



# Marshall Space Flight Center Advanced Concepts Office

Engineering Solutions for Space Science and Exploration

**The Advanced Concepts Office (ACO)** performs early-phase analyses and feasibility evaluations of space systems for planning purposes. ACO's aegis is to provide a preliminary assessment for proposed missions in the pre-phase A development stage. ACO is capable of evaluating launch vehicles, planetary probes, lunar landers and habitats, or complete space system architectures. ACO serves many types of customers; not only NASA and MSFC, but space industry partners and academia. ACO analyzes trade spaces and alternative design solutions to enhance mission success. ACO also assists customers in defining architectures, constraints, and ground rules and assumptions that define the opportunities and risks of new (or proposed) projects and programs.

ACO uses custom tools, empirical data from previous space platforms, proven engineering practices, and experienced analysts to support the intellectual frameworks that turn ideas into possibilities. The ACO team has extensive engineering experience and capabilities in spacecraft, vehicle, and technology design and development. The ACO evaluation is scalable to the resources available to support a particular effort. The evaluations start at "Level 0" for a one-day effort, up to a "Level 4" study, which can take six to twelve weeks with corresponding funding resources.

The ACO team is dedicated to offering each partner the opportunity to discuss the depth of study or analysis that best meets their needs and resources. Flexible and efficient, the team provides excellent return on investment whether it be a one-day study by a single team member or a multi-month analysis with a full team of NASA engineers.



ACO has extensive experience providing end-to-end analyses to multi-organizational teams, including other NASA centers, U.S. Government agencies, industry partners and academic institutions. For more information about partnering with the Advanced Concepts Office, visit [nasa.gov/centers/marshall/about/business.html](https://nasa.gov/centers/marshall/about/business.html).



In-depth Analysis



Software Capabilities



Direct Impact Innovation



Vehicle Concept Design

## Capabilities

The Advanced Concepts Office has extensive experience in the following areas:

- System Analysis
- Concept Development
- Launch Vehicle Assessment
- Human Landing Systems (HLS)
- Habitats and Surface Systems
- Space Launch System (SLS)
- Mars Exploration Campaign
- Space Nuclear Propulsion
- Science Studies
- Technology Demonstrations

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## Key Benefits

This office helps address many needs in NASA's design community, including:

- Defining large trade-spaces
- Evaluating advanced technology concepts unaddressed by other aerospace groups
- Rapid turn-around of highly time-critical actions

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