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HUMSAT: NANOSATELLITE CONSTELLATION APPLIED TO HUMANITARIAN SUPPORT

Abstract

The interest in the HUMSAT project is worldwide and it is being developed in close cooperation with more than 24 international institutions. The University of Vigo, together with UNAM and Cal Poly, initiated and are co-promoters of the HUMSAT project. Each is leading a regional initiative to support HUMSAT in their respective geographical areas. The Outer Office for Space Affairs of United Nations has selected HUMSAT as the first project in the Basic Space Technology Programme. The HUMSAT project has been presented at several symposiums under the framework of the United Nations Programme on Space Applications. In addition, the HUMSAT project has been supported by: • the European Space Agency, • the United Nations through the Office for Outer Space Affairs. (UN-OOSA), • the University of Vigo (Spain), • the California Polytechnic State University – Cal Poly (USA), and • the Autonomous National University of Mexico and CRECTEALC (Mexico).

The purpose of the HUMSAT project is the development of a nanosatellite constellation and its corresponding ground segments to provide support for humanitarian initiatives, especially in developing areas. Furthermore, the HUMSAT project will have strong educational objectives boosting cooperation between universities from different countries. The HUMSAT project is aiming to provide a wide range of applications such as climate change monitoring, remote disaster tracking, and public health communications. The HUMSAT project will have strong educational objectives such as: • Providing hands-on-project experience on a space project to engineering/science students. • Promoting international cooperation between universities about space technology. • Transferring technology from developed to developing areas. In terms of its main functions, the HUMSAT project will be capable of: • Managing the worldwide sensor network. • Using the GENSO network. • Accessing the data obtained from the satellite. • Defining new experiments for the proposed payloads With regards to its configuration, the HUMSAT system is composed of: • A space segment based on a constellation of CubeSat spacecraft. • A ground segment based on: The ground stations included in the GENSO network. Non-mandatory specific ground stations, additionally constructed by each university. Additional data distribution facilities. • A user segment based on: The sensors deployed worldwide. User facilities for accessing the data gathered by the space segment.