



ENGINEERING AND INTEGRATION FOR COMMERCIAL SPACE

Space is changing more rapidly than ever. Technological advancement, lower-cost access to orbit, and massive private investments are driving a wave of space innovation—introducing novel, next-generation capabilities to meet current and emerging operational needs. The global space economy was estimated to reach \$469 billion in 2022 by Space Foundation, with commercial space sector revenues comprising 77 percent, or \$362 billion.

A vibrant commercial space economy supports the development of maturing, nascent, or conceptual technologies and technical domains, while affording U.S. government organizations more choice in the marketplace—in line with national policy to buy, adapt, and adopt commercial products and services, when appropriate, to meet national mission requirements.

The Aerospace Corporation (Aerospace) is a leading architect for U.S. government space programs, and a trusted partner for the U.S. commercial space industry, helping to solve the hardest technical challenges in order to accelerate the rapid delivery of new capabilities to space.

Solving the Hardest Technical Challenges in Space

As the non-profit operator of the only federally funded research and development center (FFRDC) dedicated to the entire space enterprise, Aerospace is chartered to operate in the national interest. We do not compete for business, instead partnering with industry to accelerate the readiness of commercial solutions and bringing innovation to market for government missions and commercial partnerships alike.

Aerospace brings our proven systems engineering and integration (SE&I) capabilities and space insights directly to the private sector through our Direct Commercial Programs Office. We advance U.S. commercial space innovation and capabilities, leveraging the breadth and depth of our technical expertise to reduce risk and uncertainty across program and innovation lifecycles. Our services foster confidence in commercial capabilities among commercial buyers, investors and venture capital firms, and the U.S. government.

Examples of Aerospace service offerings to commercial space companies include:

Launch and Space Readiness Support

- Launch safety probabilistic analysis
- Anomaly identification and resolution for errant launch and satellites
- On-orbit space platform characterization

Aerospace Corporate Locations:

- › El Segundo, CA, Headquarters
- › Huntsville, AL
- › Colorado Springs, CO
- › Albuquerque, NM
- › Houston, TX
- › Chantilly, VA
- › Crystal City, VA

Core Systems Engineering & Integration Offerings

- › Enterprise, systems, and services architecture planning and development
- › Operational requirements analysis and evaluation
- › Integration management
- › Space Situational Awareness
- › Technical performance characterization, analysis, and assessment
- › Supply chain resilience and evaluation
- › Program, milestone, and design readiness reviews
- › Emerging technology evaluations
- › Program systems engineering
- › Monitoring launch vehicle and satellite processing and certifying launch readiness

Systems of Systems Engineering

- Advancing architectures for cislunar ecosystems
- Independent space software development verification and evaluation
- Assuring effective and safe operations of trusted autonomous systems

Systems of Systems Development & Acquisition Services

- Analysis of Alternatives
- Assess technical risk and operational viability for venture capital confidence
- Independent requirements assessment
- Systems engineering and integration
- Trade studies
- Market readiness assessment of core technologies

Technology Applications

- Validating advanced technology for operational applications
- Electric propulsion and Microelectromechanical Systems Digital Thruster (MDT) testing

Research, Development, and Laboratories

Commercial customers can leverage Aerospace's unique, world class laboratories to advance research and develop new technologies. Our 150+ laboratory facilities in the Physical Sciences Laboratories (PSL) Division span 75,000 square feet, providing robust, innovative applied scientific research across a diverse portfolio including advanced concepts, resilient space, technology development, and agile acquisition. Our Concept Design Center rapidly delivers complex and innovative space system concepts through concurrent, digital engineering and rapid prototyping.

Technology Transfer

Aerospace continually transfers technology and intellectual property for the public benefit through publications, exchanges at conferences, reports, work under contract, and relationships with industries and the federal government. Aerospace formally transfers technology through nondisclosure agreements, software release and licensing, patent and technology licenses, and the transfer of know-how and deliverables under technical services contracts.

Maximizing Commercial Space Capabilities for the Nation

The U.S. government is eager to rapidly harness commercial space innovation to improve the nation's security and prosperity. Aerospace's Direct Commercial Programs Office works in coordination with our Commercial Space Futures Office to foster greater collaboration between the U.S. government and commercial space and to facilitate U.S. government access to U.S. commercial space capabilities. For more information or to collaborate with us, please contact us at commercialprograms@aero.org.

The Aerospace Corporation

The Aerospace Corporation is a national nonprofit corporation that operates a federally funded research and development center and has more than 4,500 employees. With major locations in El Segundo, California; Albuquerque, New Mexico; Colorado Springs, Colorado; and the Washington, D.C. region, Aerospace addresses complex problems across the space enterprise and other areas of national and international significance through agility, innovation, and objective technical leadership. For more information, visit www.aerospace.org.

Commercial Space Activities at Aerospace



With escalating needs for space traffic management and collision avoidance support in low Earth orbit, Aerospace is shaping industry best practices to prevent new space debris through objective research, strategic analysis, and technological innovation.



Building confidence in commercial cislunar systems, Aerospace performs independent technical reviews and activities to mature unproven capabilities via in-space testbeds and proving grounds. Image courtesy of NASA.



Aerospace guides collaboration to provide new pathways for in-space servicing, assembly, and manufacturing (ISAM) technologies to extend satellite lifecycles, enable debris removal, and sustain operations in orbit, cislunar space and beyond. Image courtesy of NASA.