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ACTIVITIES (D5)

For a successful space program : Quality and Safety! (1)

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THE IMPORTANCE AND APPROACHES TO INVOLVE A VERIFICATION AND VALIDATION  
ENGINEER IN A NEWLY FORMED R&D DEPARTMENT**Abstract**

The United Nations Office for Outer Space Affairs (UNOOSA) has reported a marked increase in the number of orbital payload launches in the past two decades, with a total of 744 launches recorded between 2000–2022. The increasing number of launches has been made possible by advancements in technology and a growing interest in space exploration. A significant positive progression in the field is represented by the recent upsurge of interest in the space industry among countries new to the field and their associated Research and Development (RD) departments. However, this also poses major challenges as these groups must strive to assert themselves in the complex and rapidly evolving space industry by implementing innovative strategies and solutions. It is commonly observed that newly established RD teams, in their pursuit to contribute to the advancement of their respective space programs, focus their resources on mastering fundamental skills. Particularly while developing the initial satellite, RD teams tend to allocate more of their assets toward the appointment and growth of system and subsystem engineers. In contrast, the crucial involvement of Verification and Validation (VV) is frequently neglected and is insufficiently budgeted at early stages. VV engineers hold a vital role in ensuring quality and compliance with standards during the design and manufacturing phases while conducting necessary documentation. The absence of this documentation poses challenges in identifying and resolving problems that arise during the development process. Furthermore, this shortcoming can result in higher costs and longer manufacture times because the VV engineer can simplify and optimize the design and production process, increasing overall efficiency. Satellites are critical components of modern communication and navigation systems, and they must be highly reliable. The exclusion of a VV engineer increases the chances of problems arising during the mission, potentially affecting the safety of the satellite and its ability to perform its intended functions.

This article highlights the importance and significance of the mutual allocation of resources for VV engineers alongside system and subsystem engineers, in order to ensure the success of newly emerging RD programs in the field of space. Furthermore, it aims to explore the conditions for VV engineers to efficiently develop their skills and grow into experienced professionals despite limited resources and lack of attention.