CAViT | Status.E

Evaluation, comparison and validation of CAT & CAE data

Martin Liebscher
Gordon Geissler
Rainer Hausdorf

SDM Infotag, Mai 2016

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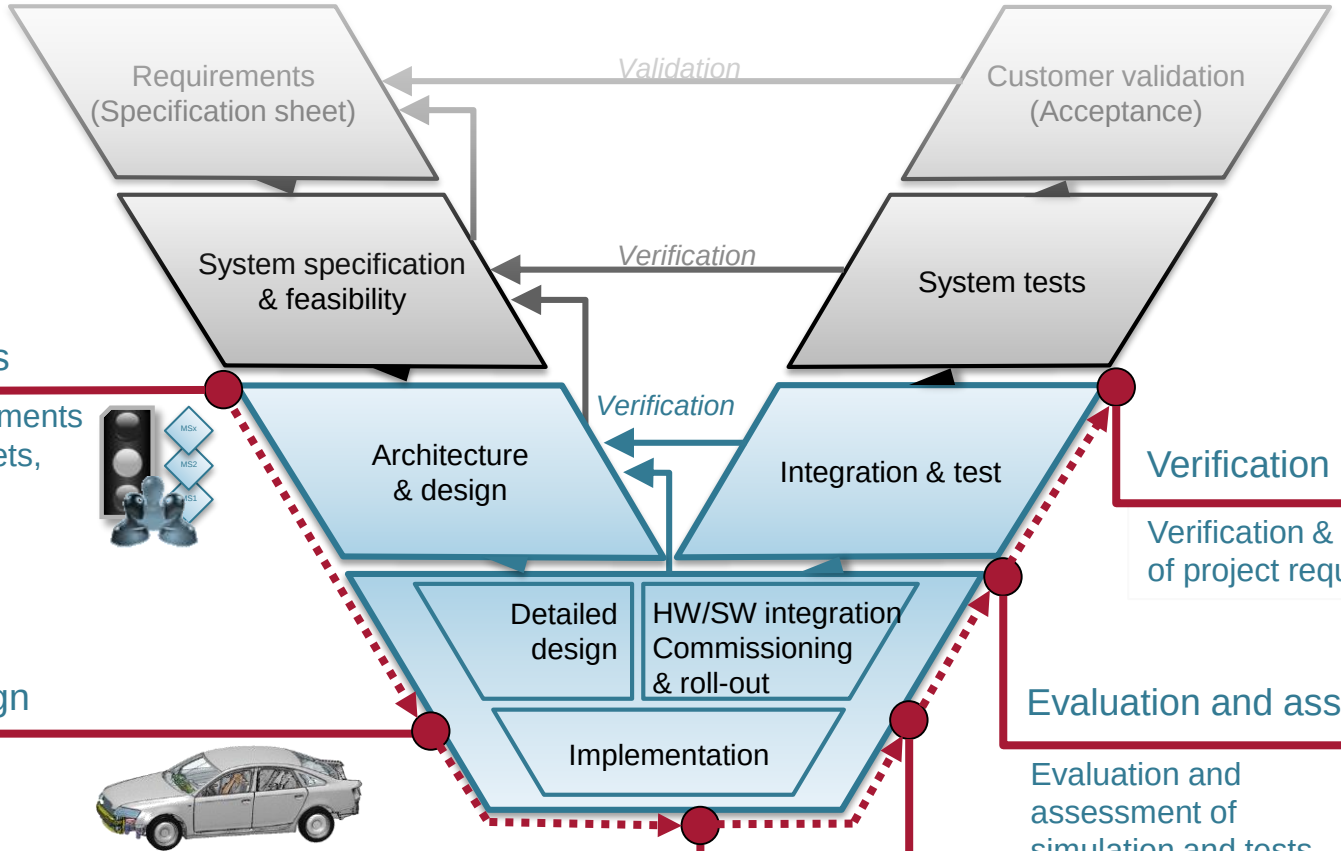
SCALE

Introduction - Systems Engineering Process



Project targets

Setup of requirements and project targets, milestones and responsibilities

Verification

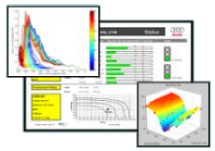
Verification & monitoring of project requirements

Detailed design

CAD / DMU

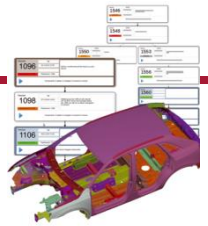
Evaluation and assessment

Evaluation and assessment of simulation and tests, Reporting



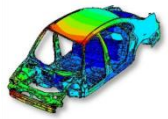
Implementation

Setup of simulation models and test prototypes



Solving / Testing

Perform simulation & test



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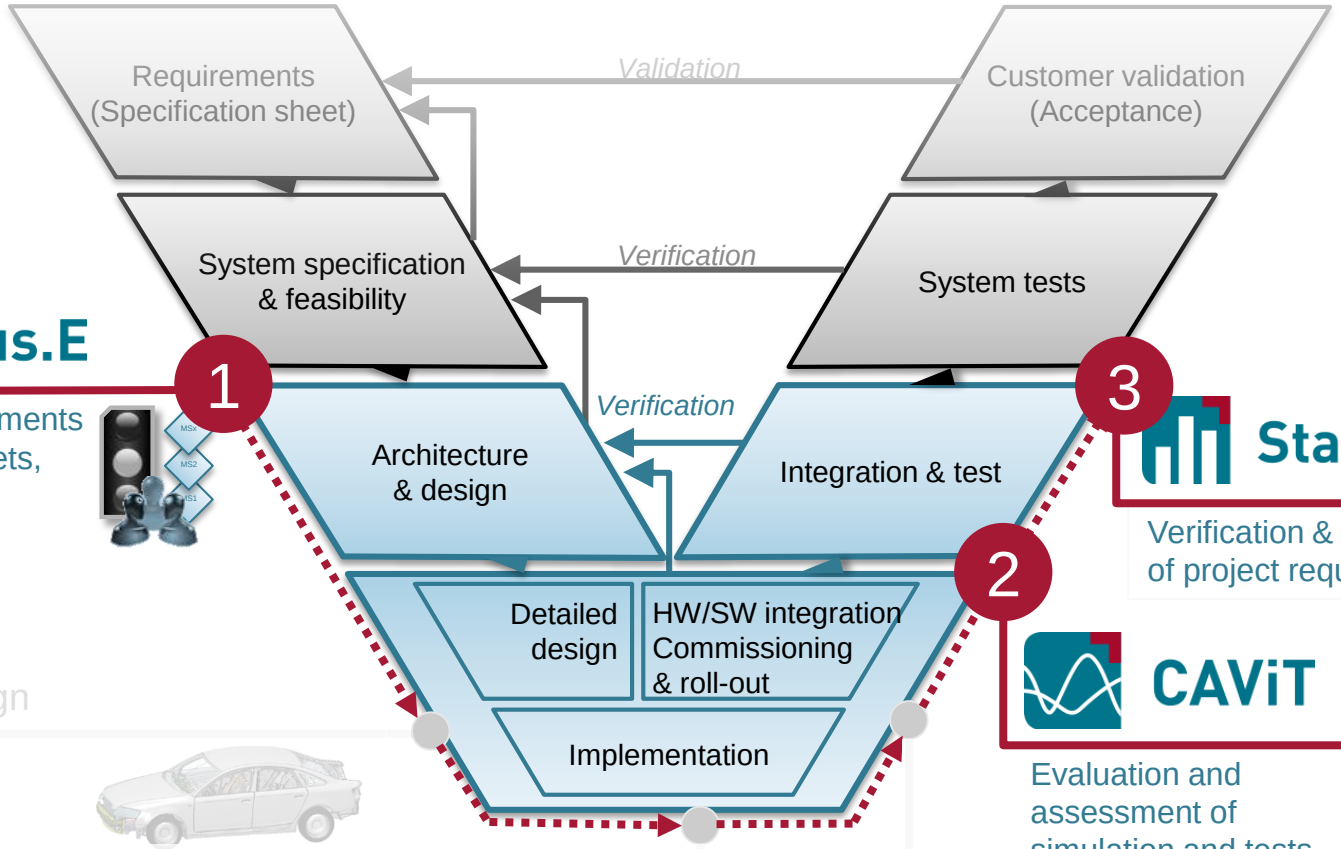

Status.E

1

Setup of requirements and project targets, milestones and responsibilities

3

Status.E

Verification & monitoring of project requirements

2

CAViT

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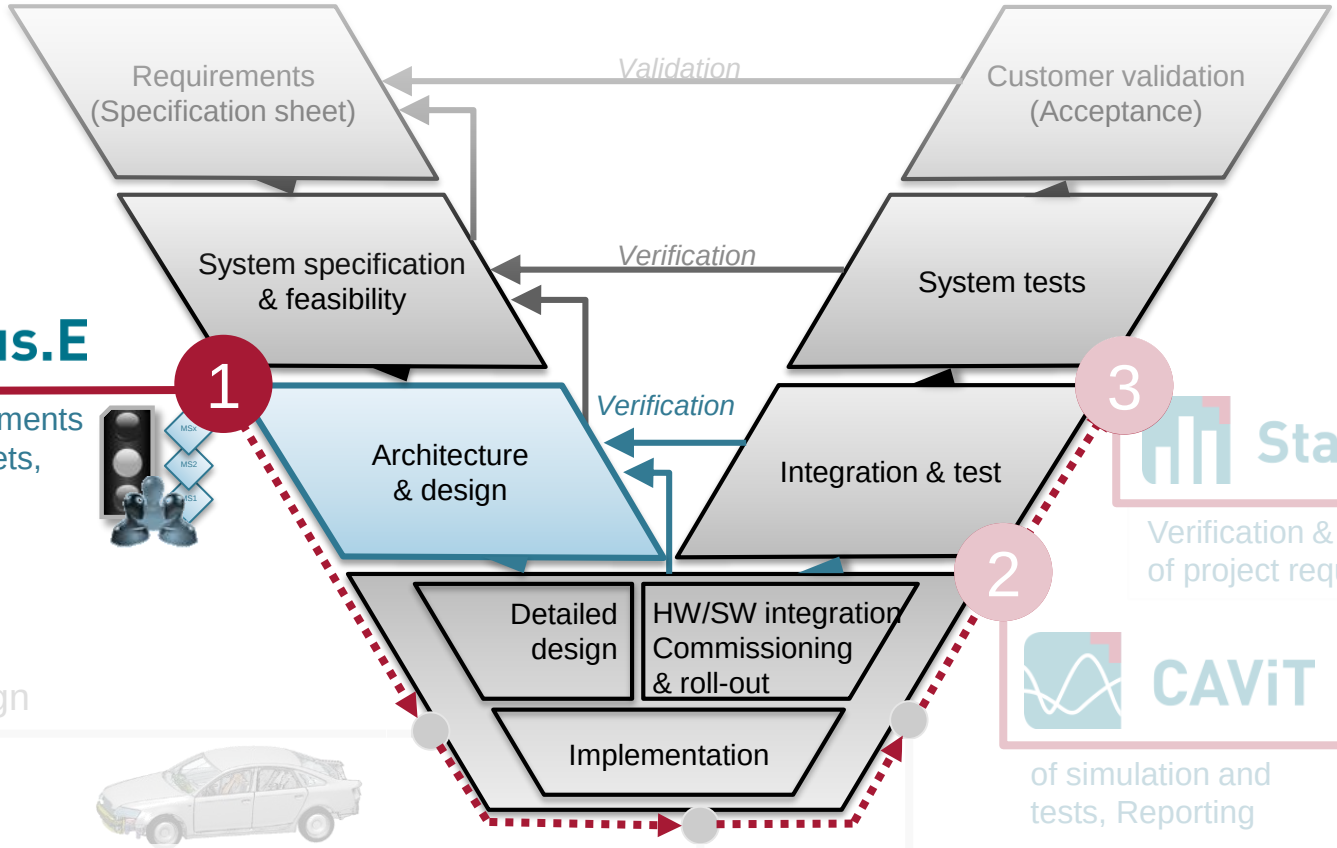

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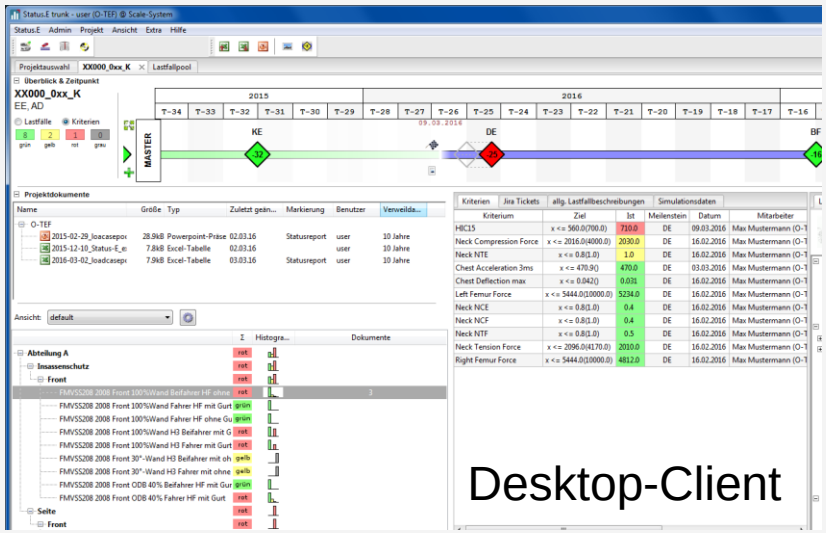
Status.E: Monitor and Report Project Status



Native iOS APP

Website

Characterization

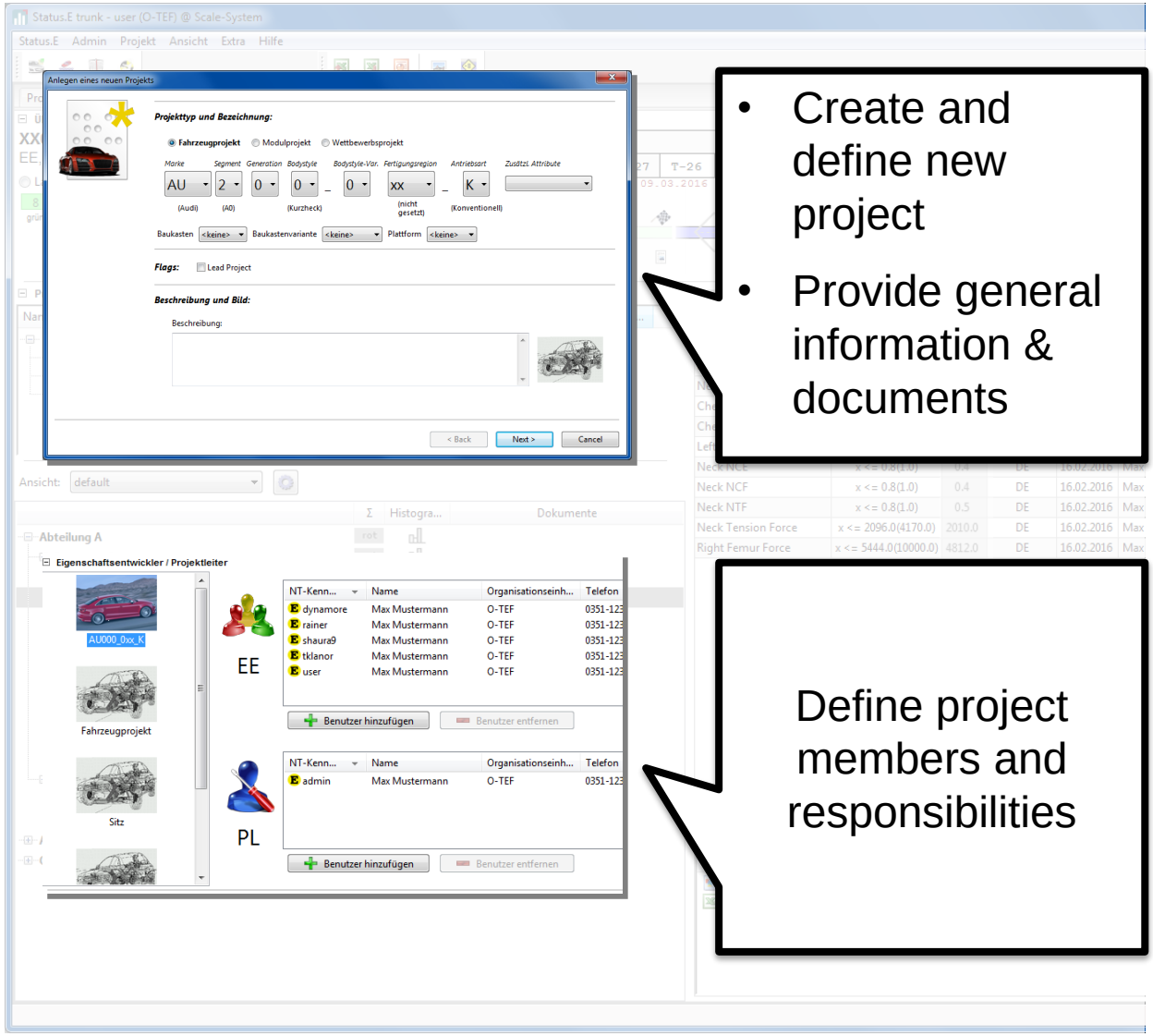
- Requirement and Test Case Management
- Status Monitoring
  - Track fulfillment of project targets / requirements with respect to project milestones
  - Status aggregation for projects
- Reporting - generation of status reports (ppt, doc, pdf)
- Documentation - Integrated document management system

Project Setup: Define Project & Responsibilities

Define Project

Project Milestones

Test Cases (Load Cases)



- Create and define new project
- Provide general information & documents

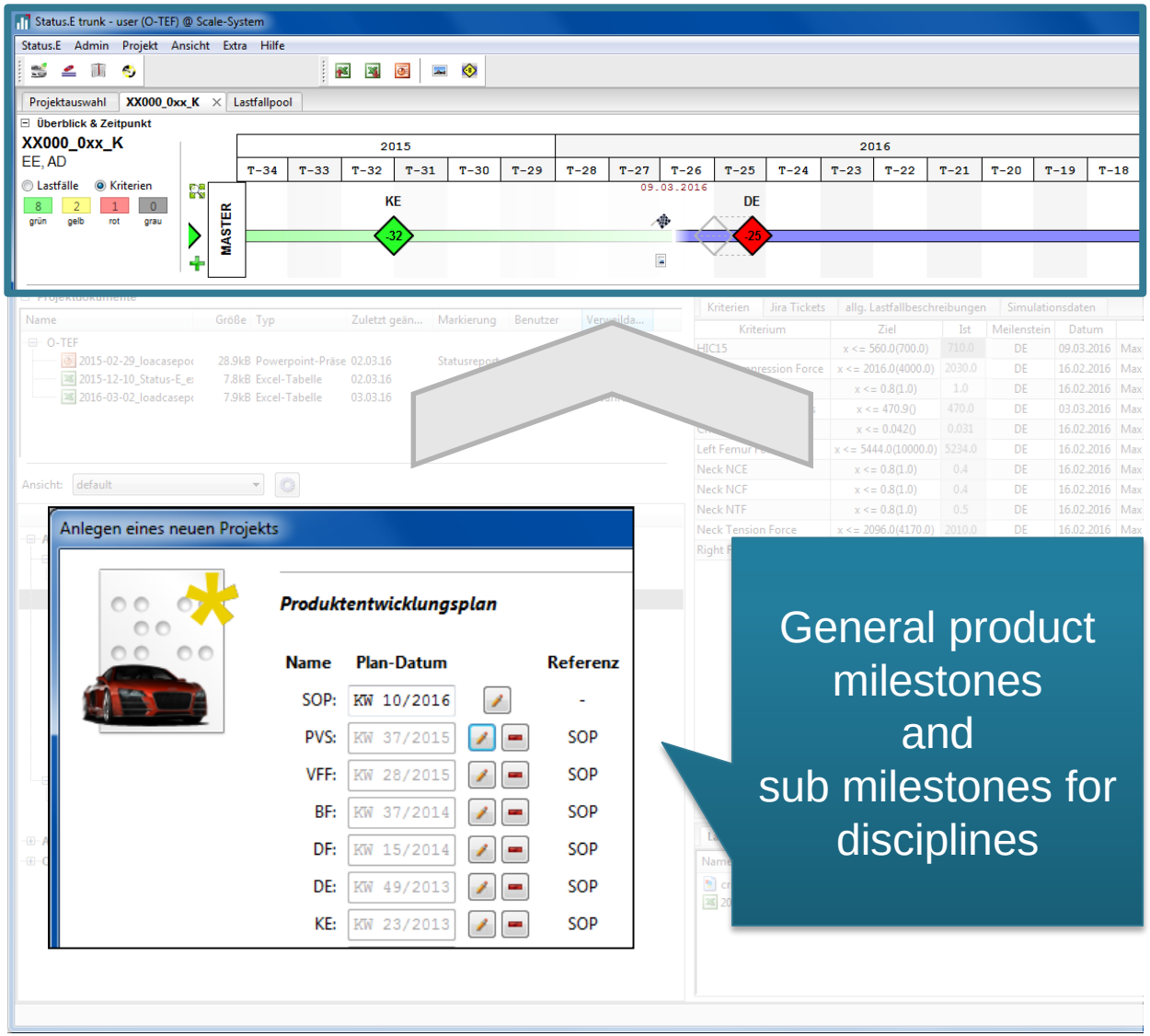
Define project members and responsibilities

Project Setup: Milestones

Define Project

Project Milestones

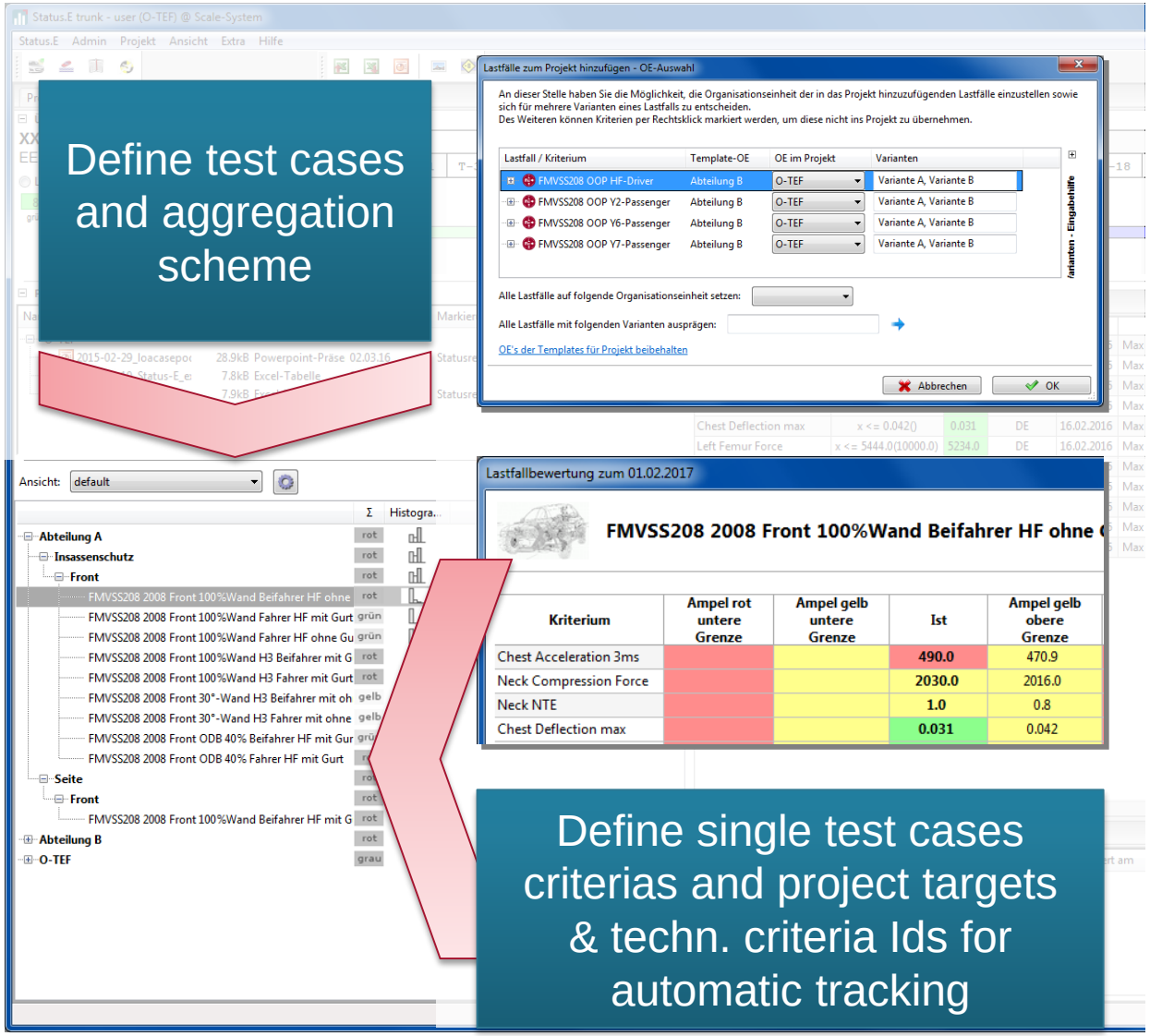
Test Cases



General product milestones and sub milestones for disciplines

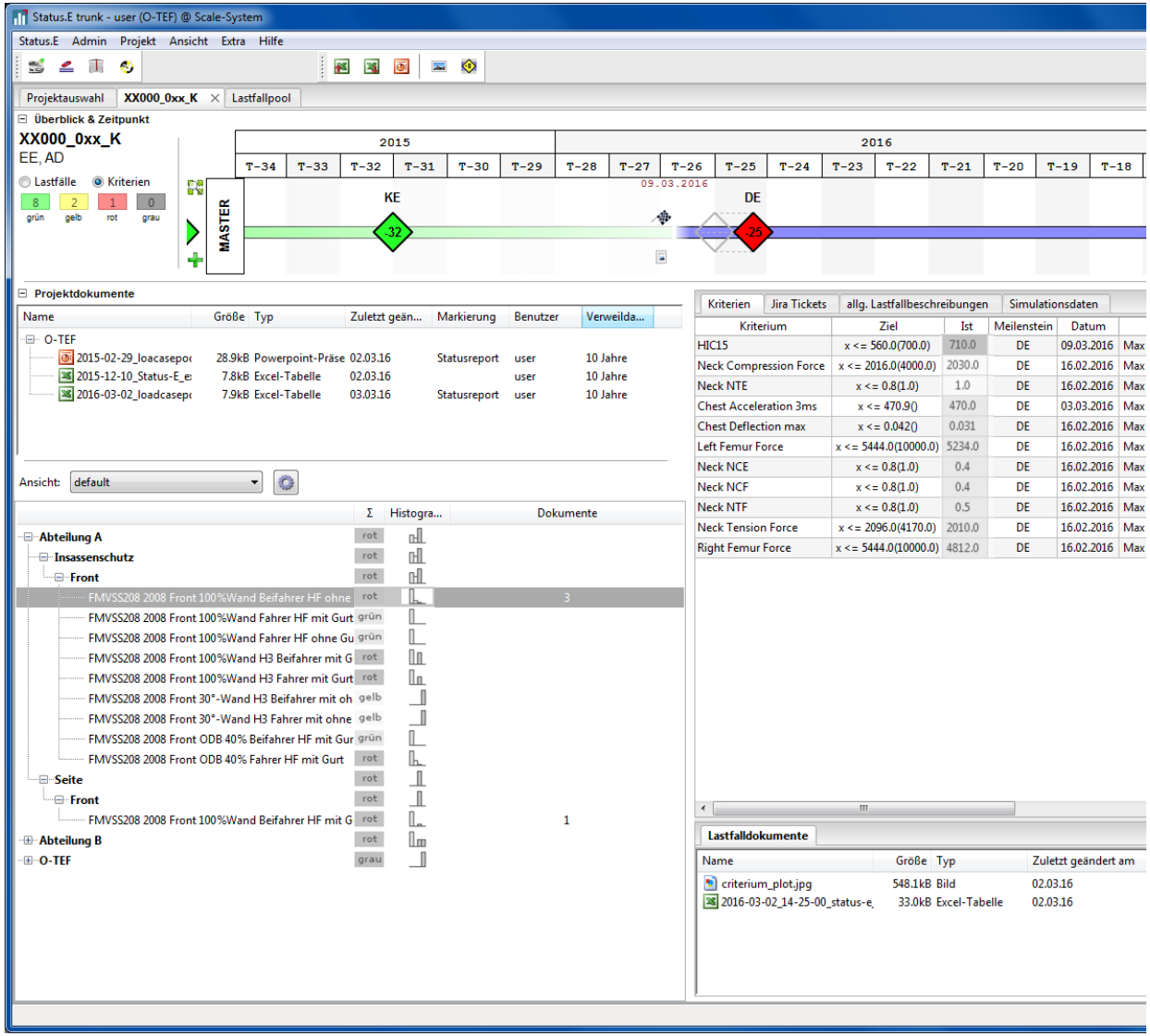
Project Setup: Test Cases and Project Targets

- Define Project
- Project Milestones
- Test Cases



Project Setup

- Define Project
- Project Milestones
- Test Cases



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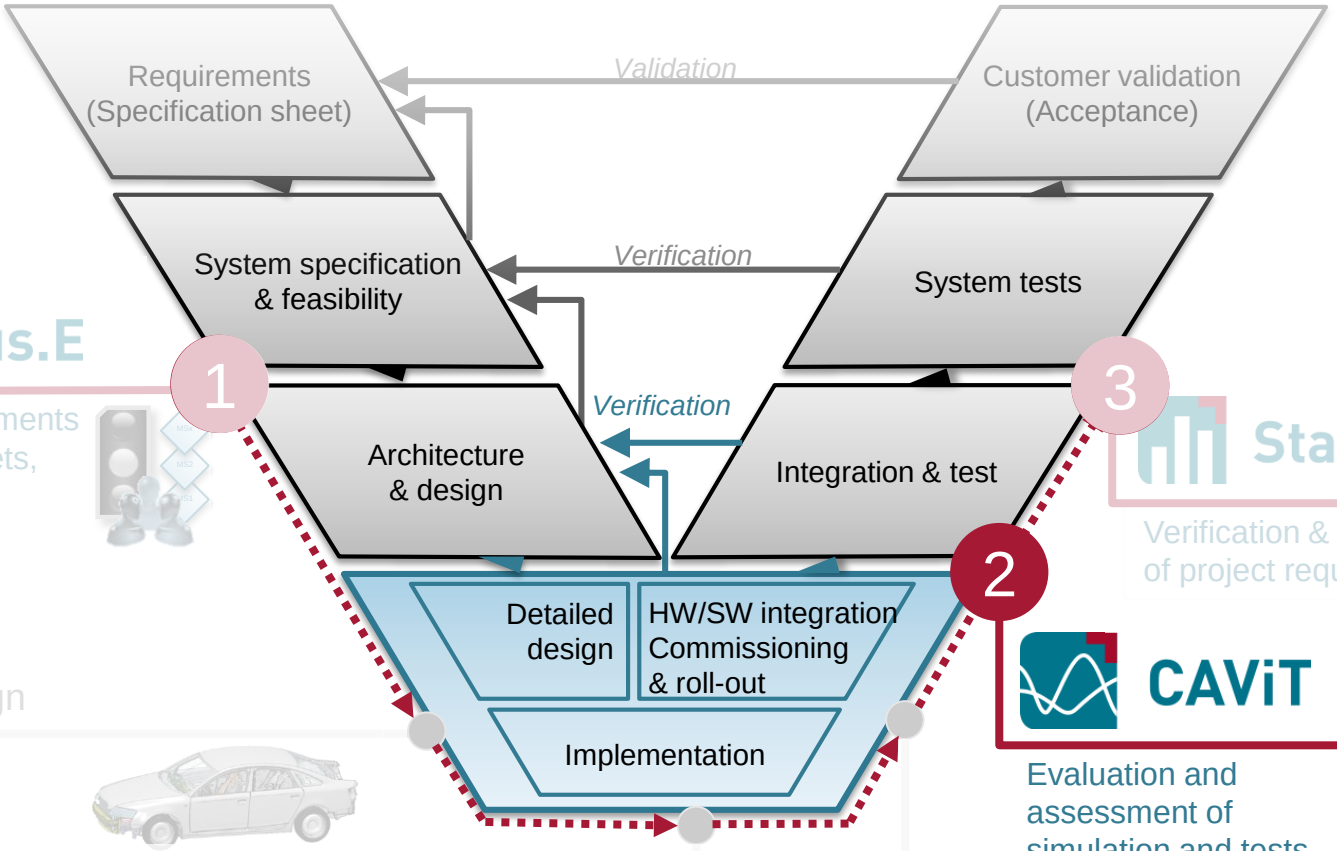

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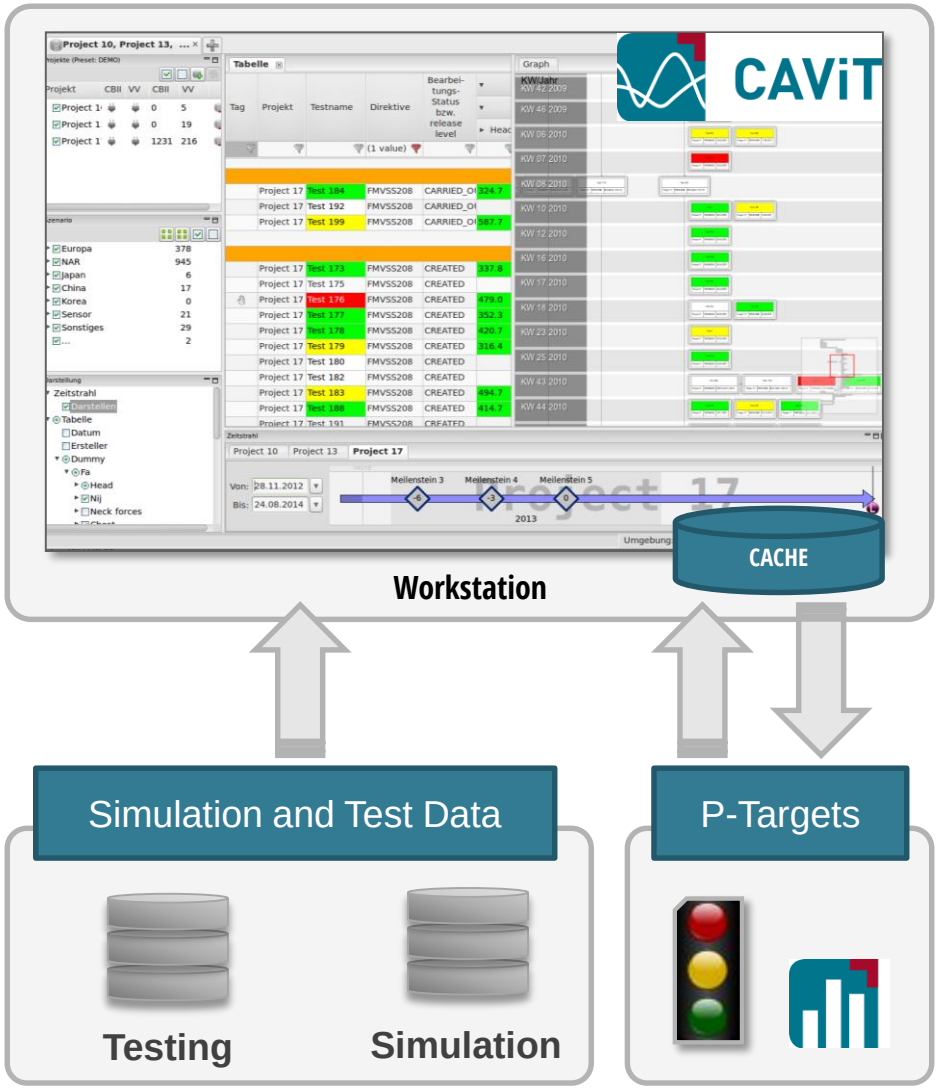
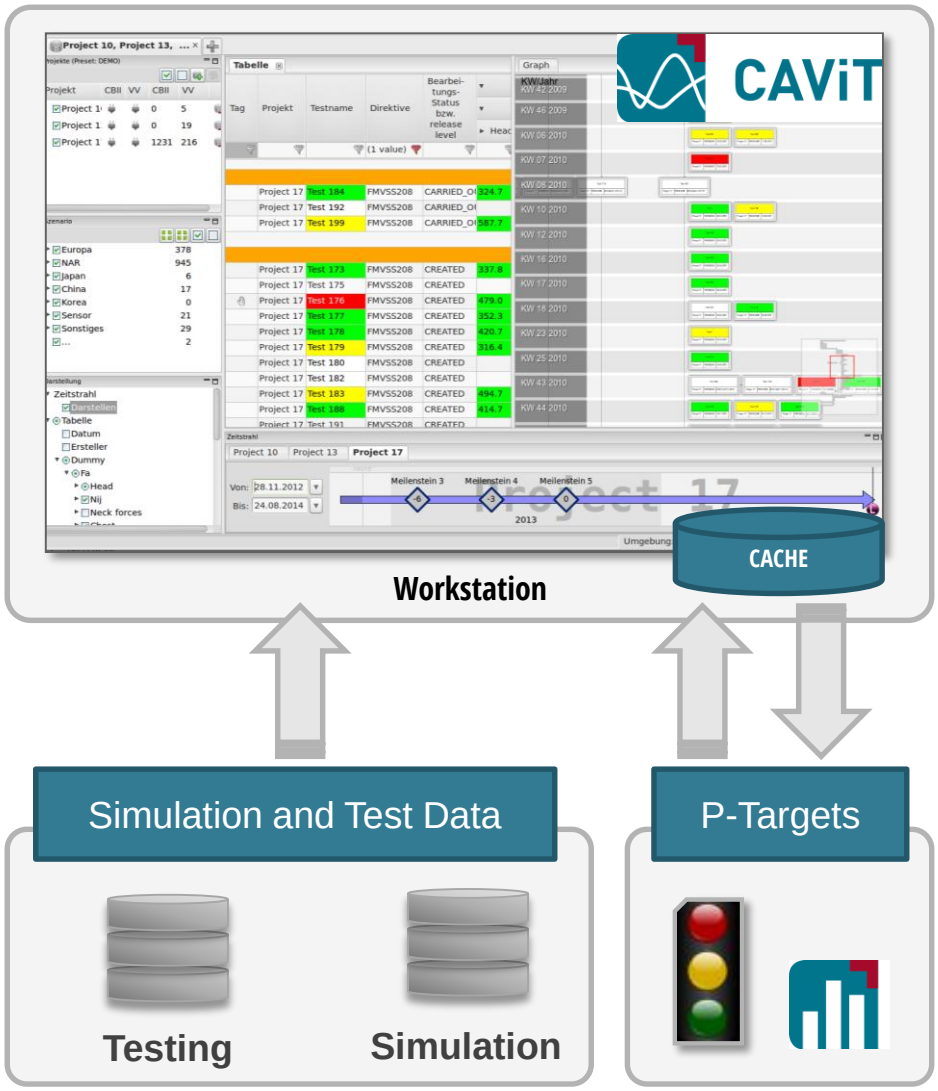


Characterization

- Provide easy and fast access to test and simulation results
- Uniform handling of test and simulation data
- Seamless integration of existing post processors, scripts, … **not (!)** replacing them
- Provide workflow automation and reporting capabilities

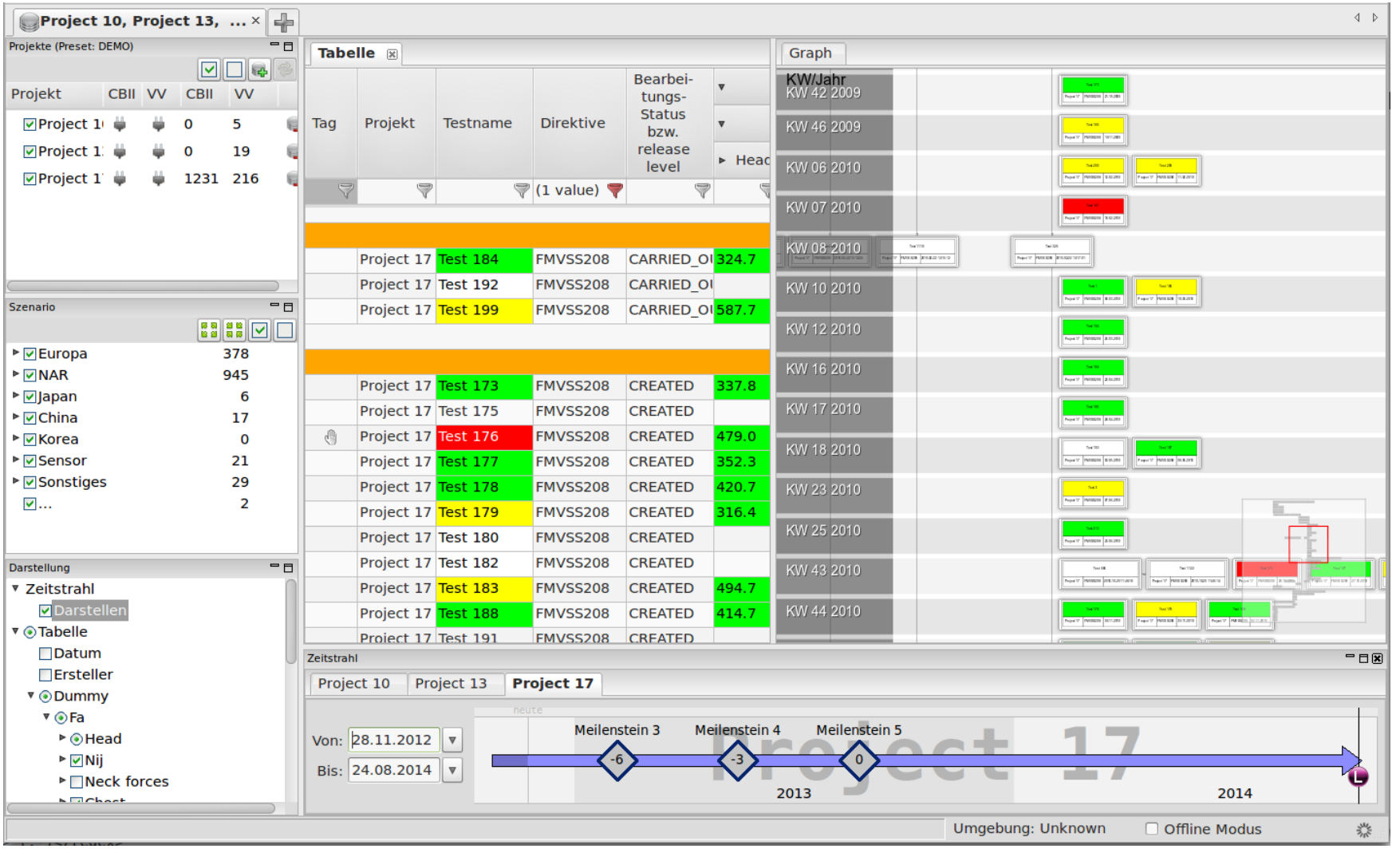
CAViT: Evaluation, Assessment and Reporting



Characterization

- Data collection from several backend systems
- Cache of data for fast local access, particular important for bulk data
- Offline capabilities [Caching]
- Interfacing with Status.E for test cases and assessment criteria
- Assessment based on project targets

CAViT: GUI Overview



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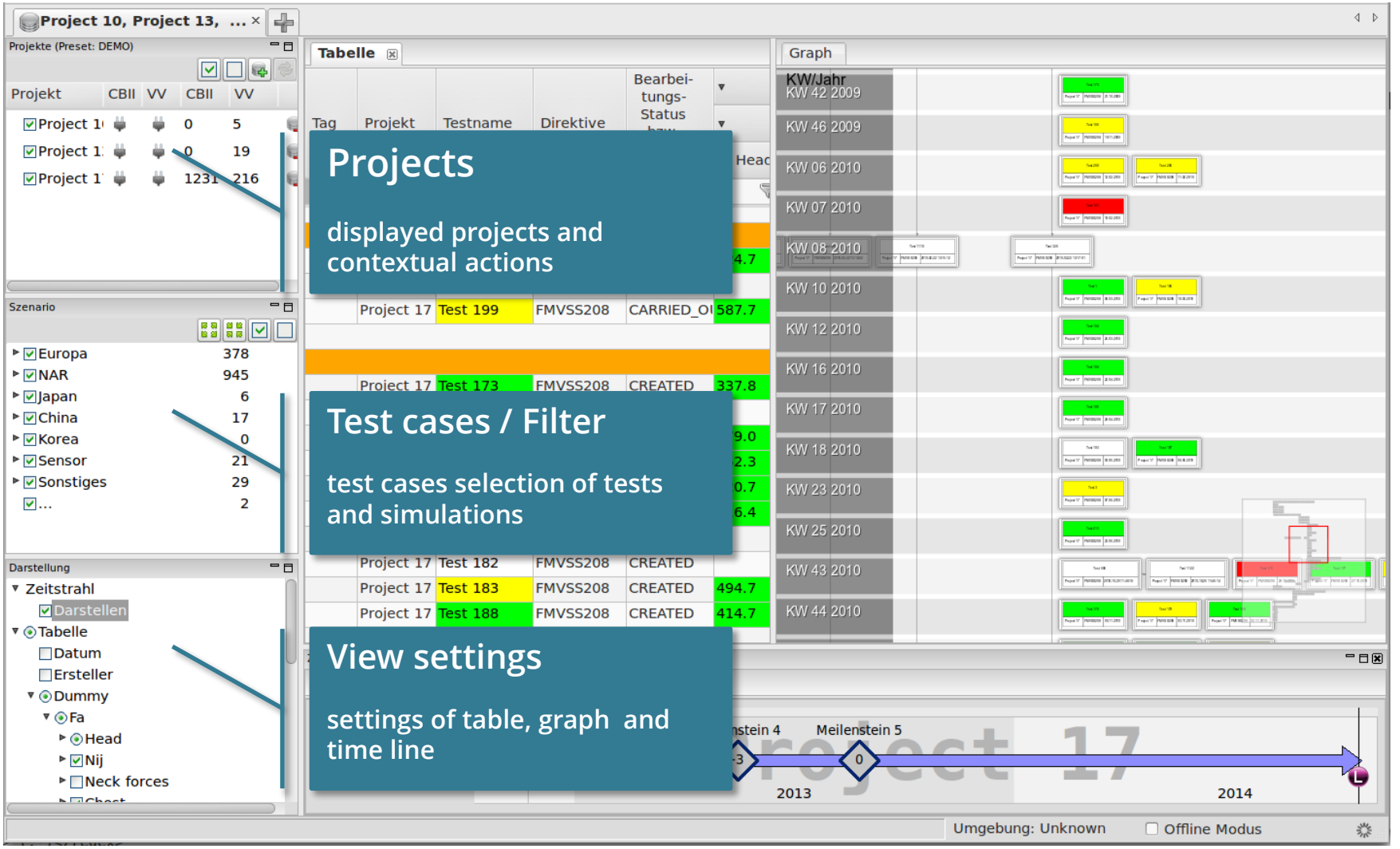

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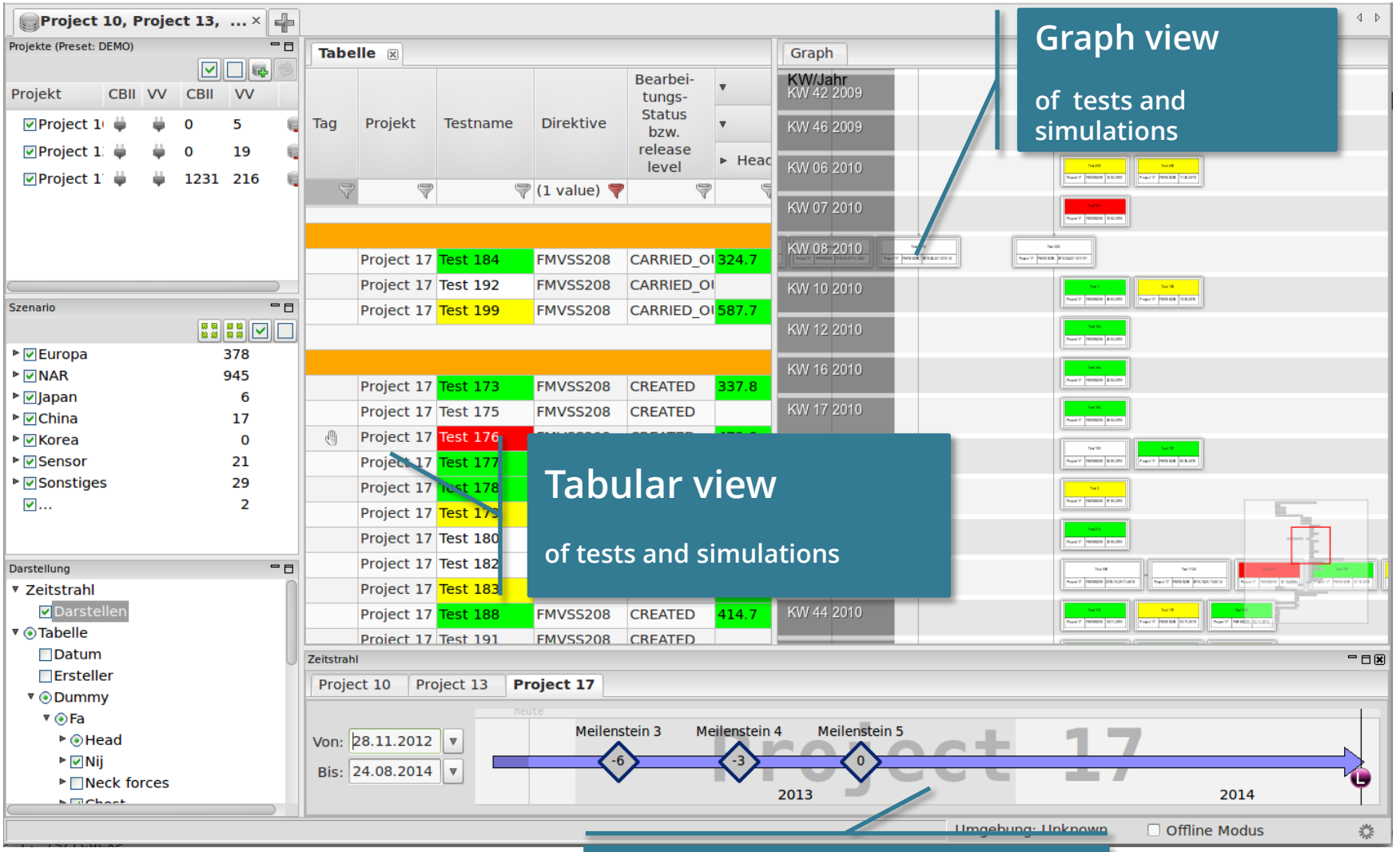

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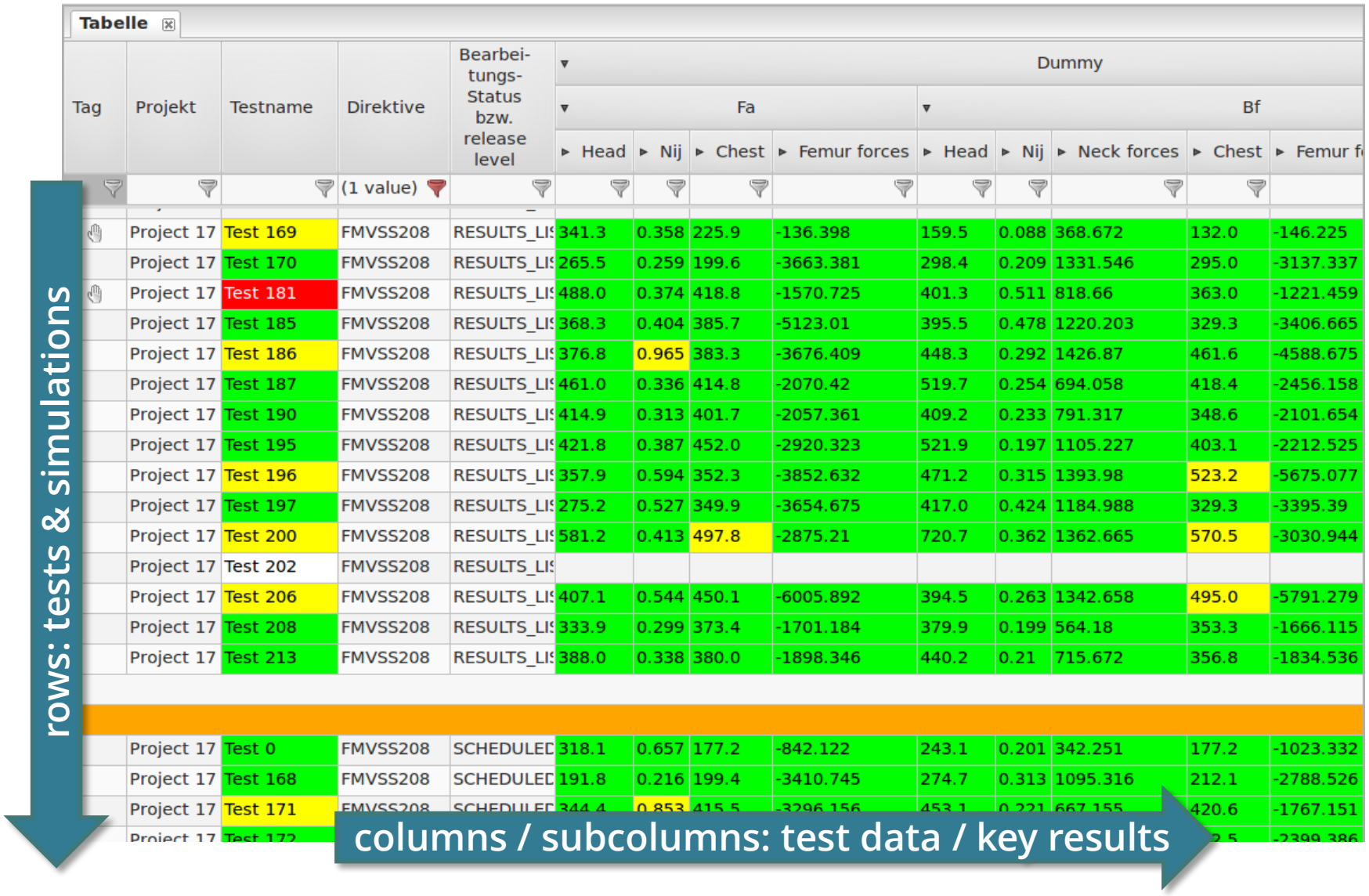

Tabelle

Tag	Projekt	Testname	Direktive	Bearbei-tungs-Status bzw. release level	Dummy								
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					Head	Nij	Chest	Femur forces	Head	Nij	Neck forces	Chest	Femur f
			(1 value)										
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	Project 17	Test 170	FMVSS208	RESULTS_LIS	265.5	0.259	199.6	-3663.381	298.4	0.209	1331.546	295.0	-3137.337
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	Project 17	Test 200	FMVSS208	RESULTS_LIS	581.2	0.413	497.8	-2875.21	720.7	0.362	1362.665	570.5	-3030.944
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	Project 17	Test 208	FMVSS208	RESULTS_LIS	333.9	0.299	373.4	-1701.184	379.9	0.199	564.18	353.3	-1666.115
	Project 17	Test 213	FMVSS208	RESULTS_LIS	388.0	0.338	380.0	-1898.346	440.2	0.21	715.672	356.8	-1834.536
	Project 17	Test 0	FMVSS208	SCHEDULED	318.1	0.657	177.2	-842.122	243.1	0.201	342.251	177.2	-1023.332
	Project 17	Test 168	FMVSS208	SCHEDULED	191.8	0.216	199.4	-3410.745	274.7	0.313	1095.316	212.1	-2788.526
	Project 17	Test 171	FMVSS208	SCHEDULED	344.4	0.853	415.5	-3296.156	453.1	0.221	667.155	420.6	-1767.151
	Project 17	Test 172											

rows: tests & simulations

columns / subcolumns: test data / key results

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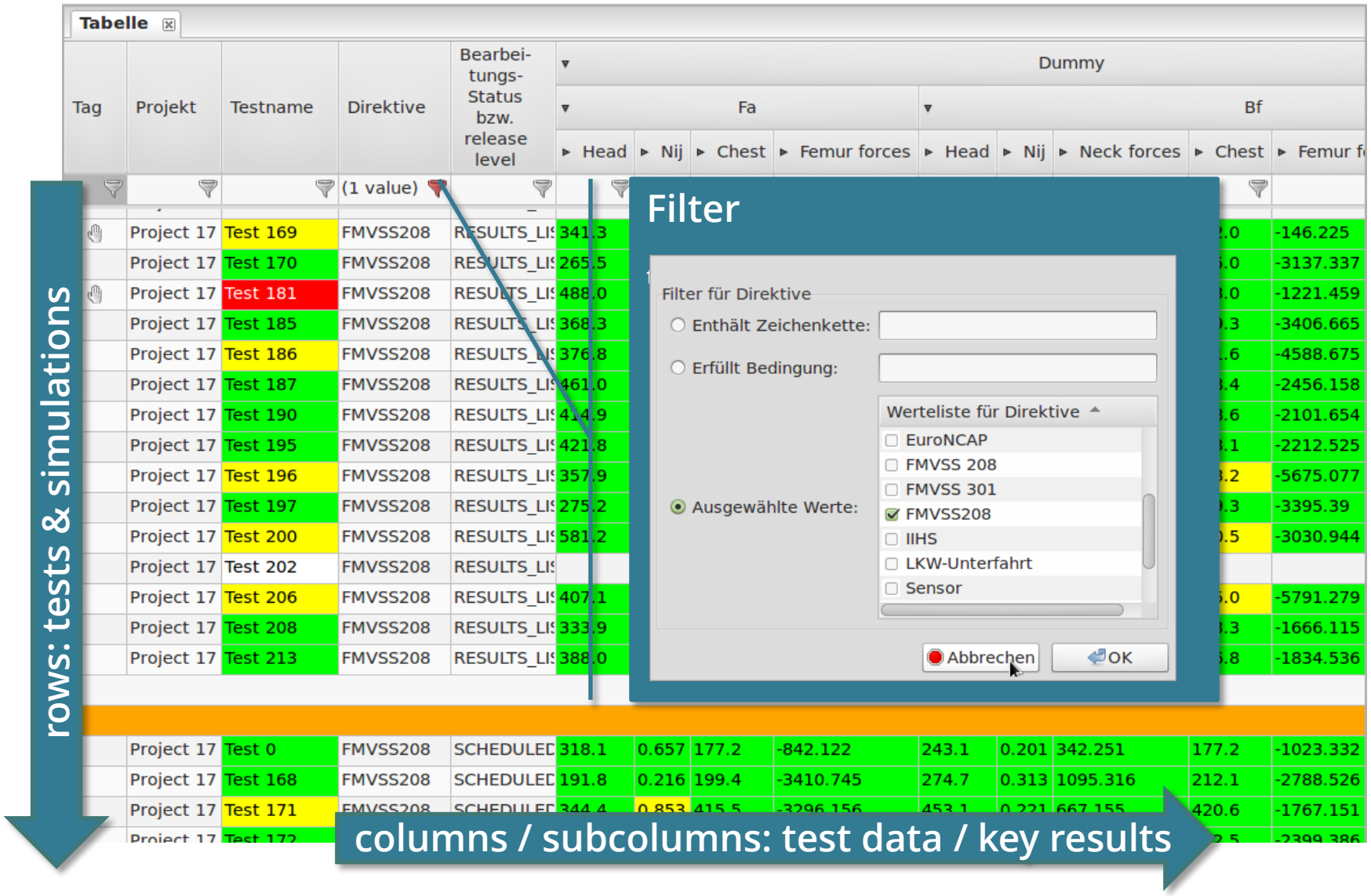

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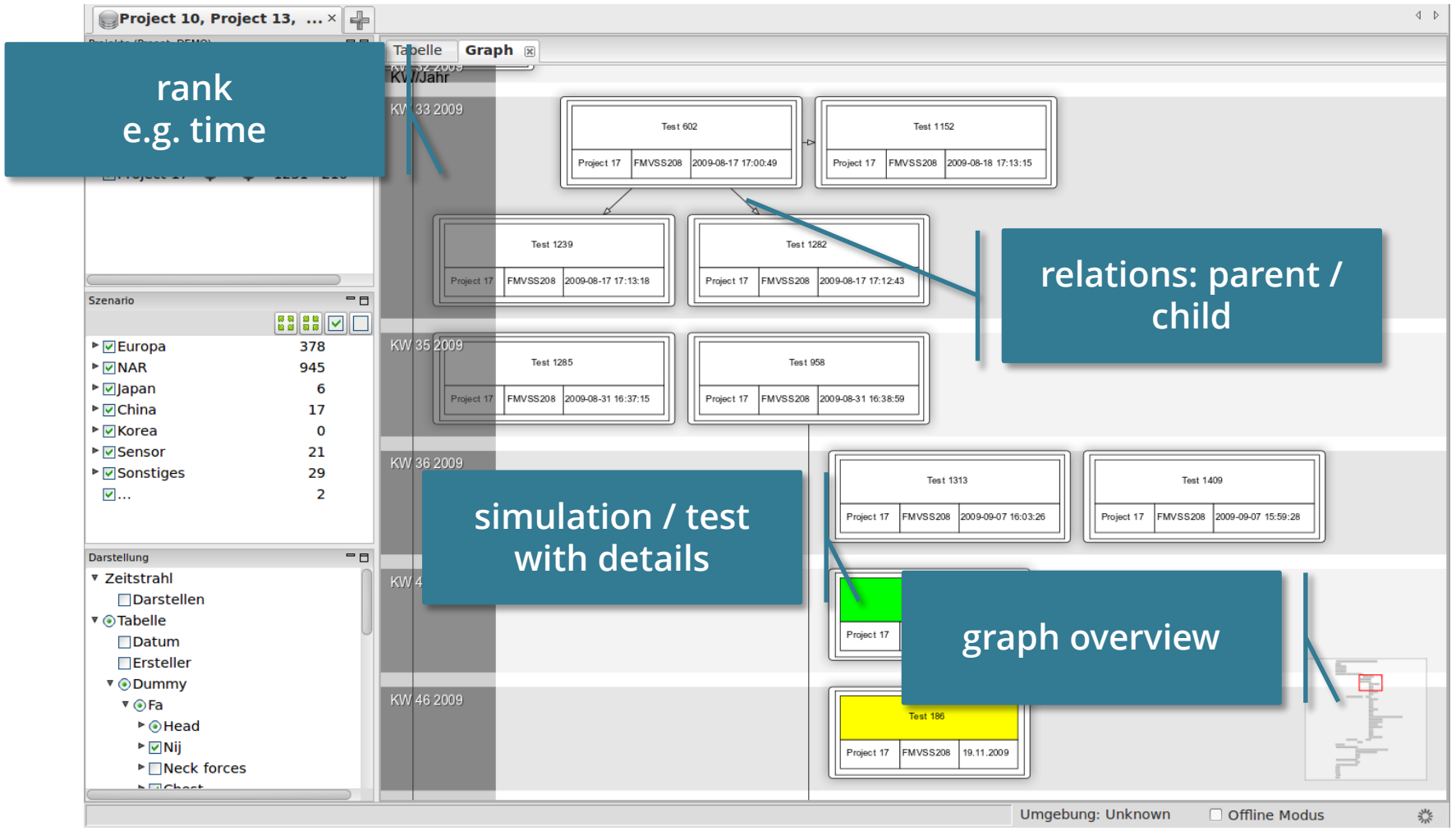

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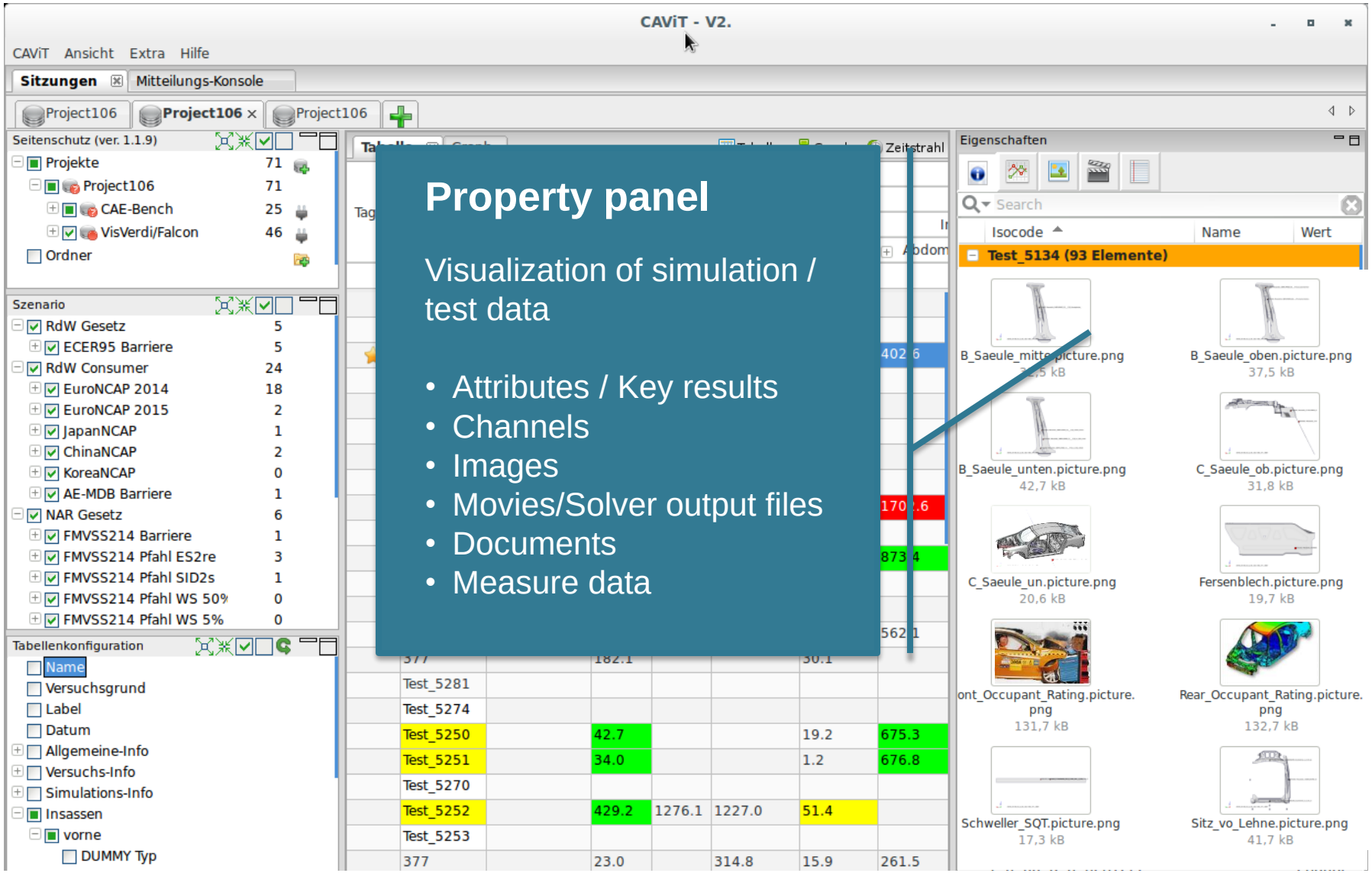


Property panel

Visualization of simulation / test data

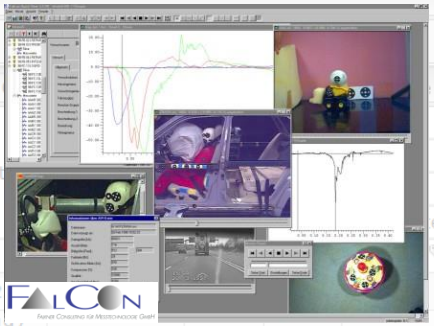
- Attributes / Key results
- Channels
- Images
- Movies/Solver output files
- Documents
- Measure data

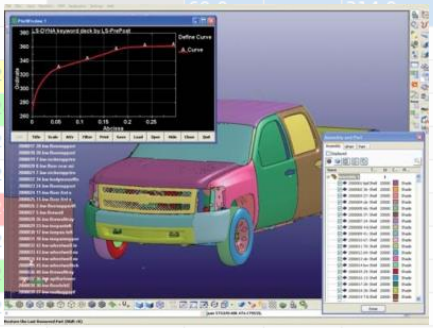
CAViT: Evaluation, Assessment and Reporting

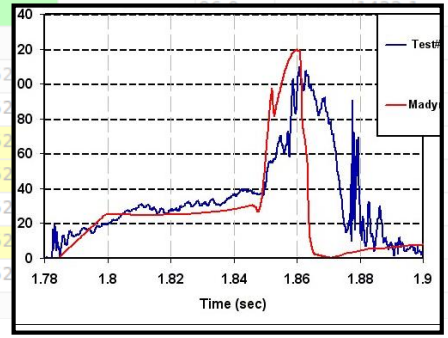
Access and open movies and media data with external viewers

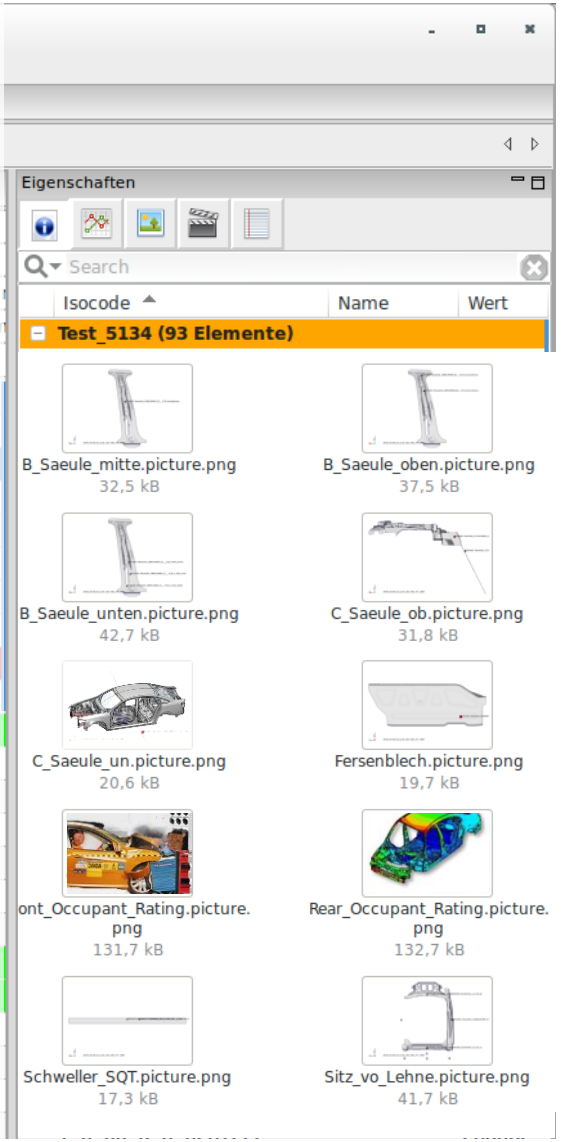
Integration of Postprocessors: Analyze simulation results

Quick preview of curves and measure data and documents









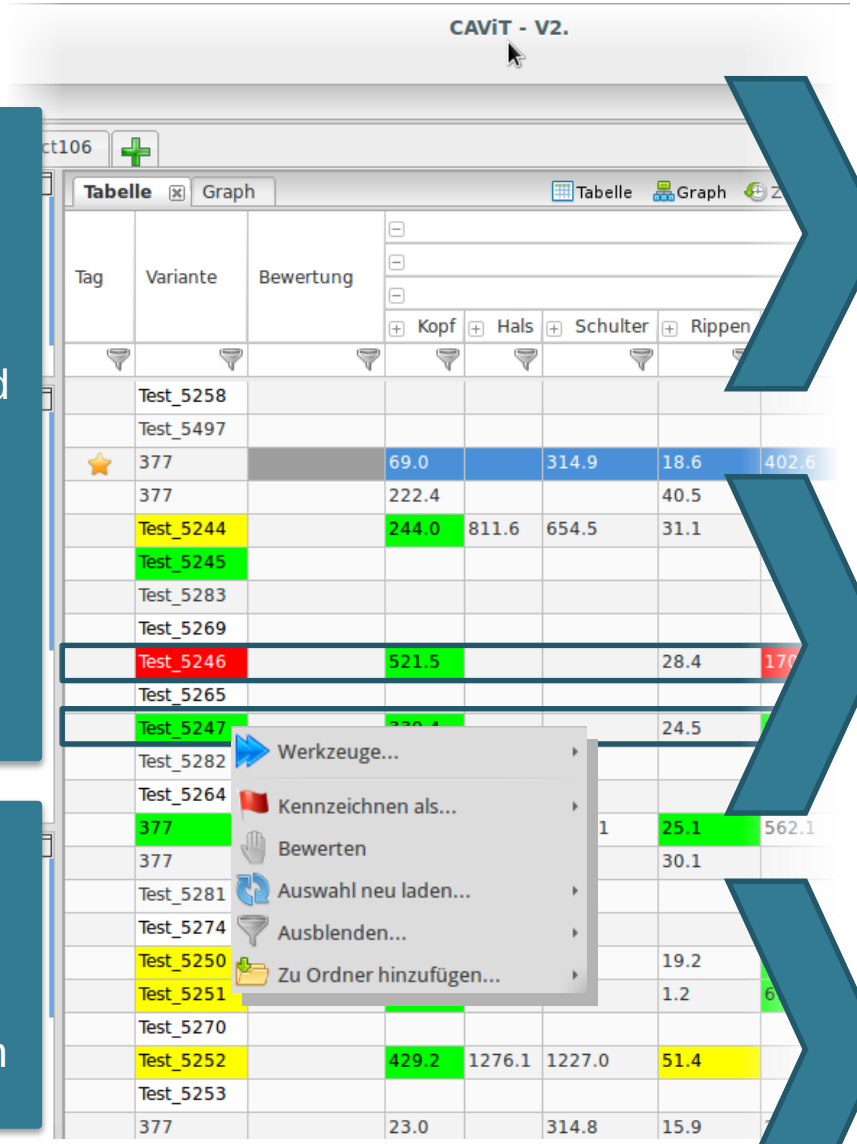
CAViT: Evaluation, Assessment and Reporting

Extensive support for Reporting

- Generation of Word documents based on docx templates
- Dedicated support for Reporting via GNS Animator

Extendable via plugins

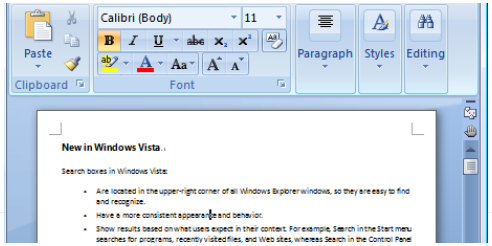
Flexible customization



[PDF/PPTs Reports]

[Video Overlay]

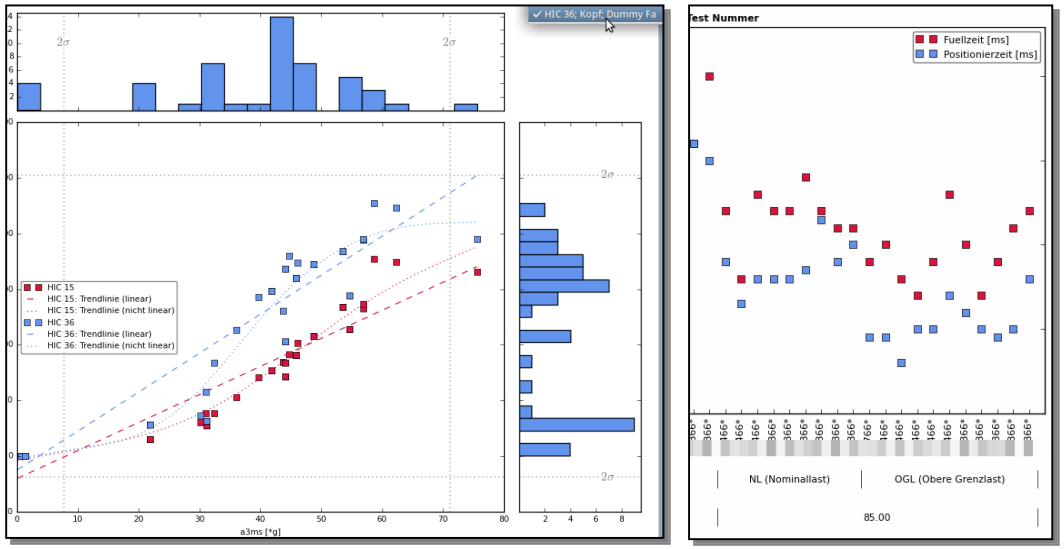
[docx Reports]



CAViT: Evaluation, Assessment and Reporting

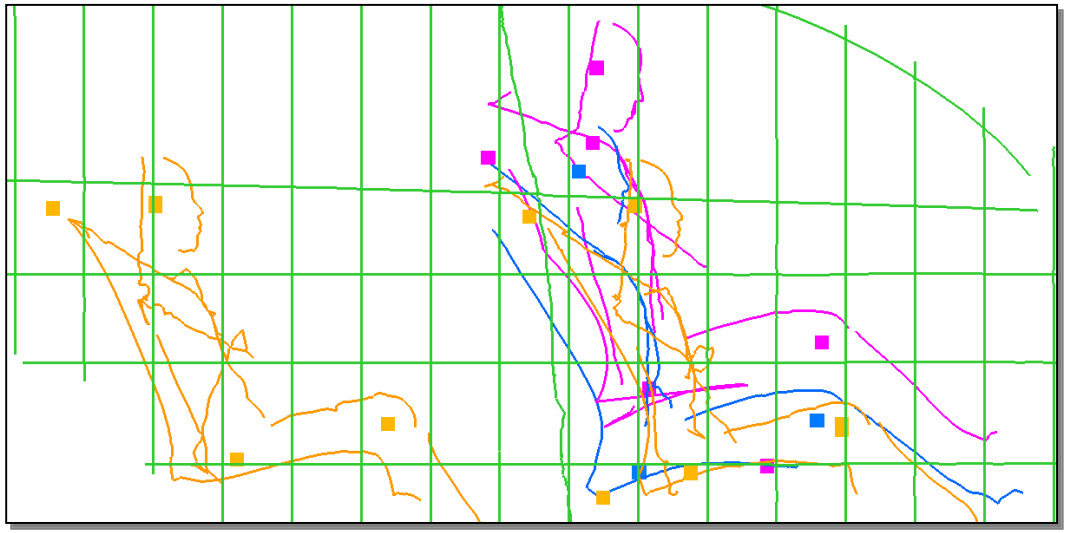
PlugIn Example #1 Plotting

- Trend analysis
- Statistical parameters



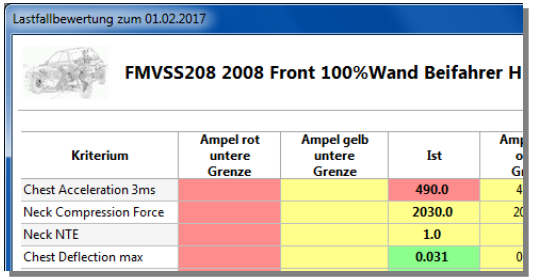
PlugIn Example #2 Compare Dummy Positioning

test vs. simulation



CAViT: Evaluation, Assessment and Reporting

Automatic assessment of test key results based on test cases and criteria targets



Every single line represents a simulation or test data set with its key results

Tabelle

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CAViT: Evaluation, Assessment and Reporting

Automatic assessment of test key results based on test cases and criteria targets

Lastfallbewertung zum 01.02.2017

FMVSS208 2008 Front 100%Wand Beifahrer H

Kriterium	Ampel rot untere Grenze	Ampel gelb untere Grenze	Ist	Amp o Gr
Chest Acceleration 3ms			490.0	4
Neck Compression Force			2030.0	20
Neck NTE			1.0	
Chest Deflection max			0.031	0

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	Project 17	Test			421.8	0.387	452.0	-2920.323	521.9	0.197	1105.227	403.1	-2212.525
	Project 17	Test		SULTS_LS	357.9	0.594	352.3	-3852.632	471.2	0.315	1393.98	523.2	-5675.077
	Project 17	Test		SULTS_LS	275.2	0.527	349.9	-3654.675	417.0	0.424	1184.988	329.3	-3395.39
	Project 17	Test		SULTS_LS	581.2	0.413	497.8	-2875.21	720.7	0.362	1362.665	570.5	-3030.944
	Project 17	Test		SULTS_LS									
	Project 17	Test		SULTS_LS	407.1	0.544	450.1	-6005.892	394.5	0.263	1342.658	495.0	-5791.279
	Project 17	Test		SULTS_LS	333.9	0.299	373.4	-1701.184	379.9	0.199	564.18	353.3	-1666.115
	Project 17	Test		SULTS_LS	388.0	0.338	380.0	-1898.346	440.2	0.21	715.672	356.8	-1834.536

SCALE

CAViT: Evaluation, Assessment and Reporting

Automatic assessment of test key results based on test cases and criteria targets

Lastfallbewertung zum 01.02.2017

FMVSS208 2008 Front 100%Wand Beifahrer H

Kriterium	Ampel rot untere Grenze	Ampel gelb untere Grenze	Ist	Amp o Gr
Chest Acceleration 3ms			490.0	4
Neck Compression Force			2030.0	20
Neck NTE			1.0	
Chest Deflection max			0.031	0

manual rating of test or simulation

suggested rating (aggregated) rating

Tabelle

Tag	Projekt	Testname	Direktive	Bearbei-tungs-Status bzw. release level	Dummy								
					Fa				Bf				
					Head	Nij	Chest	Femur forces	Head	Nij	Neck forces	Chest	Femur f
			1 value)										
	Project 17	Test 169	FMVSS208	RESULTS_LIS	341.3	0.358	225.9	-136.398	159.5	0.088	368.672	132.0	-146.225
	Project 17	Test 170	FMVSS208	RESULTS_LIS	265.5	0.259	199.6	-3663.381	298.4	0.209	1331.546	295.0	-3137.337
	Project 17	Test 181	FMVSS208	RESULTS_LIS	488.0	0.374	418.8	-1570.725	401.3	0.511	818.66	363.0	-1221.459
	Project 17	Test 185	FMVSS208	RESULTS_LIS	368.3	0.404	385.7	-5123.01	395.5	0.478	1220.203	329.3	-3406.665
	Project 17	Test 186	FMVSS208	RESULTS_LIS	376.8	0.965	383.3	-3676.409	448.3	0.292	1426.87	461.6	-4588.675
	Project 17	Test 187	FMVSS208	RESULTS_LIS	461.0	0.336	414.8	-2070.42	519.7	0.254	694.058	418.4	-2456.158
	Project 17	Test 190	FMVSS208	RESULTS_LIS	414.9	0.313	401.7	-2057.361	409.2	0.233	791.317	348.6	-2101.654
	Project 17	Test 195	FMVSS208	RESULTS_LIS	421.8	0.387	452.0	-2920.323	521.9	0.197	1105.227	403.1	-2212.525
	Project 17	Test 196	FMVSS208	RESULTS_LIS	357.9	0.594	352.3	-3852.632	471.2	0.315	1393.98	523.2	-5675.077
	Project 17	Test 197	FMVSS208	RESULTS_LIS	275.2	0.527	349.9	-3654.675	417.0	0.424	1184.988	329.3	-3395.39
	Project 17	Test 200	FMVSS208	RESULTS_LIS	581.2	0.413	497.8	-2875.21	720.7	0.362	1362.665	570.5	-3030.944
	Project 17	Test 202	FMVSS208	RESULTS_LIS									
	Project 17	Test 206	FMVSS208	RESULTS_LIS	407.1	0.544	450.1	-6005.892	394.5	0.263	1342.658	495.0	-5791.279
	Project 17	Test 208	FMVSS208	RESULTS_LIS	333.9	0.299	373.4	-1701.184	379.9	0.199	564.18	353.3	-1666.115
	Project 17	Test 213	FMVSS208	RESULTS_LIS	388.0	0.338	380.0	-1898.346	440.2	0.21	715.672	356.8	-1834.536

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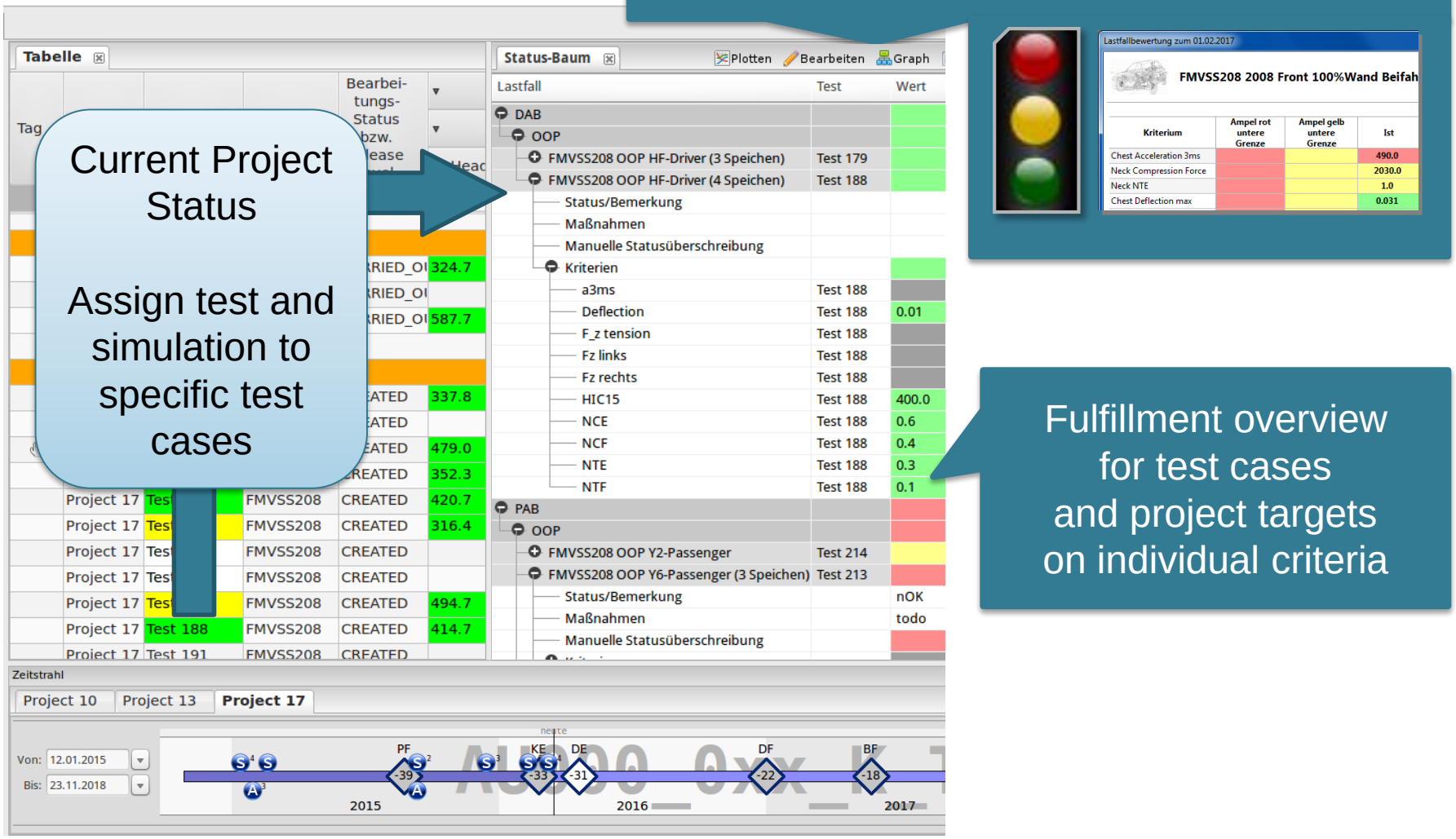
CAViT: Evaluation, Assessment and Reporting

predefined test cases & project targets

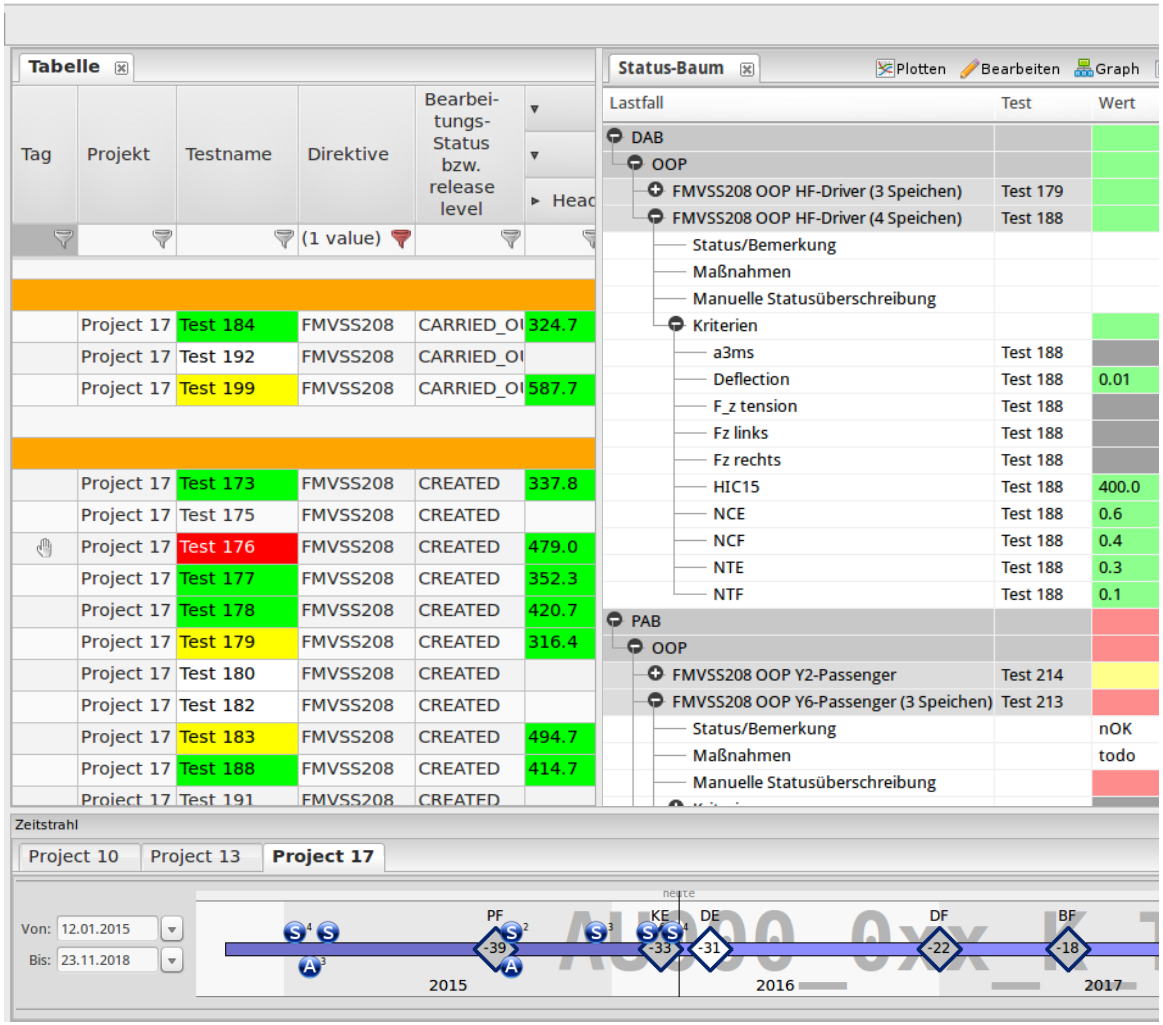


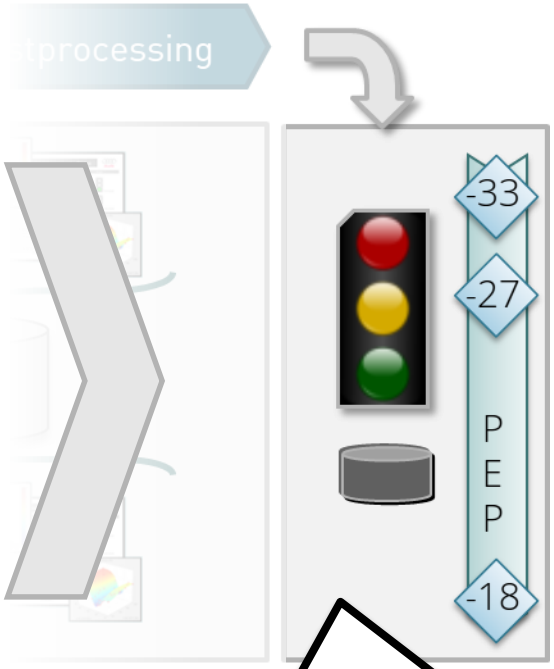
Current Project Status

Assign test and simulation to specific test cases

Fulfillment overview for test cases and project targets on individual criteria

CAViT: Evaluation, Assessment and Reporting

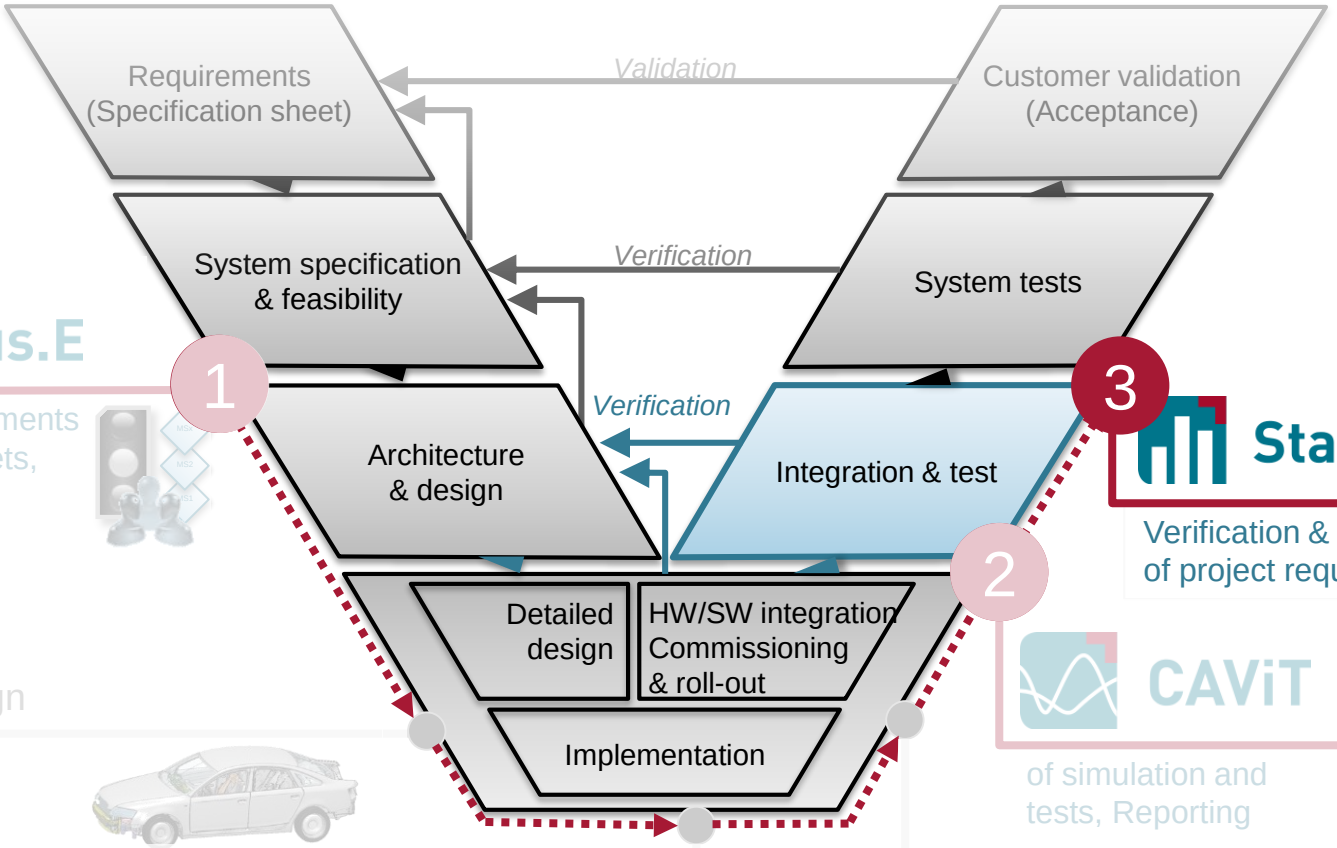




Report to Monitoring Application

Status.E

Introduction - Systems Engineering Process



Status.E

Setup of requirements and project targets, milestones and responsibilities

Status.E

Verification & monitoring of project requirements

CAViT

of simulation and tests, Reporting

Detailed design

CAD / DMU

Implementation

Setup of simulation models and test prototypes

Solving / Testing

Perform simulation & test

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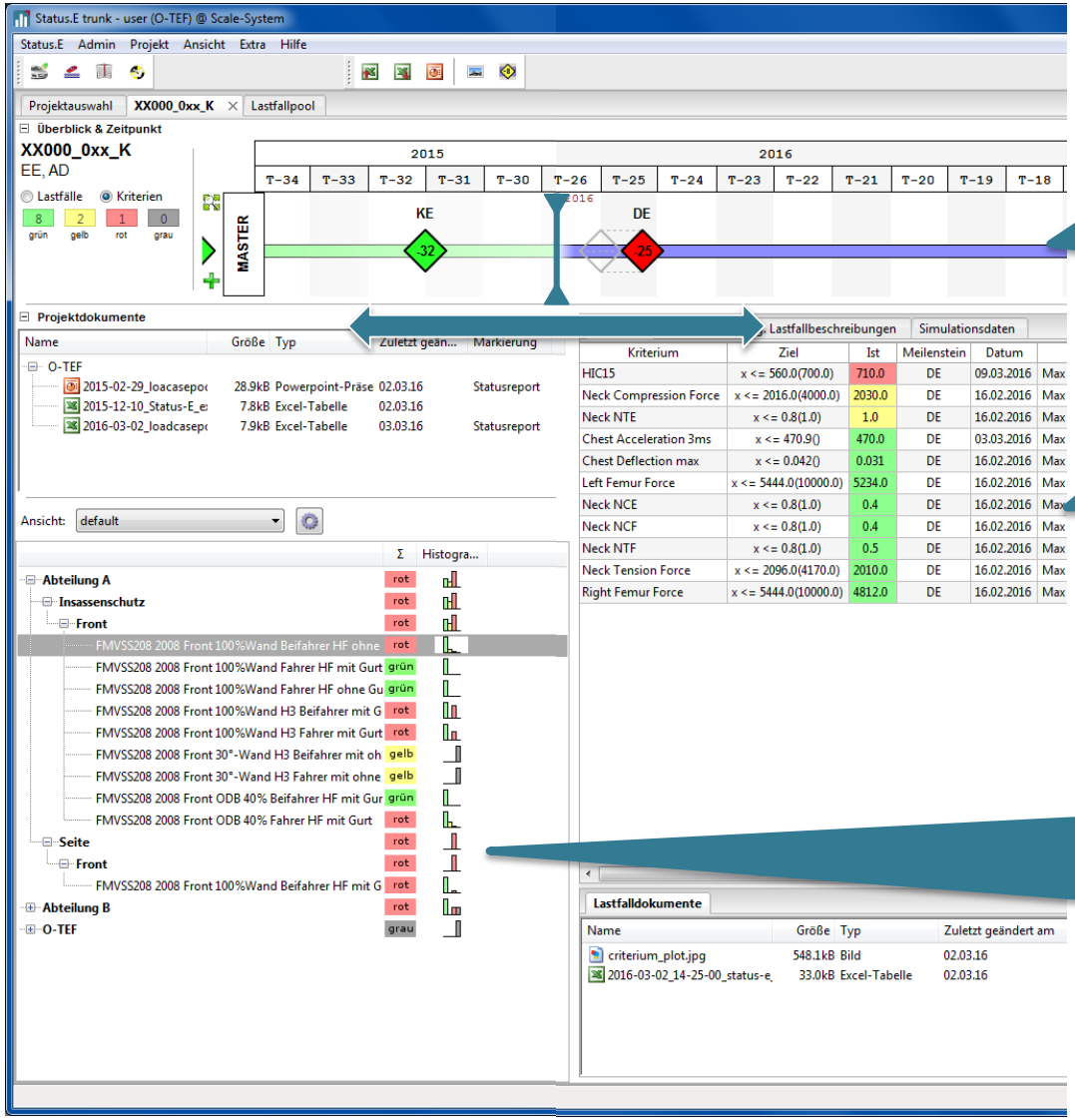
Status.E: Monitor and Report Project Status

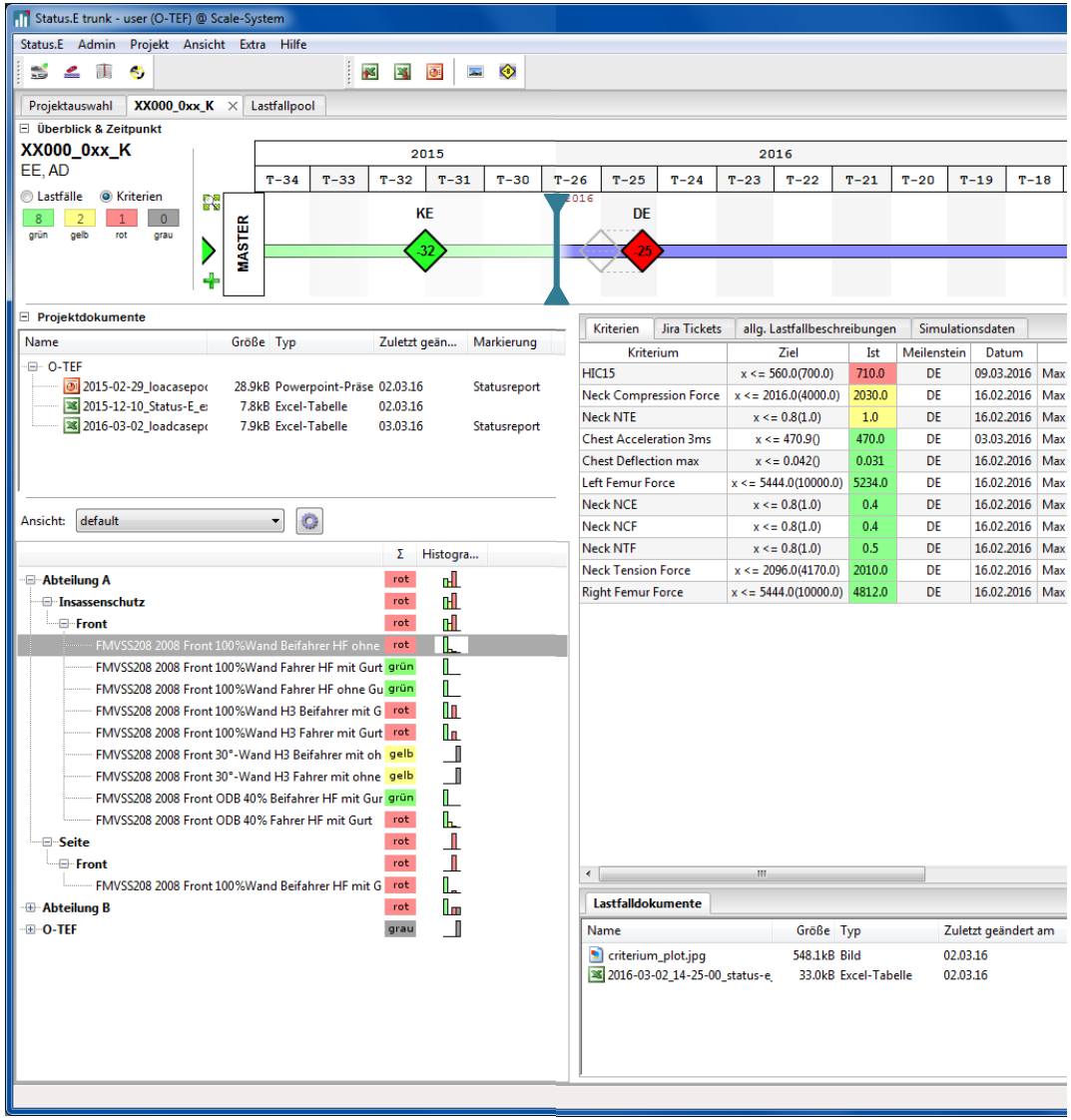


Report status for project milestone or date

Detailed view of individual test case criteria reported by CAViT

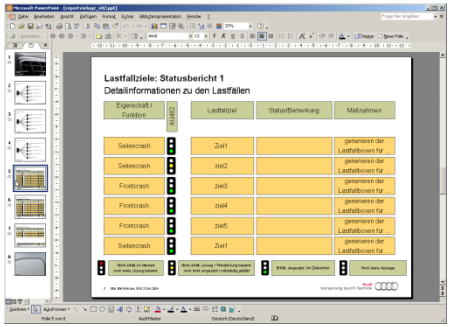
- Fulfillment of test cases at selected date
- Hierarchical status aggregation

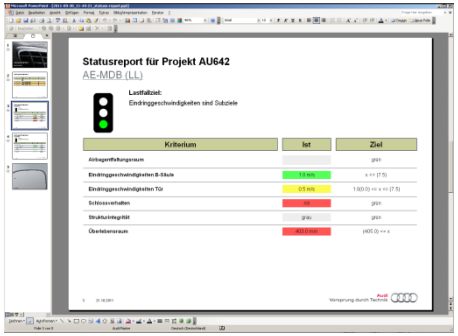
Status.E: Monitor and Report Project Status



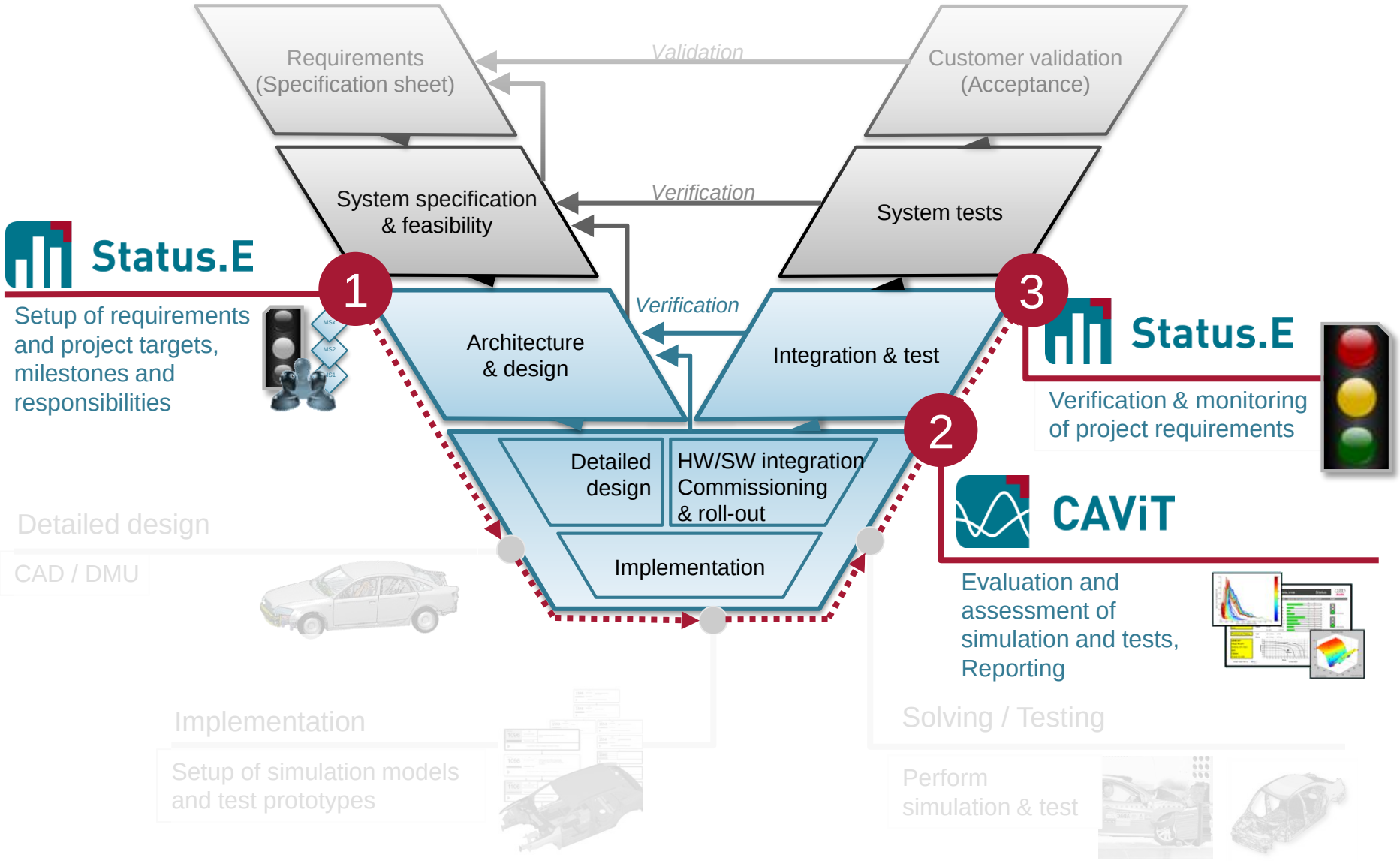
Generation of project status slides

[PPTX]





Introduction - Systems Engineering Process



CAViT | Status.E: Summary

Project Monitoring & Test Case Management

- Defining test cases, project targets and responsibilities
- monitoring and reporting the product development status

Workbench for simulation and test engineers

- Integrated view of CAT and CAE post data
- Evaluation and assessment of simulation and tests
- Reporting capabilities
- Process automation via scripts and plugins

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http://www.scale.eu