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CHANGING THE PARADIGM: A NEW APPROACH TO SATELLITE DESIGN

**Abstract**

From the smallest nanosats, to the largest communication satellites, all share a common path to launch that involves specification, procurement of subsystems, integration, test, rework/redesign, retest, and launch. The process dates back to the earliest days of launching hardware into space. With rising costs and increased focus on reducing risk, opportunities to adapt today's satellite designs to tomorrow's applications are dismissed for reasons of deviating from heritage, introducing low TRL components, and creating increased complexity. Efforts to reduce cost have focused on shortening schedules, relaxing parts standards, and either reducing or eliminating testing. For many the phrase "faster better cheaper" captures this concept. Costs for satellites are rising disproportionately, and unlike products like phones, computers, and automobiles where tomorrow's products build on yesterday's efforts, the mature space organizations – including commercial and government – are frozen in the fear of advancing technology. We are relying heavily on process consistency as the pathway to success, and this is further constricting opportunities to evolve and improve. This paper discusses the small spacecraft development program underway at LASP at the University of Colorado at Boulder using an evolved design/test/build paradigm that offers flexibility, lower cost, but maintains quality and reliability.