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THE IMPACT OF THE SUDANESE 1ST CUBESAT PROJECT, KN-SAT1

Abstract

Lately, the number of institutions that are adopting the concept of the CubeSat program is increasingly growing. Many of them are paving their countries' way in the space field. The CubeSat program is mainly an educational program that gives researchers the hands-on experience in the field of space science and engineering.

Establishing a small satellite project allow the involved personnel to grasp the theoretical and the practical knowledge regarding the design, the implementation, the accompanied scientific subjects and the management aspects of the field. I.e. Antennas and Wave Propagation, Astrophysics, Automation and Control, satellite mission design, space program management, etc. One of the greatest benefits can be addressed is getting in touch with a technical community over the world that is eager to help, the institutes receive other small satellites data, participants analyzes these data to have a good insights which help them in developing their own systems.

The University of Khartoum (UofK) in Sudan has initiated the CubeSat program in 2010 and adopted the educational value behind the program. The project was called KN-SAT project, it never launched a satellite to the orbit but in the ground segment, a high standard educational ground station was designed and built in the faculty of engineering. In the space segment, two prototypes have been designed and manufactured in the university labs. In the capacity building the projects trained number of engineers, academics and managers and most of them are having a useful contribution in the space maturity of Sudan. Although the project wasn't fully successful, it had a high positive impact on Sudan, and it is still fruitful!

This paper focus on the influences done by the project in the space filed in Sudan, both directly and in directly. It also gives some technical and managerial overview about the project to have a general understanding about the situation during and after it. The now position of the pioneers who started the project is traced and stated within the paper. The organizations and institutes established because of the project is listed, linked by their current status. The impact on Sudan's policies and regulation regarding the space is also studied. The paper takes Sudan as a case study for developing countries and it goes through the obstacles and difficulties faced the Sudanese project, its lesson learned and the needs that could make the space sector in Sudan much better as well as similar countries.