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Space Technology and System Management Practices and Tools (4)

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SPACE ARCHITECTURE COMMERCIAL FRIENDLINESS: IDENTITY, ANALYSIS, AND  
VISUALIZATION**Abstract**

This paper develops a qualitative space commercialization analysis framework to assist government agencies in evaluating the “commercializability” of their architecture alternatives as a basis for enabling broader participation in the space enterprise. The framework enumerates architecture alternatives and evaluates the potential for commercialization of each technical element against metrics that are critical for different government and commercial players to create a mutual-beneficial relationship. A set of measurement criteria of commercial “friendliness” are identified to reflect the prioritization of different types of government and commercial players depending on their preferences and barriers to market. For example, an emerging commercial player may prioritize a short payback period or potential for future market size, compared to the traditional emphasis on cost and capability. Similarly, for international players, interface simplicity can have higher priority due to legal/political considerations. The technical elements of the architectures are evaluated individually and then aggregated to produce a system-level commercial “friendliness” measure. Where previous commercialization efforts have focused on explicit incentives, this framework creates a path for government agencies interested in encouraging broader participation to create endogenous incentives through their architecture choices. To operationalize these ideas, a qualitative screening and visualization method is presented and applied to a space logistics case study. This research provides an important step to establish and pursue system-level space architecting for “commercializability”, without losing sight of traditional measures of effectiveness.