System Verification through the Life-cycle

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Abstract:

Scope of the study is to improve the overall verification process of space systems by using model-based methodologies. Methods, processes and supporting infrastructures (networked tools and people) are defined and demonstrated, with the following main study objectives:

- Evaluation of the applicability of MBSE to the AIV process
- Definition of an adequate methodology to support the AIV process in terms of:
    - Processes (what is to be done in an AIV process supported by MBSE, if some additional tasks are required, or existing tasks can be reduced, modified, split)
    - Methods (how to apply MBSE to verification in the different project tasks)
    - Tools (with what the project stakeholders may control and interact with models and related methods)
    - Models (abstractions related to the system or part of the system w.r.t. specific purposes, e.g. discipline analysis or simulation)
    - Transformations (how different models are able to be interfaced together)
- Definition of the application of such methodology on the review process
- Definition of the impact of re-used elements, COTS or series of models in the usage of such methodology
- Validation of the proposed methodology through the application to relevant cases, prototyping necessary tools/links between models used for verification in an integrated infrastructure comprising system AIV, system disciplines, and lower level models where necessary.
- Demonstration of the benefits in term of potential impacts on the effectiveness of the verification (e.g. anticipation of design problems detection, reduction of likelihood of flight anomalies due to design, higher control of project data and verification process) and improvements to the current practice (reduction of required time, and potential impact on project costs/schedule).