

Efficiency Management in Spaceflight Systems

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Abstract. Efficiency in spaceflight is often approached as “faster, better, cheaper – pick two”. The high levels of performance and reliability required for each mission suggest that planners can only control for two of the three. True efficiency comes by optimizing a system across all three parameters. The functional processes of spaceflight become technical requirements on three operational groups during mission planning: payload, vehicle, and launch operations. Given the interrelationships among the functions performed by the operational groups, optimizing function resources from one operational group to the others affects the efficiency of those groups and therefore the mission overall. This paper helps outline this framework and creates a context in which to understand the effects of resource trades on the overall system, improving the efficiency of the operational groups and the mission as a whole. This allows insight into and optimization of the controlling factors earlier in the mission planning stage.