17th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (D3) Interactive Presentations - 17th IAA SYMPOSIUM ON BUILDING BLOCKS FOR FUTURE SPACE EXPLORATION AND DEVELOPMENT (IP)

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FROM LEO TO DEEP SPACE: CUBESATS FOR THE NEXT GENERATION OF SPACE EXPLORERS

Abstract

Modern technologies such as microelectronics have revolutionized the space industry and ushered in the "NewSpace" era. Small satellites utilize miniaturization to create a commercially available, low-cost alternative to traditional large satellites. With the potential to change the space industry, CubeSats have gone from low Earth orbit to Mars and have already demonstrated how space-enabled services can impact life for all humankind. The recent success of the Mars Cube One and the planned use of CubeSats as part of Exploration Mission-1 point to a promising and exciting future for small satellites in more ways than one.

With high schools, universities, private companies, and government organizations around the world all taking part, the California Polytechnic State University's CubeSat standard provides an accessible approach to space exploration. In particular, the opportunity for students to participate in the development of a small satellite mission has numerous benefits. As the space industry grows, the need for competent, experienced, and enthusiastic young professionals grows as well. Thus, offering hands-on experience to work through the stages and processes of a satellite mission, all at a level appropriate for students, is uniquely beneficial as a learning and training tool that delivers more than an operational satellite.

This interactive presentation describes the technological and systematic advancements necessary for CubeSat missions to move from Earth's orbit to deep space with an emphasis on how the future generation of space explorers can contribute to the rapidly growing small satellite community.