Systems Engineering with Status.E and CAViT – Comparison and Assessment of CAT & CAE Data

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1   Introduction

The strongly growing number of simulations and tests in the crash area requires appropriate software solutions for an efficient management of the development process. A process model for product development used in practice is illustrated in fig. 1.
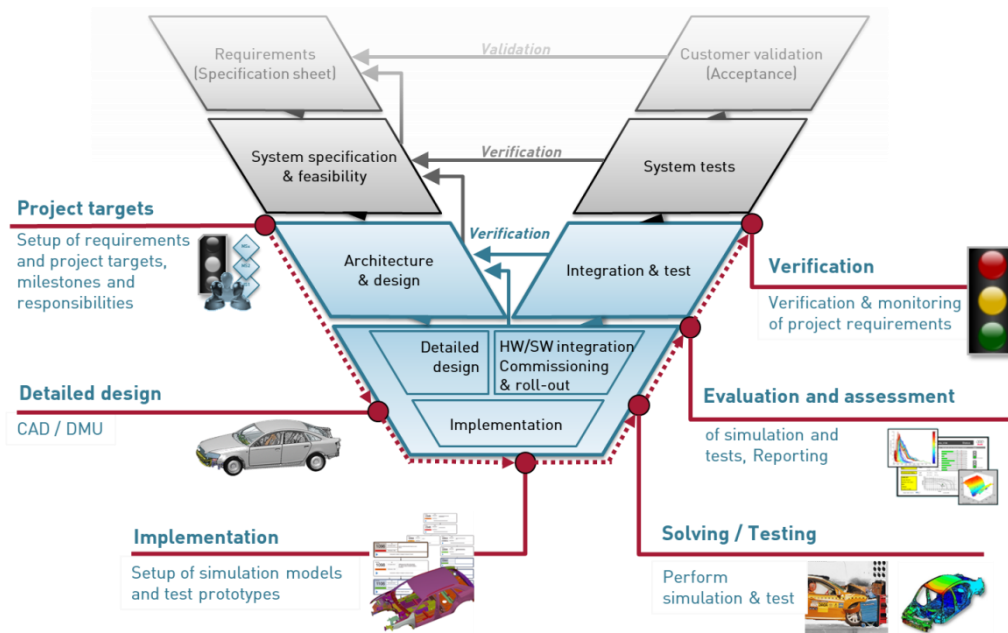

In addition to LoCo (Simulation Data Management Solution, [1]), SCALE is providing with Status.E and CAViT further integrated software tools for project management and the evaluation and validation of CAE and CAT data.

Status.E is a software system for managing requirements within the product development process. This includes the administration of project requirements, load cases and technical targets as well as the administration and authorization of all project participants. Status.E allows continuous milestone-related monitoring and reporting during the entire development process.

CAViT provides engineers an overview of all relevant result data of projects. CAViT allows automated and detailed pre-evaluation of individual simulations and tests, as well as load cases of the project based on project targets and regulations. A flexible report functionality allows efficient and standardized reports as well as transmitting status information to project management systems such as Status.E.

2   Status.E - Definition of Technical Project Targets

For a later semi-automated, valid assessment of simulations and tests at operational level (calculation or test engineers), a central definition and allocation of technical project targets and load cases based on current product requirements are necessary.
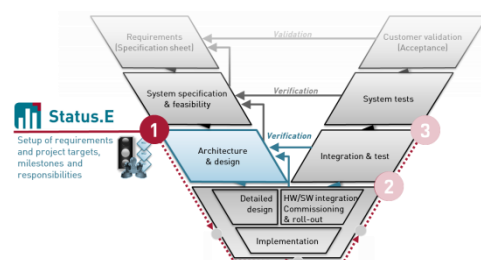
With Status.E, technical project targets which are derived from product requirements (customer perspective) and system specifications, can be defined for various specialist areas / disciplines (e.g. occupant protection, NVH, structural design ...).

For the entire project as well as the individual disciplines, milestones and responsibilities are defined. The load cases and assigned technical project targets are assigned to disciplines and attributed with further features (e.g. assemblies, target market, model variants …). These additional features allow a needs-based structured representation of the current state of project development (e.g. level of development according to target market or model, etc.)

All project members can report on the current development, i.e. actual values for appropriate technical project targets of individual load cases. According to the rights, the project management has, at any time, an overview of the state of development within individual disciplines or of the entire project.

For a partial automation of a later evaluation on operational level as well as for verification of the development level, all data are provides via API for a data supply of subsequent software systems. This is relevant for systems regarding test planning or simulation data management [1] as well as for evaluating tests and simulations, e.g. using CAViT.

3   CAViT – Assessing of CAE and CAT Data

CAViT provides engineers an overview of all relevant result data of projects. By connecting to existing data storage systems via interfaces, redundant data storage can be avoided and implementation costs can be minimized.

CAViT allows automated and detailed pre-evaluation of individual simulations and tests, as well as load cases of the project based on targets and regulations.
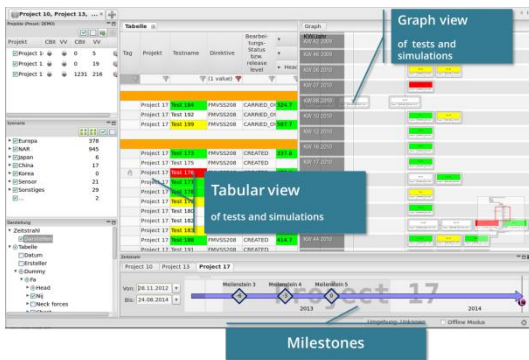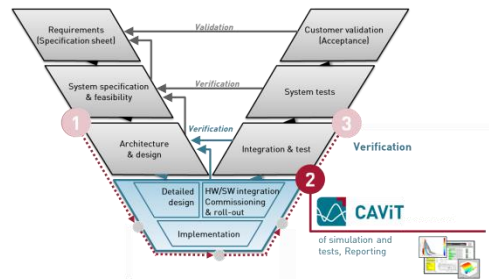
CAViT – Workspace interface: Representation of tests / simulations with evaluation
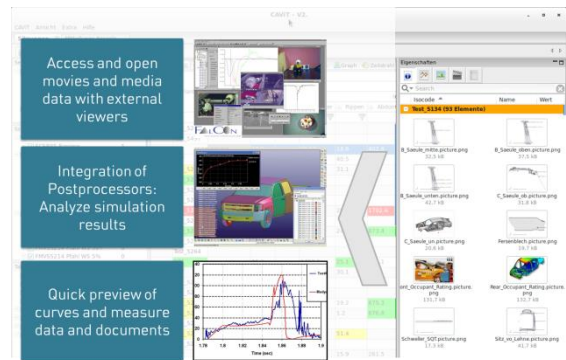
*CAViT – Integration of external applications and scripts using plugin interface*

Interfaces for standard software and plugin mechanisms guarantee an integration into the operating process as well as customer-specific extensions. CAViT is a desktop application for local use. Due to prefetching and caching mechanisms, a high-performance and offline-working environment is offered to the user.

A flexible report functionality allows efficient and standardized reports as well as transmitting status information to requirements management systems such as Status.E. CAViT provides a dedicated support and meta-language for reporting by means of Animator [2], allowing a compilation of report templates quickly and clearly.

4   Status.E – Project Monitoring, Verification

Status.E allows defining and monitoring objectives on the project level. Project objectives are presented in a structured manner according to professional and organizational information.

The performance level is milestone-related and signalized by a traffic light system. The registration and historization of all data entries as well as a corresponding rolls and rights management allow a consistent and reliable project status monitoring.
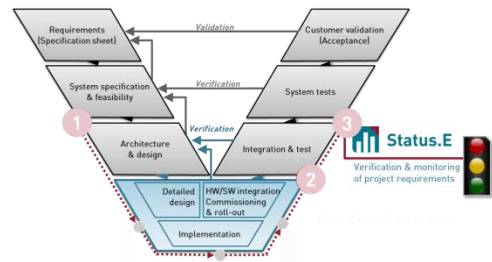
Generating a standardized set of slides reduces the reporting burden for the user. In addition to manual entries of actual states, there is also the possibility of an interface-based timesaving and (semi-)automated transmission from software tools on working level.
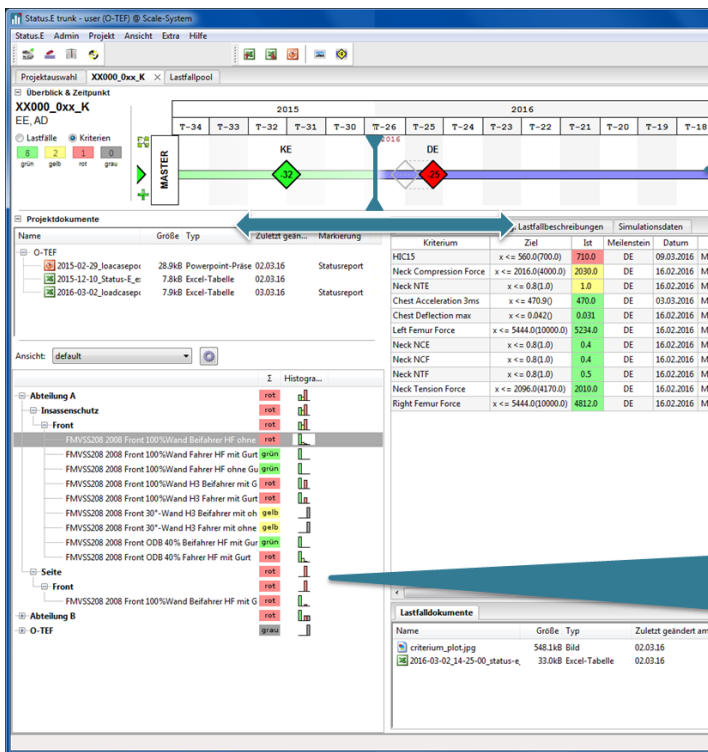
Status.E – Project view: Load cases and technical targets with fulfillment at project milestone

5   Literature

[1]   M. Thiele, T. Landschoff; A. J. Beck: *LoCo – An Innovative Process and Team Data Management Solution for Simulation*, European Conference: Simulation Process and Data Management, 2015

[2]   Gesellschaft für numerische Simulation mbH: Animator4 - Post-Processor for FEM Analysis, 2016