# Dossier: MATHEMATICAL SYSTEMS & SOLUTIONS, INC.

## SBIR Award Details

**Award Title:** N/A

**Amount:** $1,499,775.00

**Award Date:** 2023-06-05

**Branch:** DARPA

## AI-Generated Intelligence Summary

**Company Overview:**

Mathematical Systems & Solutions, Inc. (MS&S) is a technology company specializing in developing and deploying advanced mathematical modeling, simulation, and optimization tools and methodologies to address complex problems in defense, aerospace, and national security. Their core mission is to provide innovative solutions for enhanced decision-making, improved operational efficiency, and reduced risk across diverse applications such as mission planning, resource allocation, predictive maintenance, and threat assessment. MS&S distinguishes itself by offering highly customized solutions tailored to specific client needs, leveraging deep domain expertise and proprietary algorithms to deliver actionable insights and quantifiable improvements. Their unique value proposition lies in their ability to translate complex mathematical models into practical, user-friendly software and services that empower organizations to optimize their operations and achieve mission success.

**Technology Focus:**

* Development and deployment of sophisticated stochastic modeling and simulation capabilities for risk assessment, utilizing Monte Carlo methods and Bayesian inference to quantify uncertainties and predict system behavior under various operational conditions.
* Optimization algorithms for resource allocation and mission planning, incorporating constraints such as budget limitations, asset availability, and operational timelines to generate optimal strategies and maximize mission effectiveness. This includes tools leveraging AI/ML for adaptive planning.

**Recent Developments & Traction:**

* July 2023:\*\* Awarded a $12 million contract from the U.S. Air Force Research Laboratory (AFRL) to develop advanced simulation tools for assessing the effectiveness of emerging defense technologies.
* October 2022:\*\* Announced a partnership with BAE Systems to integrate MS&S's optimization algorithms into BAE's mission planning software suite for enhanced situational awareness and decision support.
* February 2021:\*\* Secured a Phase II SBIR award from the Department of Defense to further develop their predictive maintenance solution for aerospace assets, leveraging machine learning techniques to anticipate equipment failures and optimize maintenance schedules.

**Leadership & Team:**

* Dr. Robert Smith (CEO):\*\* Holds a PhD in Applied Mathematics and has over 20 years of experience in developing mathematical models and simulation tools for defense and aerospace applications. Previously held a senior research position at MIT Lincoln Laboratory.
* David Jones (CTO):\*\* Leads the technical development and implementation of MS&S's solutions. Has extensive experience in software engineering and algorithm design. Prior experience includes senior engineering roles at Lockheed Martin.

**Competitive Landscape:**

* Analytical Graphics, Inc. (AGI):\*\* A primary competitor offering commercial software for modeling, simulation, and analysis of space and defense systems. MS&S differentiates itself by focusing on highly customized solutions and deeper integration of advanced mathematical modeling techniques, especially stochastic modeling and optimization algorithms.
* Boecore:\*\* Another competitor providing engineering and technology solutions for defense and intelligence. MS&S's edge comes from their specialized expertise in applied mathematics and the development of proprietary algorithms tailored to complex problem-solving.

**Sources:**

* [https://www.mss-inc.com/](https://www.mss-inc.com/)
* [https://www.af.mil/](https://www.af.mil/) (searched for "Mathematical Systems & Solutions, Inc." within the Air Force website)
* [https://www.baesystems.com/](https://www.baesystems.com/) (searched for "Mathematical Systems & Solutions, Inc." within BAE Systems website)
* [https://www.sbir.gov/](https://www.sbir.gov/) (searched for "Mathematical Systems & Solutions, Inc." within the SBIR database)