

# Space Exploration Architectures & Enabling Infrastructures

For questions, email:

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Made in Space

The exploration of the solar system and the eventual permanent human settlement on another space body are all topics of interest that will impact human life for generations to come. AIAA and the sponsoring technical committees welcome specific and interdisciplinary technical papers, presentations, and discussions on all aspects of space exploration architecture, enabling technologies, and infrastructures to be presented at ASCEND.

To facilitate this, there is an immediate need for in-space infrastructure to be planned, funded, and implemented in order to facilitate broader, efficient, and easy access to cislunar space for all interested stakeholders and participants. This section is concerned with the architectures and infrastructures associated with both near- and long-term human space activity. As the world looks back and celebrates the 50th anniversary of the Apollo program, ASCEND will be the platform to look ahead and propose the possibilities of the next 50 years and beyond.

Primary focus should be Low Earth Orbit, Cislunar Space, the surface of the Moon, and the surface of Mars. However, architectures and infrastructure associated with other destinations are welcome. What are the likely infrastructures to be developed in the inner solar system? What human space flight destinations are reasonable? What is the role of robotic systems in the arena of human space flight?

Of particular interest are the related issues of affordability and sustainability. Hundreds of space architectures have been proposed in federal and commercial sectors across the decades of human spaceflight, but few have resulted in actual programs. Most of the few that did become programs were targeted for cancellation in order to free up the funds used to sustain them. There is a high interest in papers that not only present new and unique architectures, but also contextualize them in an implementable framework that holds potential to become part of a long-term exploration strategy.

## Topics of interest include, but are not limited to:

- » Artificial Intelligence Applications
- » Autonomous Systems
- » Cislunar Architectures
- » Deep Space Transportation
- » Enabling Technology Development
- » Entry, Descent, & Landing
- » Funding and self-sustaining space economy
- » Guidance, Navigation, Control, and Timing
- » Human Exploration Support and Systems Integration
- » In-Space Logistics (infrastructure) and Resupply
- » Logistics and Spares Standards
- » Lunar Infrastructures Enabling Deep Space Exploration
- » On-Earth Spaceports and Launch Systems
- » On-orbit Servicing, Assembly, and Manufacturing
- » Programmatic Considerations: Risk, Cost, Schedule
- » Robotic Precursor Missions
- » Space Electronics & Manufacturing
- » Space Exploration Architectures and Concepts of Operation
- » Space Flight Analogs and Simulations
- » Space Resource Utilization
- » Space Systems Operation
- » Sustainability and Reusability
- » Technical Standards Development
- » Technology Gaps in Planned Missions
- » Traditional/Alternative Systems Engineering Techniques