

IAF SPACE SYSTEMS SYMPOSIUM (D1)
Space Systems Engineering - Methods, Processes and Tools (2) (4B)

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MODEL-BASED APPROACH FOR REQUIREMENTS MANAGEMENT CONNECTION WITH
VERIFICATION PROCEDURES APPLIED TO SPACE SYSTEMS**Abstract**

Industrial companies and scientific organisations apply Model Based Systems Engineering approach to make high-level functional models of systems they develop and to effectively manage the requirements. Systems engineers use specific tools that support particular system modelling language (e.g. SysML) which give them an ability to connect the system requirements with corresponding procedures for their validation and verification, such as tests, demonstration, inspection or analysis. However, the problem is that most of the requirements verifying methods are held by engineers not familiar with specific MBSE software. That misalignment complicates test feedback and eventually hinders requirement traceability.

The aim of this research is to develop a methodology which allows to link the requirements with particular set of verification procedures, generate the descriptive documentation for engineers and get feedback about the verification results to indicate whether the requirement is satisfied or not.

The goals are:

- To provide methods of required verification procedures modelling and assignment (for systems engineers)
- To make a link between verification procedures models (defined by systems engineers) and test documentation (used by engineers conducting tests)
- To develop a tool tracking the results of the tests and transferring them into requirements management model
- To implement the methodology to Gamma Swarm project

The requirements and architecture of the Gamma Swarm project in SysML (implemented in MagicDraw) is taken as a reference example. We will showcase a tool which would be an interface between systems model and test facility engineer with no specific SysML knowledge. The methodology is focused on implementation of Model Based Engineering Environment (e.g. OpenMBEE) paradigm and can be scaled to other aerospace projects.