

ADVANCEMENTS IN CUBESAT TECHNOLOGY: FOSTERING COLLABORATION, TRAINING, AND COST REDUCTION IN SPACE EXPLORATION

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CubeSat technology has become a tool to encourage engineering collaboration, to train students providing them with a platform for real-world space exploration. These satellites are made for a rather specific purpose than a conventional heavyweight satellite thereby reducing the cost. This provides advancements in the aerospace industry as well. The CubeSat specification accomplishes several high-level goals. The main reason for miniaturizing satellites is to reduce the cost of deployment: they are often suitable for launch in multiples, using the excess capacity of larger launch vehicles. The CubeSat design specifically minimizes risk to the rest of the launch vehicle and payloads. Encapsulation of the launcher– payload interface takes away the amount of work that would previously be required for making a piggyback satellite with its launcher. Unification among payloads and launchers enables quick exchanges of payloads and utilization of launch opportunities on short notice. In essence, the evolution of CubeSat technology represents a paradigm shift in space exploration, democratizing access, fostering collaboration, and driving innovation across the aerospace sector. As these miniature satellites continue to proliferate, their impact on space research and industry is poised to expand exponentially, paving the way for a more accessible and dynamic era of space exploration.