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Modern Day Space Elevators Customer Design Drivers (3)

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DUAL SPACE ACCESS STRATEGY ENABLES SIGNIFICANT MISSIONS

Abstract

The 2023 International Space Elevator Consortium research study (18 months with 7 authors) evaluated the strengths and weaknesses of two approaches to mission orbits: Advanced Rockets and Space Elevators. This study compared the strengths/weaknesses and analyzed future characteristics of permanent space access transportation infrastructures. The Initial Baseline Capability Space Elevators will provide: permanent, daily, and routine; massive movement; safe; inexpensive; environmentally friendly; with storage facilities at stations (GEO and Apex Anchor); assembly and repair areas (above the massive gravity of Earth at GEO and the Apex Anchor); and, rapid transit (in our case to Moon/Mars); etc. Those research results have led to this paper discussing the advantages of a Dual Space Access Architecture leveraging the strengths of both compatible approaches. The focus is on potential missions (traditional and new) at GEO and beyond with the emphasis on massive movement and rapid transit available in the 2038 time period. The study investigated the level of delivery statistics from advanced rockets compared with the expectation of 30,000 tonnes per year by Space Elevators. The study looked at seven separate missions and compared delivery statistics and logistical aspects of delivery type. The results lead to the conclusion that there should be a Dual Space Access Strategy to support humanity's future missions.