

IAF BUSINESS INNOVATION SYMPOSIUM (E6)
Strategic Risk Management for Successful Space & Defence Programmes (4)

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IMPACTS OF HIGH-VOLUME PRODUCTION (HVP) ON SPACE SYSTEMS

Abstract

The space business is changing dramatically. Capital is being poured into space enterprises, supporting both spacecraft and launch vehicle production in larger numbers than previously seen. To satisfy consumer demand for ubiquitous and universal communications and internet access, government and business requirements for persistent remote sensing, and a growing requirement for proliferated space architectures perceived to increase resilience, large (in some cases very large) constellations have been proposed. A few companies have constructed manufacturing facilities to produce spacecraft at faster rates than ever seen previously – potentially producing several per day. Initial analysis indicates that spacecraft production can benefit from methodologies employed for mass production of aircraft or other complex systems that must be extremely reliable.

Based on plant visits and interviews, and leveraging current research activities at the Aerospace Corporation for smart manufacturing and continuous production agility (CPA), we evaluate initial analysis and answer some interesting questions. Is spacecraft construction becoming like other industries where production lines and automation dominate? What lessons learned from mass production of aircraft or other complex systems are applicable? What impact might HVP have on government space system acquisition in terms of contracting, requirements, development/operational testing, and program office organization? How will HVP affect “tried and true” methodologies for managing risk and assuring mission success? If successful, high volume production could have a profound impact on future space systems development. This paper answers these questions and provides some suggestions for how acquisition organizations might avoid pitfalls and leverage HVP to achieve their goals.