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FORMING A SPACE INDUSTRY ENGINEERING TEAM IN A NEWLY FORMED RESEARCH AND DEVELOPMENT DEPARTMENTS OF DEVELOPING COUNTRIES

Abstract

As global interest in space exploration continues to grow, developing countries are seeking to solidify their presence in the industry, by forming space industry engineering teams. Advancements in cutting-edge technologies, such as the James Webb telescope, the Perseverance Rover, and highly sophisticated nanosatellites, have opened up endless possibilities for new players to establish themselves as leaders of the modern space cohort. These developments have had a significant impact on the space industry, as they have paved the way for the involvement of developing countries in innovations and discoveries. Despite their desire to participate in the space industry, developing countries still face numerous challenges to establish themselves. Aside from the significant financial investment required, the biggest challenge is the lack of experienced engineering talent. The availability of a skilled and dedicated engineering workforce is essential for countries and companies to create an independent environment and continue advancing in the industry. Forming a team without ready processes, procedures and infrastructure such as labs and tools poses hardships for new teams attempting to dive into research and prepare prototypes.

At early stages the main focus point of developing countries is to increase socio-economic conditions and specifically improve the quality of general education. They prioritize investments into assets that bring short-term benefits. The educational targets of these countries are to prepare young generations by giving them basic engineering and quantitative skills. On the contrary, advancing the space industry requires an in-depth expertise in system and subsystem level engineering, and most of the projects must be initiated with long-term benefits in mind. A methodology is required to deal with the challenges that come with an inexperienced pool of new engineers, in order to realize the long-term benefits of independent development.

This paper examines an approach to forming and preparing design and development engineers in developing countries, the challenges that arise during the process, and key factors to consider during the recruitment phase. It will also analyze the types of initial projects, team structures, and vision formation, as well as integral non-engineering related factors.