RVGSS SAMPLE TASK ORDER # 4

TASK ORDER TITLE: Graphics Simulation Services

PERIOD OF PERFORMANCE: July 1, 2014 – June 30, 2015

TASK OVERVIEW:

The objective of this task is to develop and maintain 3-Dimensional (3D) graphics capabilities and associated technologies for Real-Time (RT) simulation visualization and Non-Real-Time (NRT) engineering analysis. The technologies include graphical user interfaces, data communication between simulations and graphics, and support for different computing environments and platforms. In accordance with Statement of Work 3.4, Graphics Simulation Services, the contractor shall provide the technical requirements listed below.

TECHNICAL REQUIREMENTS:

1. The Engineering Directorate has historically used 3D graphics capabilities based on Dynamic Onboard Ubiquitous Graphics (DOUG) scene rendering technologies to enable simulation visualization. In support of Orion Multi-Purpose Crew Vehicle (MPCV) and other advanced exploration programs, Engineering Doug Graphics for Exploration (EDGE) was developed to address these engineering simulation visualization requirements. The Engineering Directorate has a requirement to maintain and update EDGE in response to new project and program requirements as well as evolving computer graphics hardware.

    1.1. *EDGE Sustaining Engineering* – The contractor shall provide sustaining engineering for EDGE. The contractor shall comply with JSC Procedural Requirement (JPR) 7150.2 requirements for development and documenting EDGE software. This work shall support development and testing on various project customer required platforms.

    1.2. *TS21 Graphics Sustaining Engineering* – The contractor shall provide sustaining engineering for the 21st Century Training Systems (TS21) Modeling and Simulation (M&S) Graphics subsystem specific customization features. These features include but are not limited to dynamic event modeling, mechanical system articulation, digital camera effects, and special lighting situations. Concurrency with latest available image generation hardware incorporated within the TS21 facility is necessary under this requirement. Continue to enhance and develop video streaming over Internet Protocol (IP) technologies for application to the TS21 facility.

    1.3. *NExSyS EDGE Enhancements* – The contractor shall develop enhancements to EDGE to address new NASA Exploration System Simulation (NExSyS) exploration program driven advanced scene capabilities. This includes but is not

limited to continued improvements to artificial rock imagery capabilities for asteroid and planetary exploration, detailed lunar elevation based landing sites, Aitken basin elevation and imagery, and other modeling features associated with the Moon, Mars, and targeted asteroids.

DELIVERABLES & SCHEDULES:

1. Subtask 1 deliverables:
   A. Initial EDGE software release and JPR 7150.2 compliant documentation deployed to EDGE customer Wiki (January 1, 2015). Releases should be compatible with both Linux and Mac customer platforms.
   B. Follow up EDGE software release and JPR 7150.2 compliant documentation deployed to EDGE customer Wiki (June 30, 2015). Releases should be compatible with both Linux and Mac customer platforms.
   C. Initial TS21 specific customizations maintenance update release (January 1, 2015).
   D. Final TS21 specific customizations maintenance update release (June 30, 2015).
   E. Graphics visualization demonstration of a NExSyS vehicle simulating landing on the Aitken basin (January 1, 2015). This demonstration should be targeted for a desktop simulation environment as well as the Systems Engineering Simulator (SES) Video wall and the Liquid Galaxy Multi-Display System.

DEPENDENCIES:

NASA shall provide access to required development resources including workstations, laptops, network infrastructure, software licenses, avionics system engineering units, vehicle and environment simulations, and supporting tools resources at JSC.