AEROSPACE

# ADVANCING AI IN SPACE

## Harnessing the Power of AI

The increasing demand for innovation and efficiency across the space enterprise calls for the widespread adoption of artificial intelligence (AI) across virtually every facet of the space sector. As the aerospace industry undergoes rapid technological advancements, AI is at the forefront, offering unparalleled potential to optimize lifecycle activities, enhance decisionmaking, and ensure mission success. To harness the power of AI, Aerospace has developed a comprehensive strategy designed to integrate AI throughout space acquisition and operations. This strategy strengthens our role in advancing the application of AI across the space domain - improving both mission execution and acquisition outcomes through greater performance, resilience, and informed decision-making.

## Our Vision

Aerospace envisions a future where AI is seamlessly integrated into all aspects of space operations, from mission planning and execution to post-mission analysis. By embedding AI in all space missions, we aim to create smarter, more responsive systems that are capable of autonomously managing complex tasks, improving mission reliability, and streamlining operations. Our AI strategy is centered on providing actionable insights, fostering innovation, and ensuring mission assurance with every deployment.

## The Differentiating Outcomes

To realize this AI vision, Aerospace is working to achieve five differentiating outcomes that will provide unique contributions to our long-term value:

**AI SOLUTIONS FOR SPACE**

Aerospace will embed AI capabilities throughout all phases of space acquisition and operations.

**AI-ENABLED SPACE OPERATIONS & DECISION AIDS**

Aerospace will empower space missions with advanced AI, delivering enhanced situational awareness and operational effectiveness.

**TRUSTED AI FRAMEWORK FOR SPACE APPLICATIONS**

Aerospace will implement a comprehensive framework to ensure the reliability, safety, and performance of AI technologies.

**AI-AUGMENTED MODELING AND SIMULATION**

Aerospace will enhance modeling and simulation capabilities with AI, enabling more precise representations of complex space environments.

**CURATED SPACE DATASETS**

Aerospace will curate high-fidelity space datasets, consolidating decades of space knowledge into AI-ready data.

## Strategy in Action

- Driving AI and data science projects that directly support DoD, IC, and civil space missions
- Curating and analyzing decades of mission data from launches, anomalies, and satellite operations
- Implementing a Trusted AI Framework to verify, validate, and test mission-critical AI systems
- Forging strategic partnerships with government, commercial, and academic leaders to accelerate AI innovation in space

## Lines of Effort (LOEs)

To achieve these outcomes, the Aerospace AI strategy establishes six LOEs, each distinct but interrelated, forming the basis of our implementation roadmap.

**AI Applications: Leveraging Rapid Advances in AI for Space Innovation**
Focuses on developing AI-driven tools to simulate complex space environments, automate decisionmaking, and enhance mission execution.

**Mission Assurance: Evolving Expertise for AI-Enhanced Space Systems**
Focuses on ensuring the safety and security of AI-enhanced systems through the implementation of the Trusted AI Framework, guaranteeing performance and reliability.

**Governance: Expediting the Transformation to AI-Enabled Missions**
Develops policies, standards, and governance processes to enable fast, safe AI integration in space systems.

**AI Partnerships: Strengthening External and Internal Collaborations**
Emphasizes strategic partnerships with industry leaders, academic institutions, and government agencies to amplify AI innovations.

**AI-Fluent Workforce: Empowering Talent to Lead in AI**
Develops a skilled workforce through training, continuous learning, and the creation of an AI sandbox for hands-on experimentation.

**AI Infrastructure: Establishing the Foundation for AI Excellence**
Focuses on developing AI infrastructure, including data management systems and scalable computing power, to support machine learning, experimentation, and operational deployment.

## The Aerospace Corporation

The Aerospace Corporation is the nation's trusted partner solving the hardest problems in space. We leverage unparalleled technical depth to meet critical mission needs and design foundational architectures that secure U.S. leadership in space and keep the nation safe. Our national workforce of more than 4,800 employees provides objective technical expertise and data driven insights that drive mission success across space systems and space vehicles. For more information, visit www.aerospace.org.

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