SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Space Culture (9)

Author: Mr. Luis Monge
Central American Association for Aeronautics and Space (ACAE), Costa Rica

Dr. Andrés Mora Vargas
Central American Association for Aeronautics and Space (ACAE), United States

ESTABLISHING INDEPENDENT AEROSPACE RESEARCH PROGRAMS IN A DEVELOPING COUNTRY: DITSÖ PROGRAM AND THE COSTA RICA EXPERIENCE

Abstract

Middle income countries have a history of success attracting industry through well-established governmental policies and education investment. In Costa Rica, even when space has been identified as an instrument to boost education and a mean to effectively promote industry, the limitation of the government's resources along with a series of social challenges, continuously relegates science, and technology topics to the last spots in the political agenda. In recent years, an increasing number of new space companies provide low cost private access to space infrastructure. NanoRacks Company allows research onboard the International Space Station through nanolabs or self-contained automated mini-laboratories that can be transported to orbit at a low cost. By taking advantage of this possibility, space research programs can be implemented independently from government by establishing a strategic alliance between three key partners. Each partner contributes with resources for the project and in return obtains benefits from their involvement. First, scientific partners provide knowledge in exchange for the opportunity take their research initiative to space. Second, non-profit organizations through volunteer students, can provide design and execution of the experimental nanolab. In return, they obtain valuable expertise in space design hard to obtain in the region with endless academic possibilities. And third, private enterprises can provide resources and in return obtain media exposure and achieve social responsibility goals. The success of a program lies in the capacity to align each partner's expectations and objectives with the programs goals in the three key areas: scientific, engineering design, and media exposure. An example of this partnership principle is the program Ditsö: a Costa Rican scientific research program in microgravity conditions. An initiative of non-profit organization ACAE (Central America Air Space Society), which promotes research and development projects in space related technology for Central America. Through Ditsö, ACAE aims to create the first real-world example of the feasibility of this partnership principle, by allowing scientific research from Costa Rica universities to be carried out onboard the ISS using nanolabs developed by volunteer undergraduate engineering students and Nanoracks services financed by private enterprises. The nanolab for the first mission of program Ditsö is already in its third iteration ready for testing. The mission will study the possible use of new materials found in Costa Rica rain forest to create synthetic coating for satellite and spacecraft electronics, but more importantly it will prove that independent (no government sponsorship) space scientific research is possible.