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ascend.events/cfc

Space Resource Utilization

For questions, email:
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Space Resources TC

CONTRIBUTORS

Space Resources Technical Committee

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Space Exploration Integration Committee

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Following many precedents in the history of human civilization, our era of exploration and short-term presence of space will be followed by the desire to increase and sustain human presence on off-Earth worlds and the expanses in between. The newest chapter of our history may unfold logically through a transition to economically feasible development of infrastructure, exploitation of resources, production means, and sustainable transportation both on planetary surfaces and in interplanetary space. This transition to economically sustainable settlements outside of Earth through the use of local resources requires a change in paradigms about the capabilities and lifecycles of space systems and the synergistic engagement of many disciplines.

ASCEND will serve as a catalytic event for professionals and students to bring forth essential questions and challenges facing the establishment of reliable in-situ resource utilization (ISRU) on the Moon and Mars as a priority. Experts from both terrestrial and space-focused industries, government agencies and academia are invited to propose content that will examine the near and long-term development and deployment of technologies and systems for space resources utilization integrated with other enabling space-based architectures. The development of this content for ASCEND will be done in collaboration with other interested technical committees to enable rich interdisciplinary discussions.

Participants are encouraged to propose content to fit various formats of presentations and discussions, including traditional technical papers.

Please consider and, where appropriate, reference the questions below, for submissions to the topics listed on the right.

Questions

- What technical and operational challenges arise to transition current space exploration architectures into the utilization of Off-Earth planetary resources?
- What concepts of reliability can be expected for ISRU operations?
- What synergies exist with terrestrial industry to enable technology development for space resource utilization?
- What economic analyses are appropriate to determine benefits of space resource utilization?
- What roles can governments and world governance play in fostering commercial development of space resources?
- What ethical principles should guide stewardship of Off-Earth resources and lands during exploitation?

Submission Topics

- Detecting/Defining/Proving Availability of Resources
- Economic Analyses involving ISRU
- Space resource / ISRU technology hardware testing and development
- Space Mining Planning/Operations Integrated within Space Architectures
- Systems Analysis of ISRU-based Surface Architectures
- Energy Production and Usage by ISRU
- Surface Energy Architecture to Meet ISRU Demand
- Production of Propellants and Other Commodities
- ISRU Product Storage and Delivery
- Public Governance and Commercial Development of Space Resources
- Ethical Stewardship in the Era of ISRU
- Other