1125-VC-2043 Karel Marshall, Paul Vienhage* (paul.vienhage@emory.edu), Heather Barcomb and William A. Black. War-Gaming Applications for Achieving Optimum Acquisition of Future Space Systems.

In 2014, the federal government spent nearly half a trillion dollars on contractor projects. Motivated by the Space Modernization Initiative and the Defense Innovation Initiative, the Department of Defense wants to develop an algorithm to optimize the acquisition of new technologies. This Unified Game-based Acquisition Framework Advanced Game-based Mathematical Framework makes use of game theory, probability and statistics, non-linear programming and mathematical models to model negotiations between governmental agencies and private contractors. This project focuses on generating the optimum Program and Technical Baseline (PTB) solution and its corresponding acquisition strategy with associated contract incentives for the Fixed-Price Incentive Firm and Fixed Price Seal Bid contract types. An "optimum solution" is obtained by compromising the system and acquisition objectives to achieve low lifecycle cost/total ownership cost, innovative design, decreased acquisition time, while meeting warfighter needs. This project culminates in a collection of MATLAB (MathWorks) programs which model contractor and governmental interactions. The newly developed strategy shows strong convergence to nash equilibrium values for the bidding games and successful selection of PTB solutions. (Received September 19, 2016)