

IAF SPACE SYSTEMS SYMPOSIUM (D1)

Lessons Learned in Space Systems: Achievements, Challenges, Best Practices, Standards. (5)

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PROJECT MANAGEMENT PRACTICES TO PROMOTE THE DOCUMENTATION AND
DISSEMINATION OF LESSONS LEARNED

Abstract

Known for their innovation and agility, small satellites have delivered significant contributions to the space industry through various technology demonstrations, Earth observation missions, and interplanetary travels. Furthermore, the continuously growing number of CubeSats launched each year validates the ability for such missions to accelerate project timelines, lower development costs, and produce meaningful results. However, the steady percentage of CubeSat mission failures highlights a programmatic level challenge surrounding the distribution of lessons learned.

Recent studies on this alarmingly high rate of failure for CubeSat missions propose that a lack of best practices surrounding knowledge transfer is a key contributing factor. While most well-established CubeSat programs have adopted methods of capturing and sharing expertise internally, few have developed external partnerships to leverage global expertise. Moreover, first-iteration CubeSat developers are often too preoccupied mastering the basics of spacecraft engineering to recognize or act upon the benefit in sharing lessons learned with other groups. Collectively, this results in the repetition of minor errors and critical mistakes driving eventual mission failure. This paper highlights the value of documenting and disseminating lessons learned, supported by interviews and discussions with CubeSat developers from around the world. New project management approaches are proposed to expand current best practices and promote interorganizational collaboration for the preservation and circulation of lessons learned. Key lessons include the implementation of best practices throughout all phases of mission planning and execution, as well as notable achievements from collaborative partnerships.