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Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development (1)

Author: Mr. Rogelio Morales
Bolivarian Agency for Space Activities (ABAE), Venezuela

PROPOSAL FOR A VENEZUELAN NATIONAL PROGRAM FOR ROBOTIC SPACE EXPLORATION

Abstract

The future of space exploration is increasingly supported by robotic platforms as a tool for the study and understanding of the universe, as well as in preparing the conditions for future missions and human settlements. However, the development of these robotic missions is, in essence, a risky and difficult activity which often coexists with the uncertainty and adverse conditions of remote operations, where there is no option for help or rescue.

To increase the chances of survival and mission success, swarm robotics systems have been proposed as a **new paradigm for space exploration**, providing robust and reliable platforms that allow the exploration of the Solar System in a totally new magnitude and scope.

This proposal called **Venezuelan National Program for Robotic Space Exploration**, focused on swarm robotics , aims to offer the country the possibility to develop and position itself, permanently and its own feet, in the space sector.

Program Purpose

Develop national capacities in autonomous robotic platforms, to carry out space exploration missions in all its modalities and permanently in the Solar System. The program is designed to be completed in 12 years, from 2024 to 2036.

Program Goals

1.- Develop an intensive and top-level education and research system to support the national space industry.

2.- Develop an autonomous, robust and reliable robotic swarm platform to guarantee the permanent exploration and study of the Solar System.

3.- Develop a high-tech national space industry to produce high value-added products and services.

4.- Guarantee Venezuela involvement, permanently and its own feet, in the international space arena.

5.- Develop Space Dynamics Navigation Routes (SDNR) for the Solar System exploration.