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SPACE SYSTEMS SYMPOSIUM (D1.)
Lessons Learned in Space Systems (5.)

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SATELLITE ARCHITECTING PHASE AND ASSEMBLY, INTEGRATION AND TEST INTERRELATIONS

Abstract

The Satellite Assembly, Integration and Test (AIT) activities are a logical and interrelated sequence of events. The main objective in this phase of a space program development is to achieve a high degree of confidence that the Satellite complies with its specified performance parameters.

It is verified that the interrelations of the process of AIT in the development of complex space systems – satellites, either in the traditional way or that already employ simultaneous engineering; it does not contemplate in an appropriate form the participation of AIT in the phases of conception and detailing of project of the satellite.

Considering that the involved costs and the time currently placed for AIT activities correspond approximately 15% and 25% respectively of the total of a space project and that shaping multiple aspects of a system in its cycle of life, this new vision of system project, offers to dramatic profits of productivity and quality of product, it is of fundamental importance to insert in the existing processes of modeling that they use the benefits of Simultaneous Engineering - "Model Driven System Design", applied to the Space Projects, the requirements of Assembly, Integration and Testes (AIT) at the system level, since the phase of conception and detailing of project of the satellite – this means to develop a process to integrate the AIT requirements – electrical, mechanical and environmental to the satellite development - Design for AIT.

This paper presents the first step to develop a set of guidelines for space systems architecting considering AIT requirements from the initial phases of systems development - part of the effort to develop a "design for AIT" tool.

It aims to present the lessons learned of a Brazilian experience on AIT activities, at system level. The paper covers satellite AIT activities with Brazilian and international satellite programs, executed at Brazilian National Institute for Space Research (INPE) - Integration and Test Laboratory (LIT) – the most important satellite testing lab in South America.