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

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MODEL BASED REQUIREMENTS VERIFICATION LIFECYCLE

Abstract

Model-Based System Engineering (MBSE) is increasingly being adopted in the industry in favor of a document-centric approach. This improves efficiency, provides more transparency in design choices and improves the communication of engineering information between different the stakeholders.

Typically, many (MBSE) tools are being used to create a wide variety of digital models, but the exchange of information between the customer and supplier is often still very much document centric. At almost every stage there is a conversion from models to documents and vice-versa rather than a model exchange. This is time consuming, costly and can lead to loss of information and loss of traceability. This has the following down-sides:

- The same information is repeated in different documents,
- Inconsistencies of information due to lack of configuration control,
- Documents are generated from tools or databases with no access to source tools or databases
- There is an inherent difficulty in navigating between the supplied documentation
- Limited accessibility and visibility of relevant information to all parties involved
- Lack of Tracking of evolution, changes, agreements with impact on system definition and status

The Model Based Requirements Verification Lifecycle (MARVL) project aims to address these problems by developing a methodology and tooling to improve the processes and the related information exchange. The MARVL project is part of the Technology Research Program of ESA which is executed by an industrial consortium comprised of RHEA, ScopeSET and Airbus. The Common Information Platform (CIP) is developed during the MARVL project. It is an IT solution that supports the exchange of requirements, design and verification information between the different actors, each of whom might use different tools and might be in a variety of forms such as models and analysis reports. The main challenge is to define tools and mappings that can continuously support the evolution of information throughout the

project life-cycle, while still allowing specialist tools to be used during specific phases. The CIP is able to accommodate and manage many forms of data and information. Although PLM and PDM systems are being widely used, they treat all the managed artifacts as black-boxes without visibility on their internal contents. There is a need for a smart but light-weight PLM that overcomes this limitation and provides end-to-end data connectivity between the content of the artifacts. The vision of the consortium is that the CIP can provide the basis for this.