

SPACE SYSTEMS SYMPOSIUM (D1)
System Engineering Tools, Processes & Training (I) (3)

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ACTUAL SYSTEMS RESEARCH PROBLEMS AS SEEN FROM THE RUSSIAN SPACE PROGRAM
PERSPECTIVE

Abstract

A paper discusses the actual systems research problems arising during the Russia's national civilian space program planning and implementation during the recent years.

Recently a complex methodology has been elaborated for use in course of the national-level space programs' planning designated 'Macro-Level Design' methodology (MLD methodology). The core of the methodology is a metric for comparative measurement of the national-level space program variants including the ambition level, perspectiveness (level of promise), effectiveness, continuity and feasibility as well as corresponded numerical indicators. The relative importance of these criteria varies depending on the political and economical environment. The other key methodology element is joint analysis of the demand for the space products and services and planned space assets' development based on the suggested 'Y-model'. The third cornerstone is critical technology approach that considers the necessary technologies' set for the advanced space program implementation.

While the MLD methodology deals with the processes planning within the national space program, the newer emerging branch of the space system engineering deals with institutional design of the space programs' implementing structure that includes interacting government agencies, space industry and various space application user communities. The institutional design methodology is rather new branch of the space system engineering that is of growing importance now due to the transitional nature of the Russia's economy as a whole and the hi-tech sphere in particular.

The third system challenge the Russian space program meets is program implementation monitoring. The basic principles had been developed for design and implementation of the Russia's civilian space program monitoring system and procedure that include parallel monitoring of the task progress and final results, strong procedural control of the progress data refreshment, monitoring information escalation and aggregation, and – last but not least – most intensive usage of the business community practices and tools.

For identified systems research tasks the formal statements and example solutions are discussed.