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## MISC-3 A COLOMBIAN CUBESAT 3U FOR EARTH OBSERVING APPLICATIONS

### Abstract

Colombia is an emerging space country. The first national space project was “Libertad 1” a CubeSat 1U satellite platform built by the Sergio Arboleda University and launched on April 17, 2007. “FACSAT-1” is the second Colombian satellite, by the Colombian Air Force Fuerza Aérea Colombiana FAC. It was

launched on November 28, 2018. Recently, The National Council for Economic and Social Policy (CONPES) approved the Space Development Policy to give greater relevance to the use of satellite technologies for the country's productivity. The CONPES document was reinforced by The Mission of the Wise, a group of experts in different areas of knowledge, who help to chart the route for the advancement of science, technology and innovation in Colombia. Motivated by this national synergy around space development the Colombian Air Force had established their own space program guided by the construction and launch in orbit of 3 small satellites conforming the "FactSat" program. This space program had included also the training of human resources and building space facilities creating the know-how, and infrastructure necessary to execute end-to-end space missions. Motivated by these activities, the FAC had started to establish strategic alliances with universities in Colombia, in order to develop further small satellite missions that will allow scientists and engineers to address the needs of the country, which include remote sensing, communications, monitoring of drug trafficking, illegal fishing, assessing the impact of and preparing for climate change, among others. In 2018 a meeting between the FAC research center Centro de Investigación en Tecnologías Aeroespaciales CITAE and three Colombian universities Universidad Industrial de Santander, Universidad del Valle y Universidad Sergio Arboleda had concluded that the best way to develop this collaboration is through the development of a joint space engineering project. This work proposes a CubeSat mission that will initiate cooperation between research institutions in Colombia. Funded by the national research ministry, The MISC-3 project will develop the first Colombian satellite build by different universities, is a CubeSat 3U model that will have as payload a multispectral camera with VIS and NIR spectral bands. It will be also the first Colombian payload launched to space. This work serves as the basis for determining aspects such as spacecraft capabilities, specifications, and resources needed. Additionally, it helps define the different spacecraft subsystems and other mission features including project management, funding acquisition, testing, launch, and operations.