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A BLUEPRINT FOR EMERGING SPACE NATIONS: DEVELOPING A COST-EFFECTIVE 6U  
CUBESAT IN JORDAN

**Abstract**

The Jordanian Design and Development Bureau (JODDB) presents a novel 6U CubeSat designed to empower emerging nations in the realm of cost-effective space exploration. This miniature satellite prioritizes Earth observation, equipped with a high-resolution camera capturing 5-meter Ground Sample Distance (GSD) imagery and a dependable X-band communication system for seamless data transmission. To guarantee image precision, the CubeSat incorporates a streamlined control system for optimal stabilization and orientation. This paper meticulously analyzes the strategic selection of subsystems, emphasizing the critical balance between achieving mission objectives and adhering to budgetary constraints. We will delve into JODDB's comprehensive project management strategy, encompassing meticulous budgeting, rigorous adherence to timelines, and a proactive risk mitigation plan. A cornerstone of the design is the modular architecture, enabling versatile payload configurations and future technological integration. This adaptability paves the way for potential integration into larger satellite constellations, significantly amplifying the CubeSat's mission scope and impact. JODDB's project serves as a scalable model for developing nations, demonstrating that through strategic planning and technical expertise, impactful and sustainable space missions are achievable even with limited resources. This initiative not only represents a substantial leap forward for Jordan's space program but also offers a valuable roadmap for similar endeavors on a global scale.