

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Heavy Lift Launchers Capabilities and New Missions (8)

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NASA'S SPACE LAUNCH SYSTEM: MAXIMIZING LAUNCH VEHICLE AND PAYLOAD DESIGN
VIA EARLY COMMUNICATIONS

Abstract

The United States' current fleet of launch vehicles is largely derived from decades-old designs originally made for payloads that no longer exist. They were built primarily for national security or human exploration missions. Today that fleet can be divided roughly into small-, medium-, and large-payload classes based on mass and volume capability. But no vehicle in the U.S. fleet is designed to accommodate modern payloads. It is usually the payloads that must accommodate the capabilities of the launch vehicles. This is perhaps most true of science payloads. It was this paradigm that brought together designers of NASA's Ares V cargo launch vehicle (CLV) with scientists and payload designers in the astronomy and planetary sciences communities. Ares V was still in a pre-concept development phase as part of NASA's Constellation Program for exploration beyond low Earth orbit (LEO). With the cancelation of Constellation and the Ares V vehicle, this conversation was put on hold. Now, with the funding and early design work for the new Space Launch System well under way, Lessons Learned from earlier dialogues for alternate users of heavy lift must be applied and the communication re-established in earnest. This paper summarizes the findings of earlier discussions bringing together the vehicle design and users as well as successes to date in establishing the Space Launch System as a robust and affordable platform for conducting new missions.