The U.S. DoD recently focused on the development of future space systems using Congressional Initiatives (CIs), Defense Innovation Initiative (DII), and BBP 3.0 to improve acquisition efficiency. CIs/BPP/DII impose requirements on innovative, affordability, increasing competition, and decreasing acquisition time. As indicated in the Space Modernization Initiative (SMI) Strategy, the future systems shall meet the design for low Life Cycle Cost (LCC)/Total Ownership Cost (TOC), provide desired system capability to meet warfighter needs and achieve resiliency to operate in contested environments. These objectives have posed conflicting requirements and a real challenge for the DOD Acquisition Authority (DAA).

The components characterized the technical baseline for the future space systems are key requirements, system architecture design and key open subsystem solutions. We propose an Advanced Game-based Mathematical Framework (AGMF) using Bayesian games for acquiring future space systems with complete and incomplete information cases. AGMF provides a recipe for DAA and Space and Missile Systems Center to achieve optimum acquisition. Optimum in the sense of compromising the objectives to achieve low LCC/TOC, innovative, decreasing acquisition time, and meeting warfighter needs. (Received August 25, 2015)