SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Technologies (5)

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UNITED LAUNCH ALLIANCE – LAUNCH VEHICLE MISSION ENHANCEMENT THROUGH SPACE BASED RANGE TECHNOLOGY

Abstract

Launch of the current Evolved Expendable Launch Vehicle (EELV) fleet is supported by a large and costly array of U.S. Government tracking, receiving, and transmission stations around the world. The Operations Maintenance (O & M) expenditures for these assets exceed 380M/year. Also, both the NASA and military customers have expressed concerns that the current Launch Vehicle (LV) telemetry systems, which have limited data rates and rigid formats, will not support the requirements of future missions.

The U. S. Government and commercial satellite companies have deployed very capable space-to-ground satellite communications systems along with a precision satellite-based navigation system known as the Global Positioning System (GPS). Space-based range is a way to leverage this capability in order to significantly reduce the costs of supporting launches while increasing performance. United Launch Alliance, in partnership with the US Government, is engaged in a three phased project plan for evolution of the EELV fleet from dependence on ground based range assets to a space based range operational concept.

This paper summarizes the current development status of ULA's space based range and describes each phase of the project including LV tracking through GPS, increased bandwidth capability, and an Autonomous Flight Termination System.