EXCERPT FROM CONTRACTS W9113M-10-D-0002 and W9113M-10-D-0003:

C-1. PERFORMANCE WORK STATEMENT SW-SMDC-08-08.

WARFIGHTER MODELING, SIMULATION, ANALYSIS AND INTEGRATION SUPPORT (WMSA&IS)

1.0 INTRODUCTION

1.1 BACKGROUND

The Warfighter Modeling, Simulation, Analysis and Integration Support (WMSA&IS) effort is multi-faceted, providing the Army, other services, and DoD an advanced capability for modeling, simulation, analysis and integration of space and missile defense issues and other advanced defense technologies. DoD advances toward assessing the operational effectiveness of new space and missile defense and other advanced defense technologies have increasingly driven the utilization of advanced simulation and modeling technologies as well as innovative analysis and integration techniques. The need has emerged to synthesize multiple system simulations that can be used to interactively define, develop, evaluate and validate operational needs, concepts and designs in a distributed simulation environment.

1.2 DESCRIPTION

The WMSA&IS efforts will develop critical technologies to provide the essential functions of the envisioned Warfighter battlefield/battle space process-target sensing, intelligence and sensor information and database fusion, command and control, target execution and damage assessment. To support this development, the WMSA&IS efforts will utilize tools based upon traditional simulation and statistical modeling while incorporating the insight of man-in-the-loop simulation.

The WMSA&IS efforts will aggregate geographically dispersed existing and to-be-developed simulation components and architectures. Distributed simulation will be utilized to acquire the "early system knowledge" essential to understand potential threats, the concepts of operations to meet the threats, the technologies, design and performance to meet the requirements, the manufacturing process to produce the design, the logistics and manpower to support the operational concept, and the architectures to interface with other systems. Distributed simulation will provide unique leverage for characterizing the environment of fewer new fielded systems, large-scale joint force operations within non-linear/highly mobile battlefields, and timely, interoperable systems with vastly increased information flow.

The general areas to be supported for the duration of the contract are set forth in this Performance Work Statement (PWS). These areas are not meant to be definitive, but rather, represent in summary form the general areas to be supported. Therefore, the PWS is deemed to be a basic expression of the contract requirement. Specific performance requirements will be set forth in Task Orders (TO's) issued under the contract. The TOs may be issued for U.S. Army Space and Missile Defense Command / U.S. Army Forces Strategic Command (USASMDC/ARSTRAT) as the Army Service Component to U.S. Strategic Command (USSTRATCOM); other associated air, space, and missile defense organizations; or higher Headquarters, as directed, in the areas of modeling, simulation, analysis and integration of space and missile defense issues and other advanced defense technologies. Task Orders awarded under this contract(s) may require performance in CONUS or OCONUS locations (including hazardous deployments).

2.0 SCOPE

The WMSA&IS contractor shall be tasked with efforts involving simulation design, simulation engineering, simulation implementation, simulation integration and maintenance in the realm of space and missile defense and other advanced defense technologies to include the integration of discrete models and other simulations and mission-critical computer resources and representative hardware elements of existing and emerging weapon systems, aircraft, missiles, sensors, planning/fusion capabilities, command, control,

and communications. The contractor shall also be responsible for parametric modeling; data collection, reduction and first level analysis; and design, engineering and integration of simulations and modeling to support evaluation of potential threats, doctrine and requirements, technologies, designs and performance, logistics and manpower, and defense system interface architectures.

Within this context, beyond building simulations, the contractor shall assist in planning, preparing, operating and documenting major simulation and war game demonstrations/exercises, while supporting the development of evaluation criteria, measures of effectiveness, and system/mission effectiveness criteria for these space, missile defense, and advanced technologies demonstrations. The contractor shall create and use a variety of modeling and simulation tools in performing these functions, including advanced networking, communications, computing, graphics, software, mathematical, and data collection.

3.0 TECHNICAL TASKS

3.1 Modeling Tools

The contractor shall provide (define, develop, and/or acquire, maintain and /or operate and document results from) statistical, stochastic and deterministic computer analysis tools for quantitative and qualitative modeling of DoD space and missile defense systems and other advanced technologies. These models shall include tools for evaluation of design, operation, performance, effectiveness, manpower, logistics, supportability, manufacturability, reliability, programmatics and cost. These tools shall be used for design and evaluation tradeoffs of manned and unmanned air and surface vehicles (e.g., aircraft, armor and ships); cruise missiles; air and surface weapon systems; command and control systems; sensor systems; communication systems; intelligence fusion, correlation and dissemination systems; automated planning systems; space systems; the subsystem components of these systems; and/or the architecture within which each of these systems resides and operates.

3.2 System Modeling, Analysis, and Integration

The contractor shall provide modeling and integration of existing, emerging and conceptual DoD space and missile defense systems and other advanced defense technologies. These systems may consist of manned and unmanned air and surface vehicles (e.g., aircraft, armor and ships); cruise missiles; air and surface weapon systems; command and control systems; sensor systems; communication systems; intelligence collection, fusion, correlation and dissemination systems; automated planning systems; and space systems. System modeling shall provide the fidelity requisite for behavioral and functional replication of the modeled artifact. The contractor system modeling capability shall provide for rapid prototyping and integration for new system concepts from the component level through the fully operational artifact.

3.3 Defense System Hardware and Software Integration

The contractor shall provide defense system hardware integration of mission-critical computer resources, hardware elements, and hardware and software interfaces for existing and emerging DoD space and missile defense systems other advanced defense technologies. The development of intelligent software will facilitate the translation and transfer of information between systems of different classifications. The hardware systems to be integrated may be operational end products or lower level constituent elements representative of manned and unmanned air and surface vehicles (e.g., aircraft, armor and ships); cruise missiles; air and surface weapon systems; command and control systems; sensor systems; communication systems; intelligence collection, fusion, correlation and dissemination systems; automated planning systems; and space systems.

3.4 Planning Technology Integration

The contractor shall integrate advanced planning technology to support simulation for advanced air vehicle man-machine interfaces, command and control, intelligence correlation and fusion, tactical information management and display, automated planning and program management tool sets. The

contractor shall provide for hardware and software interfacing and integration of multiple source real-time intelligence data in the decision aiding systems to include cross domain solution technologies.

3.5 Data Collection and Synthesis

The contractor shall provide data collection, analysis, and synthesis for the capture, evaluation, reporting, reverse engineering, element performance, system performance of high fidelity data sets, and evaluation and performance assessment or other data support relevant to space and missile defense issues and other advanced technologies. Analysis shall provide data visualization and correlation for real-time and post-event processing. The contractor shall conduct data collection exercises, experiments, and demonstrations, and analysis for creation of data sets describing operator activity under prescribed conditions for appropriate defense systems and simulations. Application of both conventional and advanced data processing, including relevant measures-of-effectiveness, measures-of-cost, and comparative performance will be provided as well as adaptive processing for sensors and other battlefield/battlespace operational systems.

3.6 Space Applications Technology

The contractor shall provide analysis of emerging space technologies that may lead to new warfighter capabilities. Proposed tasks will include investigating passive sensor technologies capable of improving measurement resolution from space platforms, performing quantitative analysis of the most promising passive sensor constructs, and quantifying warfighter utility as a function of acoustic-optic hyperspectral imagery performance or equivalent technology. Analysis and studies of variations in the number of hyperspectral bands, wavelengths, polarization states and dwell times for optimizing performance conditions may be assigned.

3.7 Architecture Development, Testing, and Standards Concepts

The contractor shall develop plans, designs, software, and technology concepts for the development, testing, and standards compliance of simulation architectures, including run-time infrastructures and confederations of existing defense systems. Tasks may include exercise or experiment planning, participation, and integration with similar and complimentary architectures as well as conversion of legacy systems to standards compliance systems.

3.8 Systems and Technology Support

The contractor shall develop architectures and domain specific integration frameworks for battlefield awareness, including the relationships between intelligence processes, command and control, and logistics. Software technology shall be developed by the contractor to assist in the automation of time-critical planning and execution of military operations, to demonstrate advanced distributed agent architectures, which have the potential to revolutionize planning, execution, monitoring, and re-planning of force deployment, logistics, and operational support. Information assurance and survivability systems shall be developed to reduce vulnerabilities and aid in the defense of mission critical information systems. Defensive measures shall also be investigated and developed which will assist in the design of intrusion resilient and intrusion tolerant systems. The contractor shall also create science-based metrics, methodologies, and tools for the implementation of assurance in information system design and assessment modeling. Mathematically accurate techniques for modeling and analyzing software agent behaviors, agent design methods and agent creation tools shall be developed, tested and implemented.

4.0 MANAGEMENT TASKS

4.1 Program Management

The contractor shall provide program management support for management planning, scheduling, costing, customer coordination, and technical performance for task orders issued under this contract. The

contractor shall integrate security considerations in accordance with the contract applicable DD254 into all contract activities. CDRL (A001, A002, A003)

4.2 Management of Equipment and Materials

4.2.1 Government Furnished Equipment

The contractor shall maintain and account for all Government furnished equipment under this contract. Upon Government direction, the contractor shall take steps required to transfer GFE to another contractor or Government facility as designated by the Government.

4.2.2 Hardware

Pursuant to FAR 52.245-1, all hardware designed, developed, or acquired under this contract shall become property of the Government and shall be delivered to the Government as required by the Contracting Officer. Hardware will not be designed, developed, or acquired except that which is incidental to effort authorized under this PWS.

4.2.3 Software

As directed by the government, software developed incidental to the performance of this effort shall be delivered to the Government as both source and executable code and shall be considered a "Special Work" pursuant to DFARs 252.227-7020, Rights in Special Works. CDRL (A007)

4.3 Program Documentation

The contractor shall provide multi-media presentation aids and related database, written, photographic and/or video documentation for task reviews, exercises and demonstrations as required by task sponsors. Documentation shall include correspondence and memoranda, as well as technical reports and documentation up to the Top Secret/Sensitive Compartmented Information (SCI) security classification level. CDRL (A005, A008, A009)

4.4 Technical Interchange Review

Technical interchange reviews shall be conducted for specific task orders as required by the Government. These meetings will provide for review of key milestones, performance goals and costs, including but not limited to functional demonstration, system design, demonstration plans, request for intelligence requirements, demonstration results and such other items that the Government requires. These meetings will provide for a technical interchange between the Contractor Program Manager, the Contractor Task Principal Investigators, and pertinent contractor and Government participants.

4.5 Quarterly In-Process Review (IPR)

The contractor shall host and conduct status meetings at his facility. These meetings, as scheduled by specific task order sponsors, shall be structured to provide the government with an up-to-date status of the contractor's technical and programmatic progress. Following each such meeting, the contractor shall prepare a report for Government approval, as required. CDRL (A002, A003)

4.6 Safety

The contractor shall identify, control, and document the hazards associated with this effort and the control methods necessary to eliminate or control the hazards. Significant items shall be addressed in status meetings.

4.7 Reports and Data Deliverables

The contractor shall deliver all reports and data in accordance with the requirements set forth herein and in Section C of Orders issued. The contractor shall deliver all data items specified in the Contract Data Requirements List (CDRL), Exhibit A, DD Form 1423. The CDRL identifies each data item, the frequency of submission, and other information pertaining to data deliverables. This CDRL is intended as a guideline for task sponsors to develop specific deliverables for individual tasks. It is not intended to be comprehensive enough to cover all deliverable requirements; therefore task sponsors are encouraged to tailor their deliverables by using the CDRL or adding more specific requirements. All deliverable reports shall be provided to the Government in electronic format by email. E-mail submissions shall be submitted according to the addresses as provided on the CDRL Distribution Sheet.

4.8 Software Development Plan

The design, development, integration, testing, documentation, and delivery of all software provided under this contract shall be in accordance with the contractor format, Government-approved Software Development Plan (SDP) as directed. The SDP shall also address Joint Technical Architecture compliance for all Army tasks. The use of commercial software engineering practices and standards is also strongly encouraged. CDRL (A006)

4.9 Media Free of Viruses

If media is delivered to or for the U.S. Government under this contract in the form of Automated Information System (AIS) media (e.g., diskettes, tapes, etc.) it shall be free of viruses which would cause damage, disruption, or degradation of the AIS. The contractor shall test such media for viruses prior to delivery. This requirement shall also be included in all subcontracts at any time when the data to be delivered is in the form if AIS media.

4.10 Contractor Performance

Contractor performance on each task will be measured based on the following factors: adherence to the task schedule, adherence to expected cost estimates, and quality factors. The schedule, expected cost, and quality factors will be defined for each task. CDRL (A001, A002, A003)

4.11 Manpower Reporting

The Office of the Assistant Secretary of the Army (Manpower & Reserve Affairs) operates and maintains a secure Army data collection site where the contractor will report ALL contractor manpower (including subcontractor manpower) required for performance of this contract. The contractor is required to completely fill in all the information in the format using the following web address: https://cmra.army.mil. The required information includes: (1) Contracting Office, Contracting Officer, Contracting Officer's Technical Representative; (2) Contract number, including task and delivery order number; (3) Beginning and ending dates covered by reporting period; (4) Contractor name, address, phone number, e-mail address, identity of contractor employee entering data; (5) Estimated direct labor hours (including sub-contractors); (6) Estimated direct labor dollars paid this reporting period (including sub-contractors; (7) Total payments (including sub-contractors): (8) Predominant Federal Service Code (FSC) reflecting services provided by contractor (and separate predominant FSC for each sub-contractor if different); (9) Estimated data collection cost; (10) Organizational title associated with the Unit Identification Code (UIC) for the Army Requiring Activity (the Army Requiring Activity is responsible for providing the contractor with its UIC for the purposes of reporting this information); (11) Locations where contractor and sub-contractors perform the work (specified by zip code in the United States and nearest city, country, when in an overseas location, using standardized nomenclature provided on website); (12) Presence of deployment of contingency contract language; and (13) Number of contractor and sub-contractor employees deployed in theater this reporting period (by country). As part of its submission, the contractor will also provide the estimated total cost (if any) incurred to comply with this reporting

requirement. Reporting period will be the period of performance not to exceed 12 months ending 30 September of each government fiscal year and must be reported by 31 October of each calendar year. Contractors may use a direct XML data transfer to the database server or fill in the fields on the website. The XML direct transfer is a format for transferring files from a contractor's systems to the secure web site without the need for separate data entries for each required data element at the web site. The specific formats for the XML direct transfer may be downloaded from the web site.