

1. **Research Title:** Mission Engineering Research for Aerospace System of Systems (SoS)
2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level**

Systems engineering for design, analysis, and effectiveness of system of systems (BA/BS, MS, or PhD level)

4. **Objectives:**

- Develop and communicate comprehensive frameworks for mission engineering in the aerospace systems domain
- Develop advanced modeling and simulation capabilities for aerospace mission and system analysis
- Enhance resilience and adaptivity of aerospace systems through mission-driven design
- Optimize human-machine collaboration in aerospace mission operations
- Integrate sustainability considerations into aerospace mission engineering
- Develop classes of model validation hierarchies for aerospace systems to advanced model confidence

5. **Description:** This research aims to explore comprehensive frameworks for mission engineering and design and analysis of aerospace system of systems. It will explore advanced modeling and simulation techniques to enhance the understanding of complex aerospace missions and system behaviors. A key focus is to develop resilient and adaptable aerospace missions through mission-driven design principles. The research will also investigate methods to optimized human-machine collaboration in mission operations and integrate sustainability considerations into aerospace mission engineering. This multi-faceted approach will contribute to the development of safer, more efficient, and environmentally conscious aerospace systems that can effectively achieve diverse mission objectives.

6. **Research Classification/Restrictions:** Distribution A

7. **Eligible Research Institutions:** Research institutions should be limited to US domestic universities, as well as require US citizenship.