy documentation and provide a recommendation, and implement, disposing of this documentation either by migration onto the electronic MSL or to off-Center storage/disposal. (completed)
A.12. The contractor shall propose and implement a configuration of the MSL that supports the needs of SSMO management. Configuration includes user group settings, account activation, naming conventions, folder/storage set up, security/permission controls.
A.13. (deleted)
A.14. (deleted)
A.15. The contractor shall provide access to electronic MSL to SSMO users.
A.16. The contractor shall provide regular maintenance for the MSL system.
A.17. The contractor shall provide a plan to transition the MSL to Alfresco Open Source Licensing.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

The contractor shall identify rooms/facilities within GSFC building 3/14 to serve as document library for HST/SSMO.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. This is primarily related to the dedicated server used to house the catalog and scanned documents.

VI. Travel Support

The only travel is local.

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Plans, schedules, as appropriate	
2	Scan migration status (# documents remaining to scan)	

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**59**
Modification:	3
Task Name:	SDO Ground System Reengineering
Task Period of Performance:	9/1/2012 to 8/31/2014
Modification Period of Performance:	3/1/2013 to 8/31/2014
GSMO SOW Reference:	Sections 1 and 3

I. Task Order History

Description of current modification (Modification 3): This statement of work for the Mod covers the remaining phases of SDO Ground System Reengineering task including Proof-of-Concept (PoC) system development and testing, operational system development and testing, installation and checkout of operational system at WSC, and transition of operational system to operations and decommission of legacy SDO Data Distribution System (DDS).

Mod #	Start	End	Brief Description
0	09/01/2012	11/30/2012	Initial task order statement of work.
1	11/29/2012	01/31/2013	No cost extension of task through Jan 31, 2013.
2	02/01/2103	02/28/2013	Closeout the SDO reengineering effort with a plan that can be used in the future should the project be willing to invest in the upgrades.
3	03/01/2013	8/31/2014	Development of a Proof-of-Concept system, followed by development and deployment of operational SDO DDS system

II. Background

The Solar Dynamics Observatory (SDO) is the first solar science research mission under NASA's Living with a Star Program. The Observatory was successfully launched in February 2010 and is now in its routine science operations phase. Lead mission operations responsibility resides with the Space Science Mission Operations (SSMO) Project Office at Goddard Space Flight Center (GSFC), Code 444.

This Task Order addresses the Systems Engineering and Software Development services required of the Ground Systems and Mission Operations (GSMO) contractor in support of the NASA SDO Mission Director (MD). The GSMO contractor provided a high level SDO Data Distribution System (DDS) Modernization presentation, which covered a preliminary trade study, preliminary design and provided tentative schedule. Mods 0, 1 and 2 of this Task Order authorized a feasibility study to determine the feasibility of porting the Apple/PowerPC based SDO DDS software to an Intel/Linux based platform. The positive results from the feasibility study were presented in a preliminary and a final feasibility study report delivered to SDO Project Office in November 2012.

Details of the SDO DDS modernization services covered in this Modification are described in the Scope of Work section. These services include performing specific Reengineering Activities for the SDO Ground System as detailed below. Additionally, the contractor shall support task order management, staffing, cost analysis, and reporting activities as required by the MD and the SSMO Project Office.

III. Scope of Work

The Contractor shall perform all technical and managerial work required to reengineer the SDO components which currently operate on 16 obsolete Apple PowerPC-based computers to run on Intel/Linux based computer clusters. These systems comprise the SDO DDS, which currently consists of 4 Front End Processors (FEPs), 2 DDS SDO Ground Station (SDOGS) Interface Manager (DSIMs), 5 Quality Compare Processors (QCPs) and 5 File Output Processors (FOPs). The contractor shall plan this reengineering effort in a staged manner, taking all operational system interfaces into account, so as to avoid any downtime for SDO Operations and SDO Science Data Delivery, as detailed below.

A. Requirements

A.1. Complete the procurement, installation, configuration and integration of Proof-of-Concept system including integration of the HDR.
A.2. Port the compiled software from the temporary server to the PoC VM server environment.
A.3. Continue the analysis of software application using simulation data
A.4. Based on successful virtualization system performance and data comparison with the legacy test system data, conduct a PoC Test Readiness Review (TRR).
A.5. Conduct PoC regression test and based on successful results, seek SSMO project approval to proceed with full operational implementation phase.
A.6. Procure and build operational SDO DDS system. Install application software as virtual machines on the system. Perform integration and test. Conduct an interim Operational Readiness Review (ORR) at GSFC upon successful I&T.
A.7. Ship and install the operational system at WSC. Conduct system checkout and full operational testing. Conduct a final ORR for WSC. Decommission the legacy SDO DDS system.
A.8. The contractor shall ensure the availability and competence of the work force necessary to execute the management and technical activities of this Task Order.
A.9. The contractor shall manage staff allocation to the required tasks specified.
A.10. The contractor shall supply all anticipated personnel training requirements (both dates and costs) and any associated ODC costs anticipated during this period of performance.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

A. Office Space

All personnel supporting this task order shall utilize government-furnished office space. This shall include office furnishings, telephone, desktop computer hardware and software resources, and internet access.

B. SDOGS Reengineering Computer Systems and Peripherals

All computer systems that comprise the SDOGS Reengineering development and proof of concept subsystems and associated peripheral equipment will be government furnished as needed during this task period or as part of the follow-on phase(s). This includes all hardware associated with the reengineering effort, servers, network security and management, printers, and data storage and backup systems.

C. SDOGS Reengineering Software

All software that comprise the SDOGS Reengineering development and proof of concept subsystems and associated peripheral equipment will be government furnished as needed during this task period. This includes all software associated with the reengineering effort including application source code, software development tools and relevant COTS software.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order. The Task Monitor shall concur with the materials list prior to procurement.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

Specifically, the contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame
Science Operations Centers for test support and consultation	As Needed
White Sands, New Mexico for logistics and planning	As Needed

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Weekly SDOGS Reengineering Status Report	Every Wednesday
2	Weekly SDOGS Reengineering Status Meeting	Every Monday
3	Proof of Concept (PoC) Test Readiness Review (TRR)	July 12, 2013
4	Final Implementation Plan Review	Oct15, 2013
5	GSFC Test Readiness Review (TRR)	Jan 13, 2014
6	GSFC Operational Readiness Review (ORR)	Mar 10, 2014
7	Final Operational Readiness Review (ORR)	Jun 7, 2014
8	DDS Reengineered System Documentation	Aug 31, 2014

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**061**
Modification:	8
Task Name:	JPSS Ground Mission Readiness Support
Task Period of Performance:	11/1/2012 to 10/31/2015
Modification Period of Performance:	2/1/2015 to 10/31/2015
GSMO SOW Reference:	2.1

I. Task Order History

Description of Modification 8: This modification is to obtain 11 Simics runtime licenses.

Mod #	Start	End	Brief Description
0	11/1/2012	10/31/2013	Initial task order statement of work.
1	7/16/2013		Administrative modification
2	8/8/2013		Administrative modification
3	9/3/2013		Administrative modification
4	11/1/2013	10/31/2014	Extend period of performance for an additional calendar year, though 10/31/2014
5	4/1/2014	10/31/2014	Add technical expertise to the task to include Mission Support analyst and Training Support specialist.
6	11/1/2014	10/31/2015	Extend period of performance for an additional calendar year, though 10/31/2015, and adds 1 new position
7	10/20/2014		Administrative modification
8	2/1/2015	10/31/2015	Obtain 11 Simics runtime licenses.

II. Background

The JPSS Ground Project provides mission support capabilities to a heterogeneous constellation of national and international missions including Suomi NPP, JPSS, European Organization for the Exploitation of Meteorological Satellites' (EUMETSAT') Meteorological Observation Program (METOP), Defense Meteorological Satellite Program (DMSP), Japan Aerospace Exploration Agency's (JAXA's) Global Change Observation Mission-Water (GCOM-W), and Windsat. This includes the mission planning and satellite control, satellite data retrieval, routing and pre-processing, data processing and distribution, direct broadcast support, algorithm development and maintenance, on-orbit calibration and validation and long-term trending.

The work associated with this Task Order is supported through multiple funding sources. For this reason, the work and financial reporting should be divided per the following subtasks:

Subtask 1: The contractor shall perform support services in the area of SNPP mission operations to the Mission Operations Manager. Support will include providing support to long term spacecraft anomaly activity, mission planning and schedules and mission readiness and validation of mission products for major ground system upgrades.
Subtask 2: The contractor shall perform support services for JPSS mission readiness activity. The contractor shall support perform support services for JPSS Ground Project in interfacing with JPSS Flight Project and external organizations. Subtask 3: The contractor shall obtain 11 Simics runtime licenses that provide the capabilities of executing the VIIRS provided Simics models as part of their simulator. Specifically the licenses will permit the use Simics BAE RAD750 platform and model for 11 runtime distribution production licenses. These licenses are required to be perpetual such that they will not expire once deployed. There should be no

additional fees once purchased. It is understood that these licenses are not provided by Windriver, the Simics developer, and that all support issues will be provided by the company providing the licenses.

III. Scope of Work

The contractor shall perform services in the JPSS Ground Project Mission Operations support area.

A. Requirements

A.1. The contractor shall perform support services in the area of mission operations for SNPP. The contractor shall perform support to Mission Operations and Mission Management for SNPP spacecraft and ground anomaly support, NOAA operational transition activity and ground system mission readiness activity. The contractor shall support the validation of operational products for major JPSS Ground System releases prior for determination of operational readiness.

A.2. The contractor shall perform engineering support for definition of JPSS mission readiness approaches, plans and schedules. The contractor shall provide support for the development of mission readiness procedures, launch activation plans and mission validation plans. The contractor shall support and/or lead various reviews and working groups as related to mission operations readiness topics and plans. The contractor shall support mission readiness meetings with Flight and Ground Project.

A.3. The contractor shall perform training support for JPSS mission readiness. The contractor shall develop appropriate, stand-alone training modules, training flow and certification. The contractor shall devise a formal testing methodology and processes to administer formal written tests. Demonstrate this methodology using the test database and formal written testing processes.

A.4. The contractor shall perform Mission Support Analyst duties for the JPSS mission readiness. The contractor shall support/develop MOST constraint database process, develop a constraint database structure research and recommend an appropriate commercial-off-the-shelf database product, and support training development for JPSS-1 Flight Engineering positions for spacecraft subsystems and instruments.

A.5. The contractor shall obtain 11 Simics runtime licenses that provide the capabilities of executing the VIIRS provided Simics models as part of their simulator. Specifically the licenses will permit the use Simics BAE RAD750 platform and model for 11 runtime distribution production licenses. These licenses are required to be perpetual such that they will not expire once deployed. There should be no additional fees once purchased. It is understood that these licenses are not provided by Windriver, the Simics developer, and that all support issues will be provided by the company providing the licenses.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

The Government shall provide furnished office space for personnel in support of Subtask 1 and 2.

The contractor shall provide laptop computer equipment needed to perform the task in an effective manner, unless provided by the JPSS Ground Project at the customer's discretion. This shall include the standard software application suite used at GSFC. Any special software applications needed to perform the task (e.g. Microsoft Project) will be provided as GFE. Additionally, the laptop shall be compliant to NASA Security requirements and subject to NASA security configuration and audits as necessary.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

The contractor will be required to support technical reviews/meetings in Colorado. The contractor shall prepare an estimate for this travel as part of their response to this SOW. For planning purposes, the contractor will support on the order of sending 5 to 7 people 4 times to Denver/Boulder, Colorado area to support various status reviews and technical interchange meetings, and send 1 contractor from Phoenix to Greenbelt six times for mission support analysis. Additionally, the contractor should assume frequent local travel to the Mission Management Center (MMC) in Suitland, MD. The contractor shall include an estimate for this local travel as part of their response to this SOW.

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date
1	Weekly Technical Status	
2	Monthly Management Report	

End of Task Order Statement of Work

GSMO TASK ORDER

Task No: **#62**
Modification: 9
Task Name: MAVEN Mission Operations Management Support
Task Period of Performance: 10/27/12 to 9/30/15
Modification Period of Performance: 7/1/15 to 9/30/15
GSMO SOW Reference: 2.1

I. Task Order History

Description of current modification (Modification 9): MAVEN is now in full operations of its Primary Science Mission. The emphasis of the task during this extended period focuses on the continuation of operations-related activities and the execution of the 2nd and preparations for the 3rd Deep Dip. There is also System Engineer support added as MAVEN prepares for Verification and Validation of the interfaces with the InSight Mars-lander based on its ICD with MAVEN.

Mod #	Start	End	Brief Description
0	10/27/2012	9/30/2013	Initial task order statement of work.
1	3/01/2013	9/30/2013	Added new engineering roles/duties
2	10/01/2013	12/31/2013	GS development and most of the verification completion and transition to Operations
3	1/01/2014	6/30/2014	Cruise towards Mars
4	1/01/2014	6/30/2014	Administrative
5	5/01/2014	6/30/2014	Additional engineering support for documentation and Peer Review actions
6	7/01/2014	4/30/2015	Continuation of the MAVEN Operations to the time of the MAVEN Project transition to SSMO management
7	2/25/2015		Administrative
8	5/1/2015	6/30/15	Continuation of Primary Science Operations, InSight/MAVEN V&V, Deep Dip 2 execution, and preparations for Deep Dip 3.
9	7/1/2015	9/30/15	Continue just the Deputy MOM part-time through end of September 2015.

II. Background

The purpose of this task is to support the MAVEN Mission Operations Management. This work includes, but is not limited to, the technical and management activities described in this SOW.

III. Scope of Work

The Contractor shall support the MAVEN Mission Operations Manager (MOM). Specific requirements are provided in section A.

A. Requirements

1) [redacted] **the Government Mission Operations Manager**
- Support the MOM during the daily activities and replace him during his absence especially when approvals following Command Conferences or real-time concurrence with plans on how to proceed with operations are required
- Support the close out of Mission Incidents, Surprises & Anomalies (ISAs) and Operations Change Requests (CRs)
- No Travel is required for this task.

2) **Provide support to standing meetings as follows:**
- Weekly MAVEN Mission Planning
- Weekly MAVEN Incidents, Surprises and Anomalies (ISAs) Status
- Weekly MAVEN Mission Operations Change Board (MOCB)

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

There are no Government furnished facilities, equipment, or software associated with this Task Order.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order.

End of Task Order Statement of Work

GSMO TASK ORDER

Task No:	**63**
Modification:	4
Task Name:	Mass Spec Instrument Operations Support
Task Period of Performance:	October 27, 2012 to September 30, 2015
Mod Period of Performance:	January 15, 2015 to September 30, 2015
GSMO SOW Reference:	2.4, 3.3, 3.6

I. Task Order History

Description of current modification (Modification 4): This modification provides support for the ExoMars MOMA-MS Project which will require some international travel to support Assembly, Integration and Test (AIT) activities at our international partner facilities.

Mod #	Start	End	Brief Description
0	10/27/2012	09/30/2012	Initial task order statement of work.
1	10/1/2013	9/30/2014	Extend Period of Performance
2	7/1/2014	9/30/2014	Add Subtask 3
3	10/1/2014	9/30/2015	Extend Period of Performance
4	1/15/2015	9/30/2015	Provide international travel to support Assembly, Integration and Test (AIT) activities at our international partner facilities.

II. Background

GSFC Code 699 has developed a line of space flight mass spectrometers that have been flown and are currently selected for several space flight missions. These instruments require the development of mission specific h/w and s/w tools to support eventual science operations after launch.

The work associated with this Task Order is supported through multiple funding sources. For this reason, the work and financial reporting should be divided per the following subtasks:

Subtask 1: The Neutral Gas and Ion Mass Spectrometer (NGIMS) will fly on the Mars Atmosphere and Volatile Evolution (MAVEN) Mission to characterize the Martian atmosphere. This mission will require support for planning, development, and testing of h/w and s/w tools, and conducting of science operations for the NGIMS instrument.

Subtask 2: The Neutral Mass Spectrometer (NMS) will fly on the Lunar Atmosphere and Dust Environment Explorer (LADEE) Mission to characterize the

Lunar exosphere. This mission will require support for planning, development, and testing of h/w and s/w tools, and conducting of science operations for the NMS instrument.

Subtask 3: The Mars Organics Molecule Analyzer (MOMA) will fly on the ExoMars Mission to detect the presence of organic molecules on Mars and characterize their structure and origins. This mission will require support for planning, development, and testing of h/w and s/w tools, and conducting of science operations for the MOMA instrument.

III. Scope of Work

The Contractor shall provide all necessary support for planning, development, and testing of h/w and s/w tools required to conduct mission specific science operations for the space flight mass spectrometer of interest.

A. Requirements

A.1. The contractor shall support planning activities concerning mission specific science operations.
A.2. The contractor shall support development and testing of h/w and s/w tools required for mission specific science operations during instrument environmental testing and observatory-level testing.
A.3. The contractor shall support mission specific science operations for the mass spectrometer instrument of interest during the science phase of the mission.
A.4. The contractor shall manage and coordinate activities of the instrument science operations team and provide verbal or email status reports on a weekly basis to the instrument management.

B. Management Reporting

The Contractor shall provide monthly status reports and reviews on the technical, cost, schedule and operational performance in accordance with the WBS to adequately describe the activities of the task to the Task Monitor. The contractor shall also provide informal weekly status reports via verbal or email communication to the instrument management.

C. Contractor Controlled Property

The Contractor shall assist the GSMO contract managers and property custodians in maintaining the overall list (NPROP) of government owned property used by the Contractor on this Task Order. This support includes preparation and cooperation during property audits.

IV. Government Furnished Facilities, Equipment, Software, and Other Resources

All necessary computer workstations and other communications equipment will be provided. Some existing S/W tools will also be provided.

V. Material Procurement

The Contractor shall propose material that they identify as necessary to perform the work associated with this Task Order.

VI. Travel Support

The Contractor shall propose travel that they identify as necessary to perform the work associated with this Task Order.

Specifically, the contractor shall support the travel requirements as described in the table below:

Travel Description	Approximate Time Frame
LADEE Ops support for Launch (WFF, VA)	Oct 2013
MAVEN Ops support for Launch (KSC, FL)	Nov 2013
MAVEN technical interchange meeting (Denver, CO)	Jan 2014
MAVEN technical interchange meeting (Denver, CO)	Apr 2014
MAVEN QSR/PSG meeting (Denver, CO)	Oct 2014
MAVEN QSR/PSG meeting (Denver, CO)	Jan 2015
MAVEN QSR/PSG meeting (Denver, CO)	Apr 2015
MAVEN QSR/PSG meeting (Denver, CO)	Jul 2015
International travel to support Assembly, Integration and Test (AIT) activities at our international partner facilities. 1 Engineer for 2 international trips [redacted]	2015

VII. Deliverables

The Contractor shall provide the following deliverables in support of the Task Order:

ID	Deliverable Description	Due Date

1	MAVEN Launch Site Support	Nov 2013
2	MAVEN ORT Support	July 2014
7	LADEE Launch Site Support	Oct 2013
8	LADEE Science Ops Support	Feb 2014
9	ExoMars MOMA CDR Support	Sep 2014
10	MAVEN NGIMS mission ops support	Sep 2015

End of Task Order Statement of Work