

28th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
22nd Workshop on Small Satellite Programmes at the Service of Developing Countries (1)

Author: Mrs. Sonia Rincón
Colombia, sonia.rincon@fac.mil.co

Mr. Juan Manuel Cardenas García
Aerospace Technology Investigation Center - Fuerza Aérea Colombiana, Colombia,
juanm.cardenas@fac.mil.co

Dr. Cesar Augusto Rodriguez Adaime
Colombia, cesarpostdoctoral@gmail.com

Mrs. Paola Zarate
Colombia, paola.zarate@fac.mil.co

DEVELOPMENT OF THE COLOMBIAN SPACE PROGRAM

Abstract

Space Systems Engineering is a methodical approach that integrates engineering and management activities in the development of technology products and services, aimed at solving the needs for Colombian space advancement. The Spatial Development Policy from the Colombian Government provides the enabling conditions for technologies development, structuring of knowledge transfers, conditions for technological growth, and the construction of space systems that close the gaps to increase the competitiveness of the country, by enhancing the demand for space goods and services.

A Colombian space program must guarantee the appropriation and generation of knowledge in Research, Development, and Innovation (R+D+I) through coordinated projects that integrate the activities of Systems Engineering; the community must strengthen its capacity to: marketing, expand market opportunities in society; planning, with the management of opportunities; and design, with the implementation of a solution. However, the first obstacle encountered is the level of specialization of the information, making research prevail as transversal development in the seven phases of the life cycle of a project.

A systemic strategy focused on systems engineering is the one used by the Aerospace Technologies Research Center "CITAE" in the COLAF Space Program, to guarantee the appropriation and generation of knowledge, by defining a strategic promotion mission of education, on-the-job training, and improvement of human capital that allow the creation of capacities for the development of satellite sensors and the management of space missions.

As a result, more than 20 RD projects are being carried out in integration between the University, the Company, and the State; generating mission designs for small satellites, knowledge management, hardware, software, human talent, quality management, and creating the milestones of the space sector in Colombia as an emerging country in this field.

In conclusion, Systems Engineering is used as a method, based on the standards of organizations such as NASA, ESA, or DoD, and allows generating a map of current opportunities in the market, learning about new technologies, evaluating investment risks, and designing investment strategies, as well as defining the characteristics of solutions focused on effectiveness and achieving high-quality functionality. The implementation of this method in the R+D+i system allows dimensioning the entry barriers for the initiative of the government, private sector, and academia; and defines the needs in training, skills, regulation, and market demand and supply.