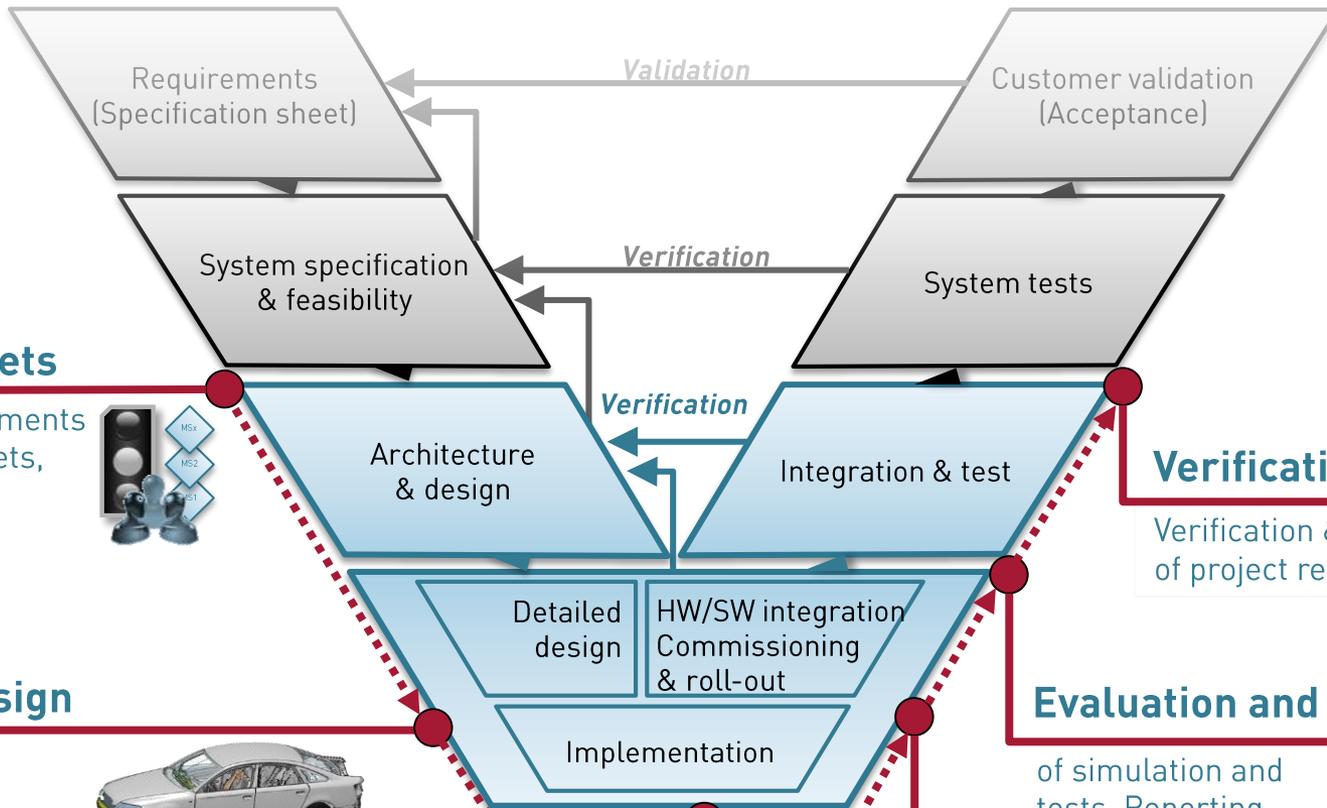


# Systems Engineering

## Auswertung, Bewertung, Vergleich und Validierung von CAT und CAE-Ergebnissen

May 2018 - Copyright SCALE GmbH; Disclosure to third parties only in consultation with SCALE

# Introduction - Systems Engineering Process



## Project targets

Setup of requirements and project targets, milestones and responsibilities



## Detailed design

CAD / DMU



## Implementation

Setup of simulation models and test prototypes



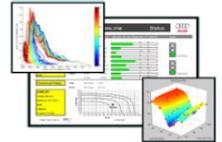
## Verification

Verification & monitoring of project requirements



## Evaluation and assessment

of simulation and tests, Reporting

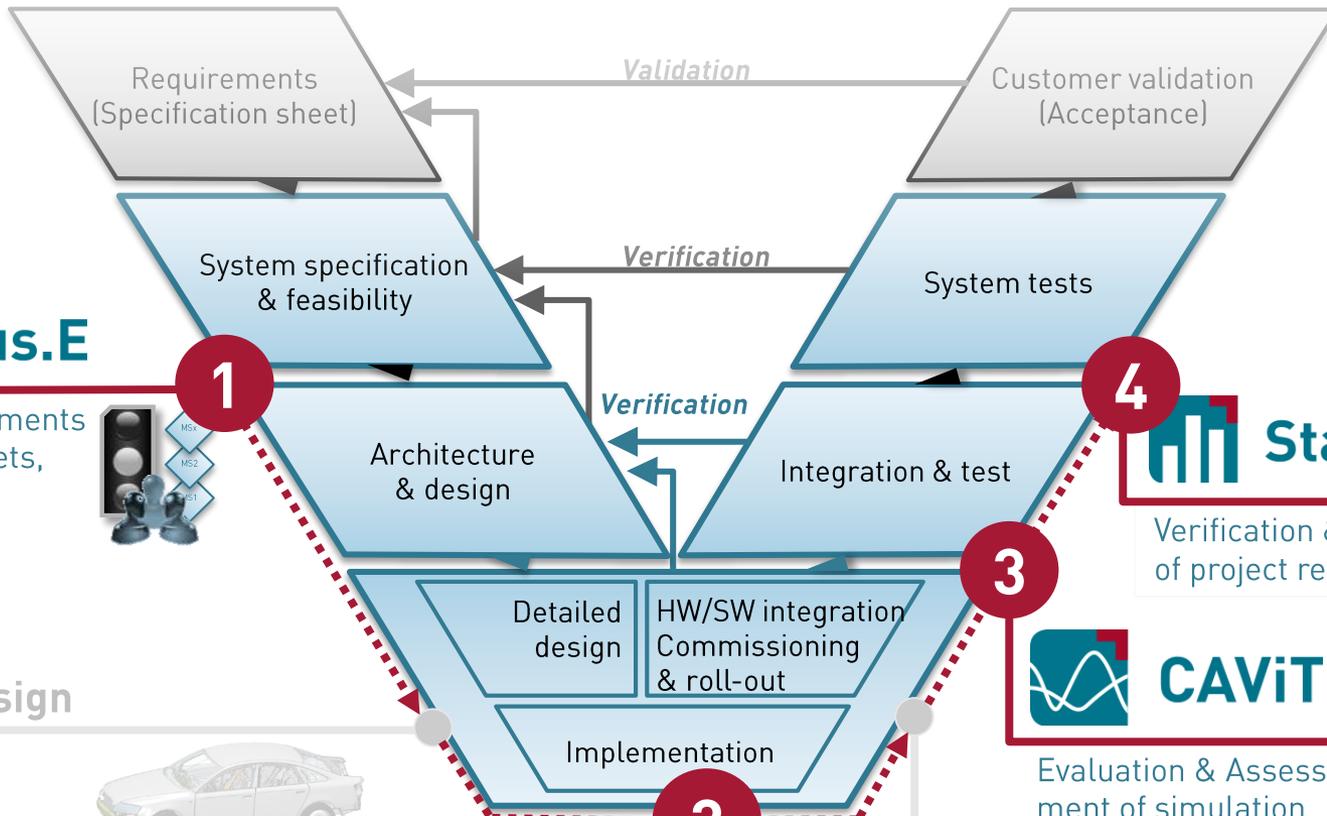


## Solving / Testing

Perform simulation & test



# Introduction - Systems Engineering Process



Setup of requirements and project targets, milestones and responsibilities



Verification & monitoring of project requirements

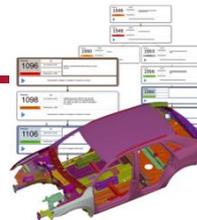


Detailed design

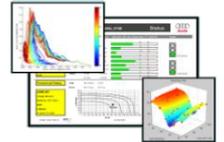
CAD / DMU



Setup of simulation models

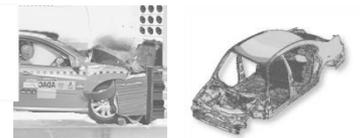


Evaluation & Assessment of simulation and tests, Reporting

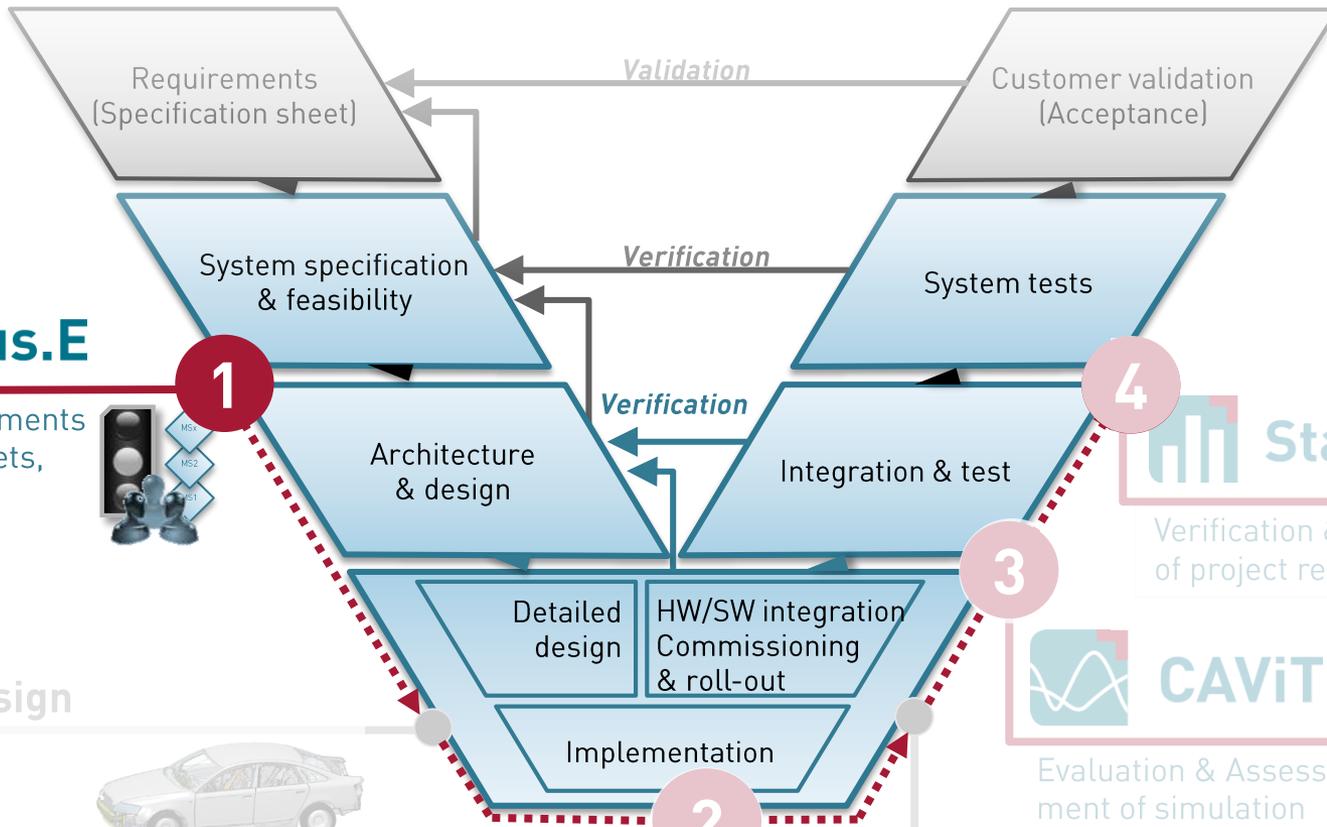


Solving / Testing

Perform simulation & test



# Introduction - Systems Engineering Process



Setup of requirements and project targets, milestones and responsibilities



Verification & monitoring of project requirements



Detailed design

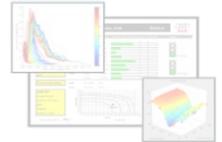
CAD / DMU



Setup of simulation models and test prototypes



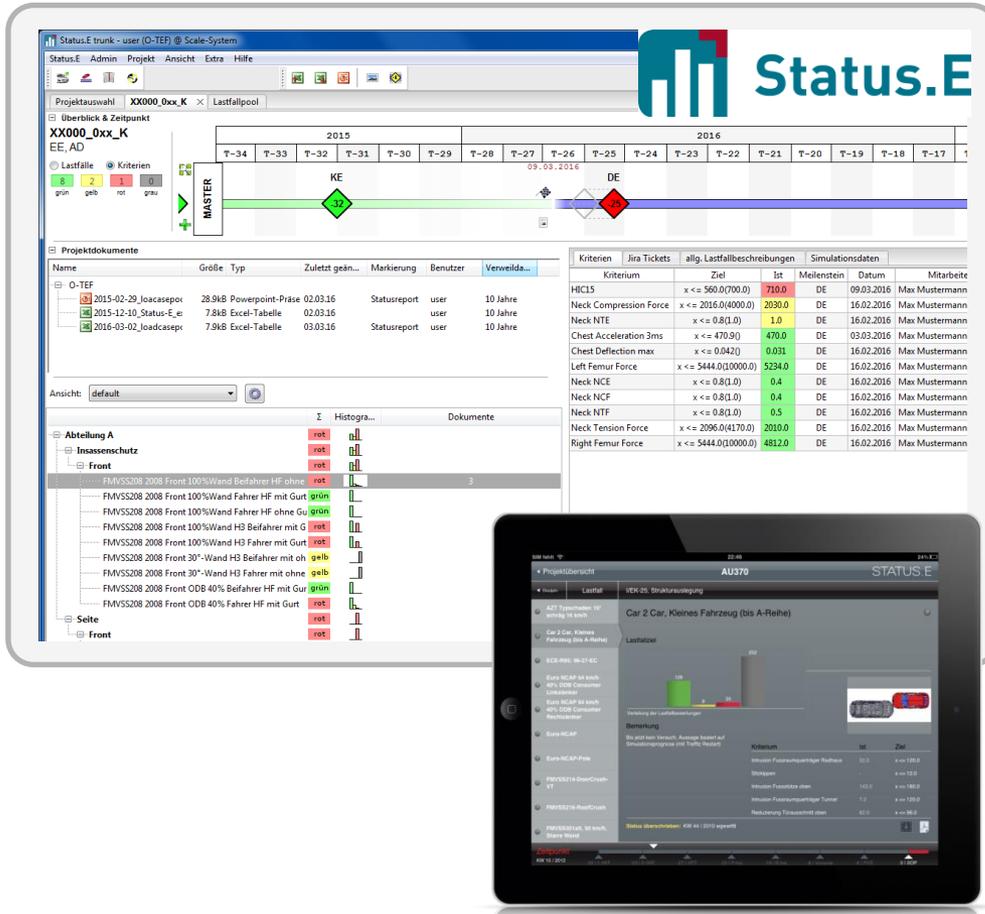
Evaluation & Assessment of simulation and tests, Reporting



Solving / Testing

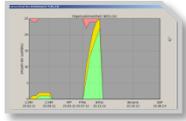
Perform simulation & test





## Characterization

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



## Criteria assessment

Simulation and test driven criteria can be assessed. Integration of 3<sup>rd</sup>-party systems allows automatic assessment.



## Individual observation of project status

Areas of interest can be focused based on criteria attributes.



## Reporting

Monitoring reports can be generated as PPT-slides or shown as live demonstration



## Versioning

Criteria assessment is never lost or overwritten. An optical time line enables the user to jump in time intuitively.



## Documentation

Arbitrary documents can be attached to assessments and become globally accessible (document management system)

# Project Setup: Define Project & Responsibilities



Define Project



Project Milestones



Test Cases  
*(Load Cases)*

The screenshot displays the 'Anlegen eines neuen Projekts' (Create new project) dialog box and the user management interface. The dialog box is titled 'Projekttyp und Bezeichnung:' and includes fields for 'Marke' (AU), 'Segment' (2), 'Generation' (0), 'Bodystyle' (0), 'Bodystyle-Var.' (XX), 'Fertigungsregion' (K), and 'Antriebsart' (K). It also has sections for 'Flags' (Lead Project) and 'Beschreibung und Bild:'. Below the dialog, the user management interface shows a list of users with columns for 'NT-Kenn...', 'Name', 'Organisationsein...', and 'Telefon'. The list includes users like 'dynamore', 'rainer', 'shaura9', 'tklanor', and 'user' under the 'Eigenschaftsentwickler / Projektleiter' role, and 'admin' under the 'PL' role. Buttons for 'Benutzer hinzufügen' and 'Benutzer entfernen' are visible.

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

Define project members and roles

# Project Setup: Milestones



Define Project



Project Milestones



Test Cases

The screenshot shows the Status.E software interface. The top part displays a Gantt chart for project 'XX000\_0xx\_K' with milestones 'KE' (green diamond) and 'DE' (red diamond) on a timeline from 2015 to 2016. Below the Gantt chart is a table of project documents. A dialog box titled 'Anlegen eines neuen Projekts' is open, showing a 'Produktentwicklungsplan' with a list of milestones and their dates.

Name	Größe	Typ	Zuletzt geän...	Markierung	Benutzer	Versi...
2015-02-29_Joacasepor	28.9kB	Powerpoint-Präse	02.03.16	Statusreport		
2015-12-10_Status-E_e	7.8kB	Excel-Tabelle	02.03.16			
2016-03-02_Loadcasepr	7.9kB	Excel-Tabelle	03.03.16			

Kriterium	Ziel	Ist	Milestein	Datum	Max
HIC15	$x \leq 560.0(700.0)$	710.0	DE	09.03.2016	Max
Compression Force	$x \leq 2016.0(4000.0)$	2030.0	DE	16.02.2016	Max
	$x \leq 0.8(1.0)$	1.0	DE	16.02.2016	Max
	$x \leq 470.90$	470.0	DE	03.03.2016	Max
	$x \leq 0.0420$	0.031	DE	16.02.2016	Max
Left Femur Force	$x \leq 5444.0(10000.0)$	5234.0	DE	16.02.2016	Max
Neck NCE	$x \leq 0.8(1.0)$	0.4	DE	16.02.2016	Max
Neck NCF	$x \leq 0.8(1.0)$	0.4	DE	16.02.2016	Max
Neck NTF	$x \leq 0.8(1.0)$	0.5	DE	16.02.2016	Max
Neck Tension Force	$x \leq 2096.0(4170.0)$	2010.0	DE	16.02.2016	Max

Name	Plan-Datum	Referenz
SOP:	KW 10/2016	-
PVS:	KW 37/2015	SOP
VFF:	KW 28/2015	SOP
BF:	KW 37/2014	SOP
DF:	KW 15/2014	SOP
DE:	KW 49/2013	SOP
KE:	KW 23/2013	SOP

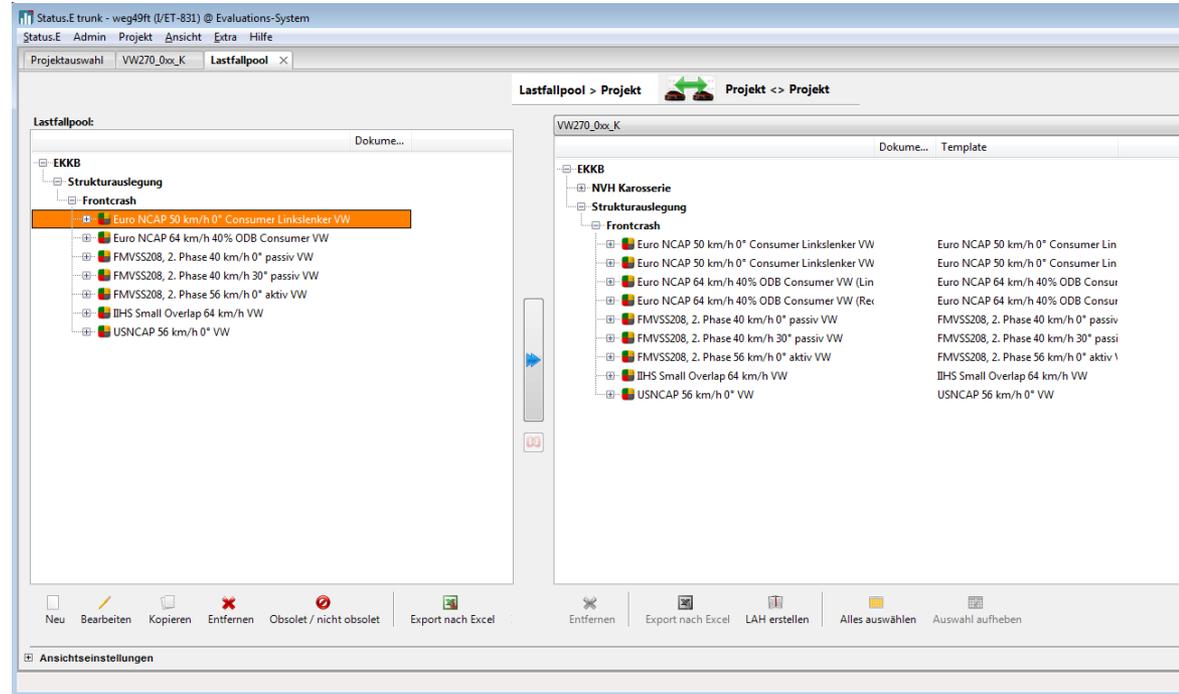
General product milestones and sub milestones for disciplines

# Project Setup: Test Cases and Project Targets



## Test Cases (Pool)

## Test Cases (Project)



Define relevant Test Cases for project from a pool of predefined Test Cases / regulations (per project milestone and discipline)



## Test Case

**Eigenschaften und Attribute**

**Basisattribute**

Name	Euro NCAP 64 km/h 40% ODB Consumer VW
Beschreibung	
Jira-Instanz	
Relax-Id	

**filterbare Attribute**

Region	EU
Derivat	
Fachdisziplin	Strukturauslegung
Funktion/Eigenschaft	Frontcrash
Bauteil	Karosserie
Bauteilgruppe	
Organisationseinheit	EKKB
Konzeptrelevanz	

**Kriterien**

Kriterium	Ampel rot untere Grenze	Ampel gelb untere Grenze	Ist	Ampel gelb obere Grenze	Ampel rot obere Grenze	Einheit
Intrusion Fussraum Insassenrelevanter Bereich (Ferse)				50.0 mm	55.0 mm	mm
Intrusion Fussraum Insassenrelevanter Bereich (Fusspitze)				50.0 mm	55.0 mm	mm
Intrusion Modulquerträger Mitte FS in X				20.0 mm	22.0 mm	mm
Stirnwandintrusion (im Bereich Kneearbagmodul)				80.0 mm	88.0 mm	mm
Strukturintegrität qualitative Kriterien						Ampel
Türausschnittsreduzierung				10.0 mm	11.0 mm	mm
Verschiebung Fussstütze oben				45.0 mm	49.5 mm	mm
Verschiebung Fussstütze unten				30.0 mm	33.0 mm	mm
Verschiebung Pfosten Δ				20.0 mm	22.0 mm	mm

**Lastfallbeschreibungen**

Name	Größe	Typ	Zuletzt geändert am
Euro_NCAP_ODB.ppt	464.0kB	Powerpoint-Präsentation	29.07.15

### Description

- Name
- Icon

### Attributes

- Test Case characterization and classification

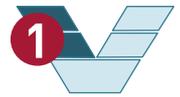
### Criteria

- Limits
- Units
- default values (project specific adjustment possible)

### Documentation

- Files for general Test Case description
- read-only access in project view

# Project Setup: Test Cases and Project Targets



**Define test cases and aggregation scheme**

**Lastfälle zum Projekt hinzufügen - OE-Auswahl**

An dieser Stelle haben Sie die Möglichkeit, die Organisationseinheit der in das Projekt hinzuzufügenden Lastfälle einzustellen sowie sich für mehrere Varianten eines Lastfalls zu entscheiden. Des Weiteren können Kriterien per Rechtsklick markiert werden, um diese nicht ins Projekt zu übernehmen.

Lastfall / Kriterium	Template-OE	OE im Projekt	Varianten
FMVSS208 OOP HF-Driver	Abteilung B	O-TEF	Variante A, Variante B
FMVSS208 OOP Y2-Passenger	Abteilung B	O-TEF	Variante A, Variante B
FMVSS208 OOP Y6-Passenger	Abteilung B	O-TEF	Variante A, Variante B
FMVSS208 OOP Y7-Passenger	Abteilung B	O-TEF	Variante A, Variante B

Alle Lastfälle auf folgende Organisationseinheit setzen:

Alle Lastfälle mit folgenden Varianten ausdragen:

[OE's der Templates für Projekt beibehalten](#)

Abbrechen OK

**Lastfallbewertung zum 01.02.2017**

**FMVSS208 2008 Front 100%Wand Beifahrer HF ohne C**

Kriterium	Ampel rot untere Grenze	Ampel gelb untere Grenze	Ist	Ampel gelb obere Grenze
Chest Acceleration 3ms			490.0	470.9
Neck Compression Force			2030.0	2016.0
Neck NTE			1.0	0.8
Chest Deflection max			0.031	0.042

**Define single test cases criterias and project targets & techn. criteria Ids for automatic tracking**

# Project Setup: Finished



**Projekttauswahl** XX000\_0xx\_K x Lastfallpool

**Überblick & Zeitpunkt**  
XX000\_0xx\_K  
EE, AD

09.03.2016

**Projekt Dokumente**

Name	Größe	Typ	Zuletzt geän...	Markierung	Benutzer	Verweilda...
O-TEF						
2015-02-29_loacasepor	28.9kB	Powerpoint-Präse	02.03.16	Statusreport	user	10 Jahre
2015-12-10_Status-E_e	7.8kB	Excel-Tabelle	02.03.16		user	10 Jahre
2016-03-02_loadcasepr	7.9kB	Excel-Tabelle	03.03.16	Statusreport	user	10 Jahre

Ansicht: default

Abteilung	Σ	Histogra...	Dokumente
Abteilung A	rot		
Insassenschutz	rot		
Front	rot		
FMVSS208 2008 Front100%Wand Beifahrer HF ohne	rot		3
FMVSS208 2008 Front100%Wand Fahrer HF mit Gurt	grün		
FMVSS208 2008 Front100%Wand Fahrer HF ohne Gu	grün		
FMVSS208 2008 Front100%Wand H3 Beifahrer mit G	rot		
FMVSS208 2008 Front100%Wand H3 Fahrer mit Gurt	rot		
FMVSS208 2008 Front30*-Wand H3 Beifahrer mit oh	gelb		
FMVSS208 2008 Front30*-Wand H3 Fahrer mit ohne	gelb		
FMVSS208 2008 Front ODB 40% Beifahrer HF mit Gur	grün		
FMVSS208 2008 Front ODB 40% Fahrer HF mit Gurt	rot		
Seite	rot		
Front	rot		
FMVSS208 2008 Front100%Wand Beifahrer HF mit G	rot		1
Abteilung B	rot		
O-TEF	grau		

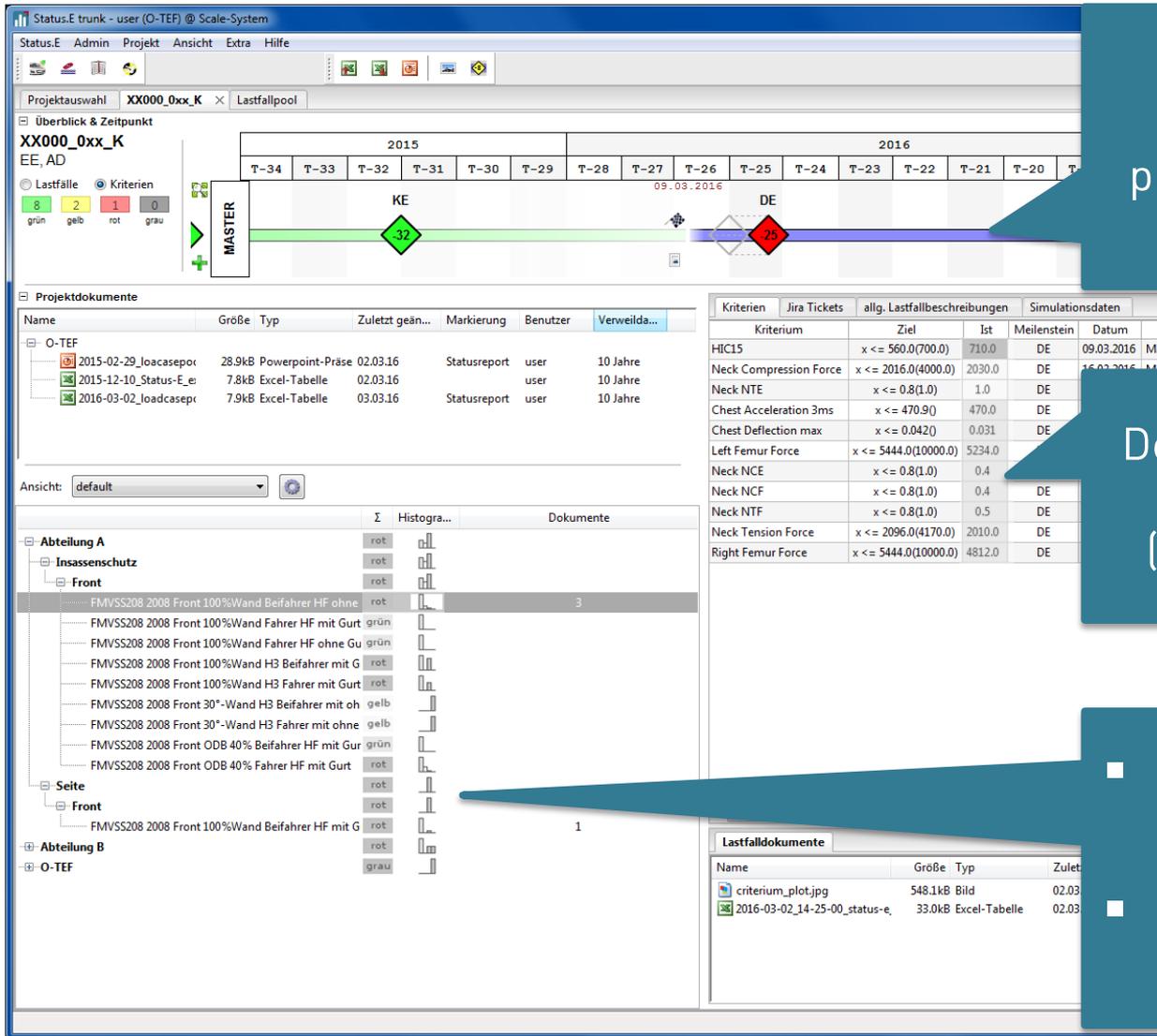
**Kriterien**

Kriterium	Ziel	Ist	Meilenstein	Datum	Max
HIC15	x <= 560.0(700.0)	710.0	DE	09.03.2016	Max
Neck Compression Force	x <= 2016.0(4000.0)	2030.0	DE	16.02.2016	Max
Neck NTE	x <= 0.8(1.0)	1.0	DE	16.02.2016	Max
Chest Acceleration 3ms	x <= 470.9(0)	470.0	DE	03.03.2016	Max
Chest Deflection max	x <= 0.042(0)	0.031	DE	16.02.2016	Max
Left Femur Force	x <= 5444.0(10000.0)	5234.0	DE	16.02.2016	Max
Neck NCE	x <= 0.8(1.0)	0.4	DE	16.02.2016	Max
Neck NCF	x <= 0.8(1.0)	0.4	DE	16.02.2016	Max
Neck NTF	x <= 0.8(1.0)	0.5	DE	16.02.2016	Max
Neck Tension Force	x <= 2096.0(4170.0)	2010.0	DE	16.02.2016	Max
Right Femur Force	x <= 5444.0(10000.0)	4812.0	DE	16.02.2016	Max

**Lastfalldokumente**

Name	Größe	Typ	Zuletzt geändert am
criterium_plot.jpg	548.1kB	Bild	02.03.16
2016-03-02_14-25-00_status-e	33.0kB	Excel-Tabelle	02.03.16

# Verification: Monitor & Report Project Status

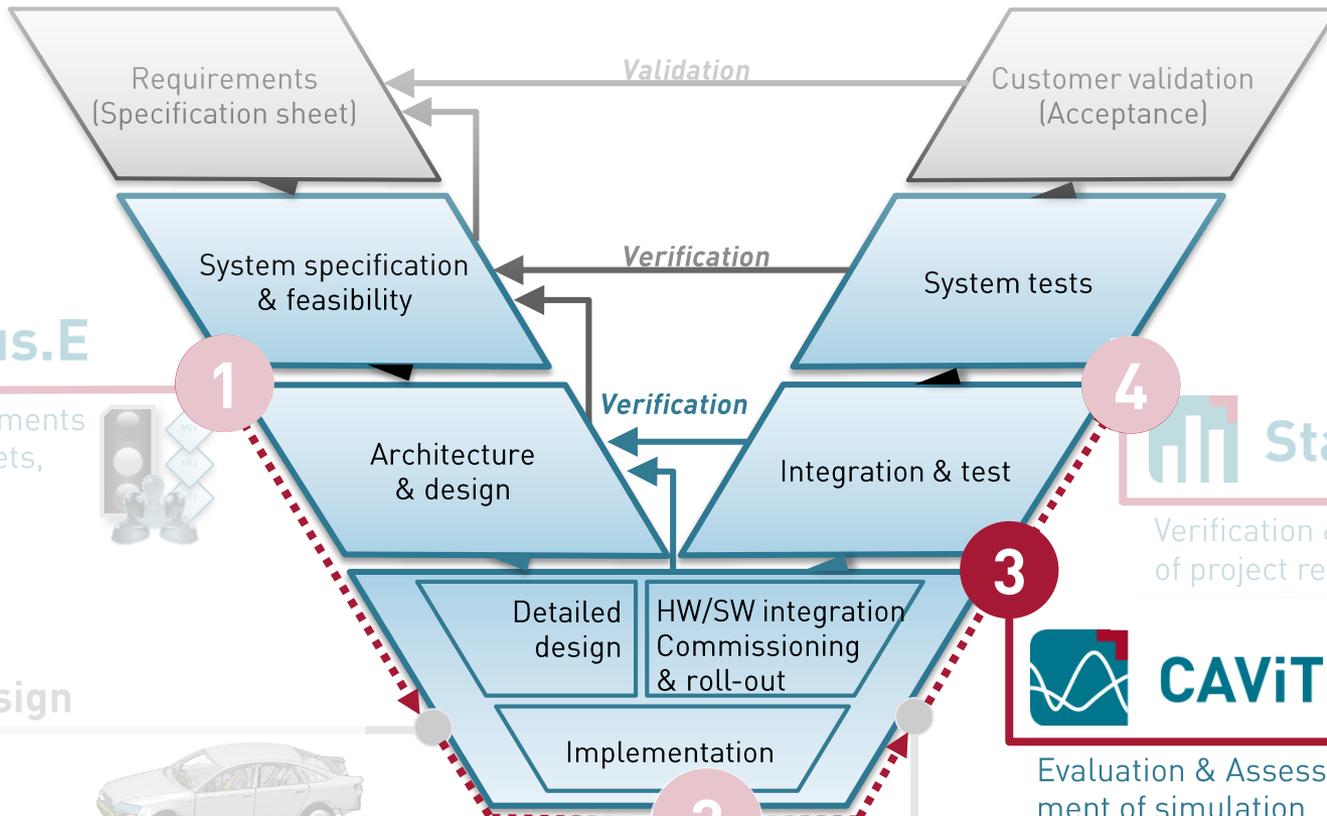


Report status for project milestone or date

Detailed view of individual test case criteria (e.g. reported by CAViT)

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

# CAViT: Evaluation, Assessment and Reporting



Setup of requirements and project targets, milestones and responsibilities



Verification & monitoring of project requirements



Detailed design

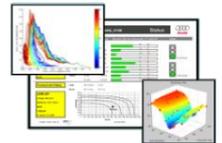
CAD / DMU



Setup of simulation models and test prototypes



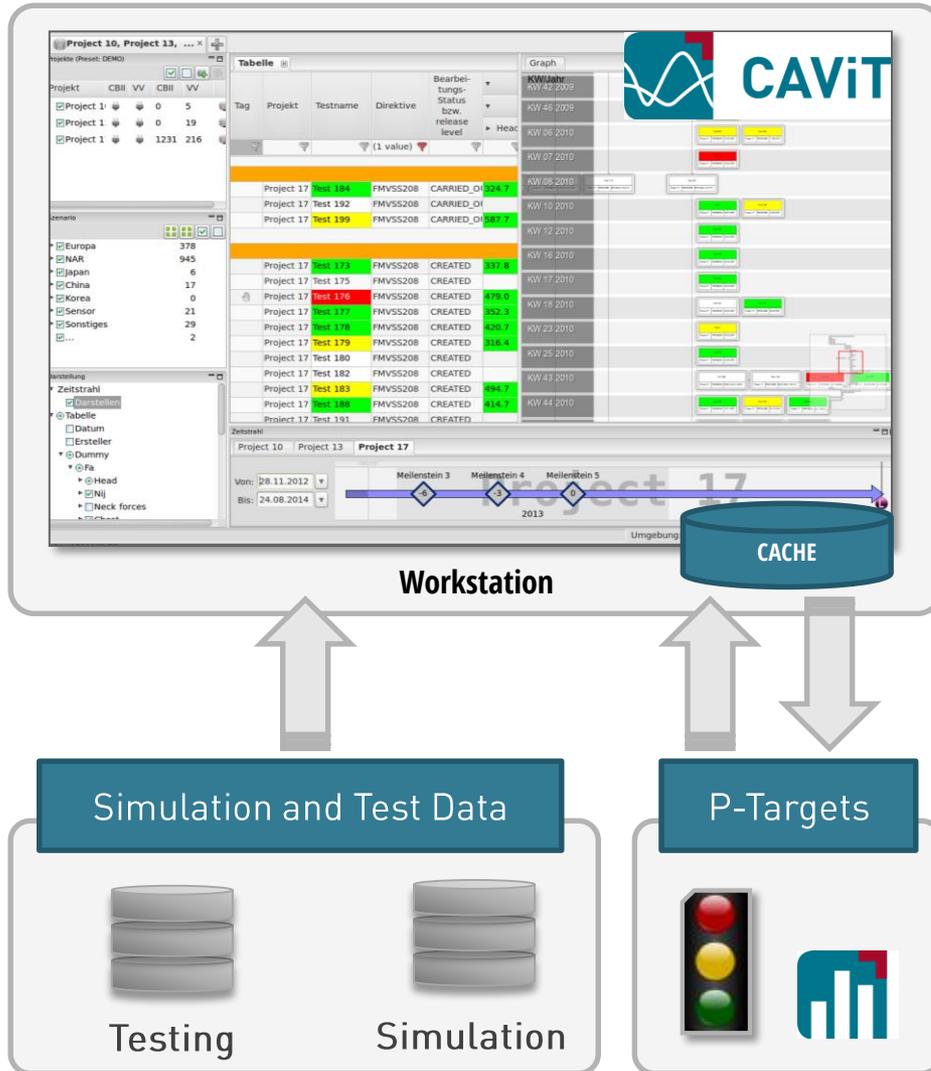
Evaluation & Assessment of simulation and tests, Reporting



Solving / Testing

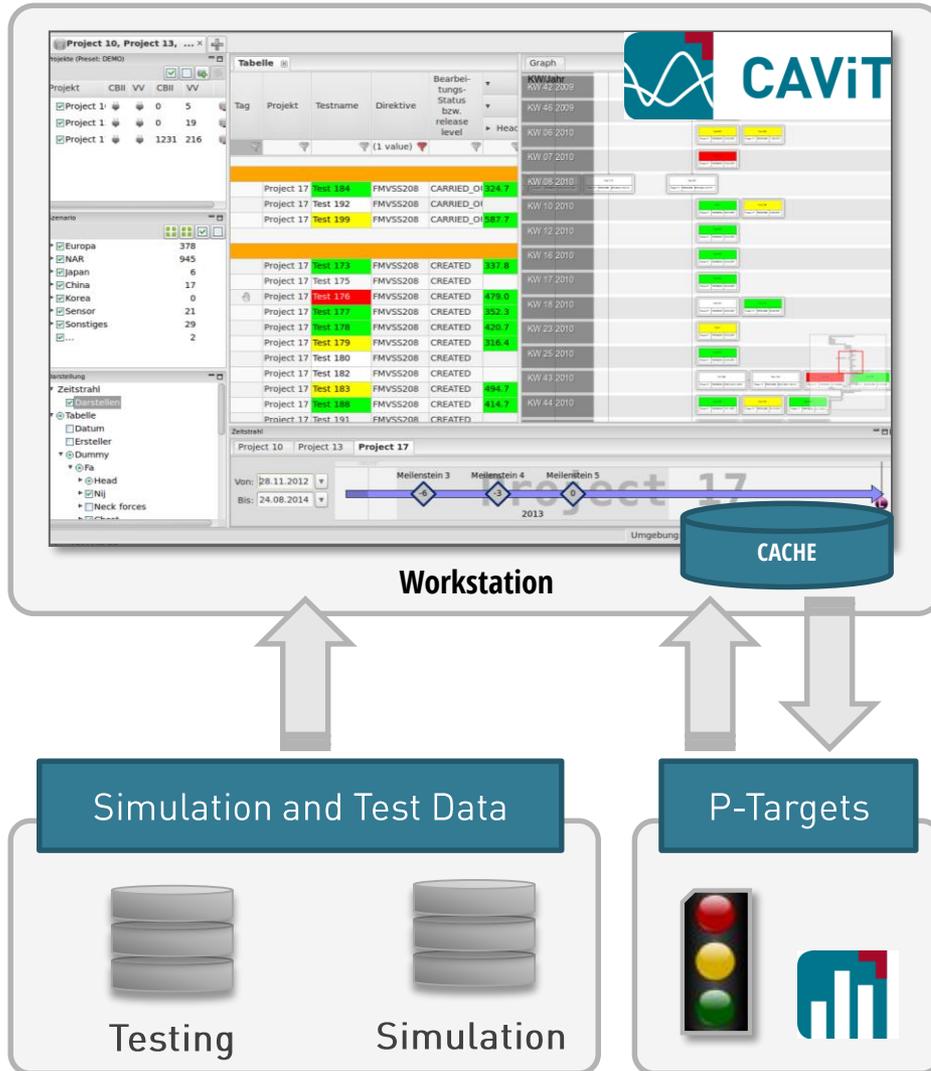
Perform simulation & test





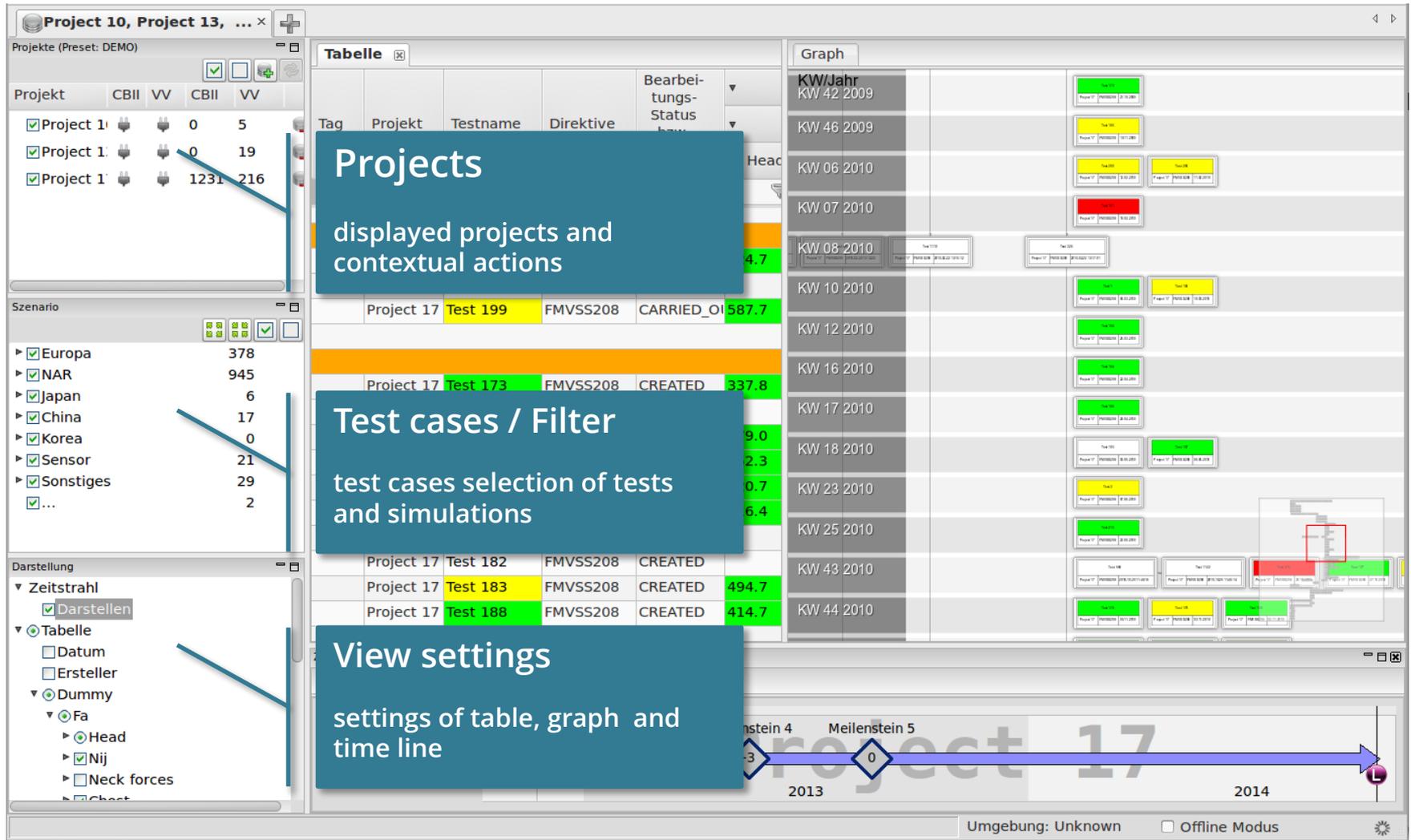
## Characterization

- 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



## 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



The screenshot displays the SCALE GUI interface, divided into several functional areas:

- Projects (left sidebar):** A list of projects with columns for 'Projekt', 'CBII', and 'VV'. Three projects are listed, with the third having 1231 CBII and 216 VV.
- Szenario (left sidebar):** A tree view of scenarios including 'Europa' (378), 'NAR' (945), 'Japan' (6), 'China' (17), 'Korea' (0), 'Sensor' (21), and 'Sonstiges' (29).
- Darstellung (left sidebar):** View settings for 'Zeitstrahl' (Timeline), including 'Darstellen' (checked), 'Tabelle' (selected), and 'Datum' (unchecked).
- Table (center):** A table with columns 'Tag', 'Projekt', 'Testname', 'Direktive', and 'Bearbeitungs-Status'. It lists test cases for Project 17, such as Test 199 (FMVSS208, CARRIED\_OI, 587.7), Test 173 (FMVSS208, CREATED, 337.8), Test 182 (FMVSS208, CREATED), Test 183 (FMVSS208, CREATED, 494.7), and Test 188 (FMVSS208, CREATED, 414.7).
- Graph (right):** A Gantt chart showing test case execution over time, with rows for 'KW/Jahr' (Week/Year) from 2009 to 2010. Test cases are represented by colored bars (green, yellow, red).
- Timeline (bottom):** A horizontal timeline for 'Meilenstein 4' and 'Meilenstein 5' in 2013 and 2014, with a blue arrow indicating a duration.

Three blue callout boxes provide additional context:

- Projects:** displayed projects and contextual actions
- Test cases / Filter:** test cases selection of tests and simulations
- View settings:** settings of table, graph and time line

**Project 10, Project 13, ...**

Projekte (Preset: DEMO)

Projekt	CBII	VV	CBII	VV
Project 1	0	5		
Project 1	0	19		
Project 1	1231	216		

Szenario

- Europa: 378
- NAR: 945
- Japan: 6
- China: 17
- Korea: 0
- Sensor: 21
- Sonstiges: 29
- ...: 2

Darstellung

- Zeitstrahl
  - Darstellen
  - Tabelle
  - Datum
  - Ersteller
  - Dummy
    - Fa
      - Head
      - Nij
      - Neck forces
      - Chest

**Tabular view of tests and simulations**

Tag	Projekt	Testname	Direktive	Bearbeitungs-Status bzw. release level	Value
	Project 17	Test 184	FMVSS208	CARRIED_OI	324.7
	Project 17	Test 192	FMVSS208	CARRIED_OI	
	Project 17	Test 199	FMVSS208	CARRIED_OI	587.7
	Project 17	Test 173	FMVSS208	CREATED	337.8
	Project 17	Test 175	FMVSS208	CREATED	
	Project 17	Test 176	FMVSS208	CREATED	
	Project 17	Test 177	FMVSS208	CREATED	
	Project 17	Test 178	FMVSS208	CREATED	
	Project 17	Test 179	FMVSS208	CREATED	
	Project 17	Test 180	FMVSS208	CREATED	
	Project 17	Test 182	FMVSS208	CREATED	
	Project 17	Test 183	FMVSS208	CREATED	
	Project 17	Test 188	FMVSS208	CREATED	414.7
	Project 17	Test 191	FMVSS208	CREATED	

**Graph view of tests and simulations**

**Zeitstrahl**

Project 10 | Project 13 | **Project 17**

Von: 28.11.2012 | Bis: 24.08.2014

Meilenstein 3 (-6) | Meilenstein 4 (-3) | Meilenstein 5 (0)

2013 | 2014

Umgebung: Unknown | Offline Modus

CAViT - V2.

CAViT Ansicht Extra Hilfe

Sitzungen Mitteilungs-Konsole

Project106 Project106 x Project106

Seitenschutz (ver. 1.1.9)

- Projekte 71
  - Project106 71
    - CAE-Bench 25
    - VisVerdi/Falcon 46
  - Ordner

Szenario

- RdW Gesetz 5
  - ECER95 Barriere 5
- RdW Consumer 24
  - EuroNCAP 2014 18
  - EuroNCAP 2015 2
  - JapanNCAP 1
  - ChinaNCAP 2
  - KoreaNCAP 0
  - AE-MDB Barriere 1
- NAR Gesetz 6
  - FMVSS214 Barriere 1
  - FMVSS214 Pfahl E52re 3
  - FMVSS214 Pfahl SID2s 1
  - FMVSS214 Pfahl WS 50% 0
  - FMVSS214 Pfahl WS 5% 0

Tabellenkonfiguration

- Name
- Versuchsgrund
- Label
- Datum
- Allgemeine-Info
- Versuchs-Info
- Simulations-Info
- Insassen
  - vorne
  - DUMMY Typ

Property panel

Visualization of simulation / test data

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

Eigenschaften

Test\_5134 (93 Elemente)

Isocode	Name	Wert
B_Saeule_mitte.picture.png	B_Saeule_oben.picture.png	37,5 kB
B_Saeule_unten.picture.png	C_Saeule_ob.picture.png	31,8 kB
C_Saeule_un.picture.png	Fersenblech.picture.png	19,7 kB
ont_Occupant_Rating.picture.png	Rear_Occupant_Rating.picture.png	132,7 kB
Schweller_SQT.picture.png	Sitz_vo_Lehne.picture.png	41,7 kB

Name	Wert	Wert	Wert	Wert
Test_5281				
Test_5274				
Test_5250	42.7	19.2	675.3	
Test_5251	34.0	1.2	676.8	
Test_5270				
Test_5252	429.2	1276.1	1227.0	51.4
Test_5253				
377	23.0	314.8	15.9	261.5

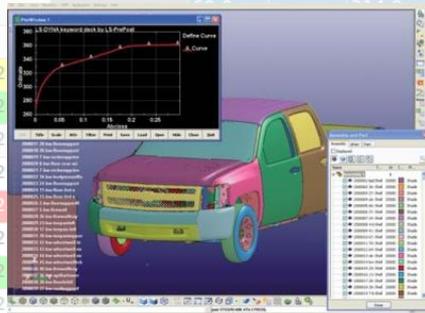
# Evaluation: Access Result Data



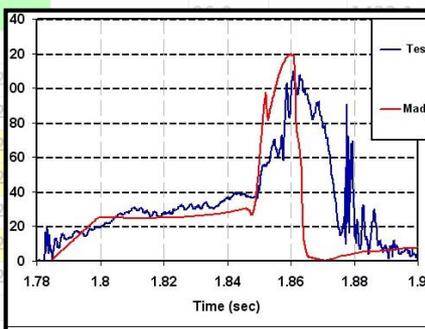
Access and open movies and media data with external viewers



Integration of Postprocessors: Analyze simulation results



Quick preview of curves and measure data and documents



Eigenschaften

Search

Isocode	Name	Wert
<b>Test_5134 (93 Elemente)</b>		
	B_Saeule_mitte.picture.png	32,5 kB
	B_Saeule_oben.picture.png	37,5 kB
	B_Saeule_unten.picture.png	42,7 kB
	C_Saeule_ob.picture.png	31,8 kB
	C_Saeule_un.picture.png	20,6 kB
	Fersenblech.picture.png	19,7 kB
	Front_Occupant_Rating.picture.png	131,7 kB
	Rear_Occupant_Rating.picture.png	132,7 kB
	Schweller_SQT.picture.png	17,3 kB
	Sitz_vo_Lehne.picture.png	41,7 kB

# Evaluation & Reporting: Run Tools and Reports



## Extensive support for Reporting

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

## Extendable via plugins

Flexible customization

CAViT - V2.

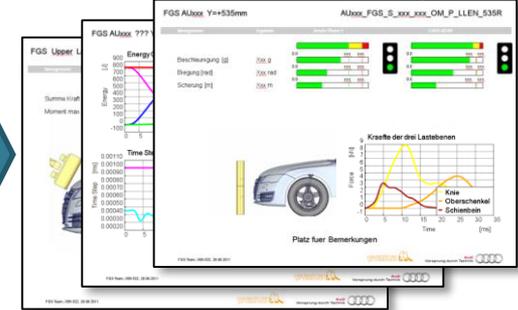
ct106

Table

Tag	Variante	Bewertung	Kopf	Hals	Schulter	Rippen
Test_5258						
Test_5497						
★ 377		69.0		314.9	18.6	402.6
377		222.4				40.5
Test_5244		244.0	811.6	654.5		31.1
Test_5245						
Test_5283						
Test_5269						
Test_5246		521.5			28.4	170
Test_5265						
Test_5247						24.5
Test_5282						
Test_5264						
377			1		25.1	562.1
377						30.1
Test_5281						
Test_5274						
Test_5250						19.2
Test_5251						1.2
Test_5270						
Test_5252		429.2	1276.1	1227.0		51.4
Test_5253						
377		23.0		314.8		15.9

Werkzeuge...  
Kennzeichnen als...  
Bewerten  
Auswahl neu laden...  
Ausblenden...  
Zu Ordner hinzufügen...

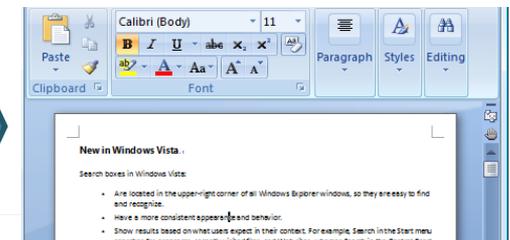
## [PDF/PPTs Reports]



## [Video Overlay]

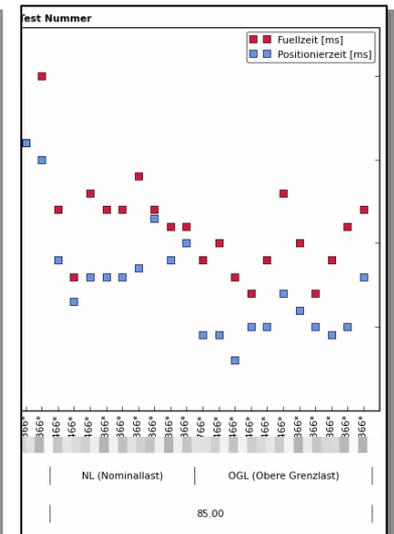
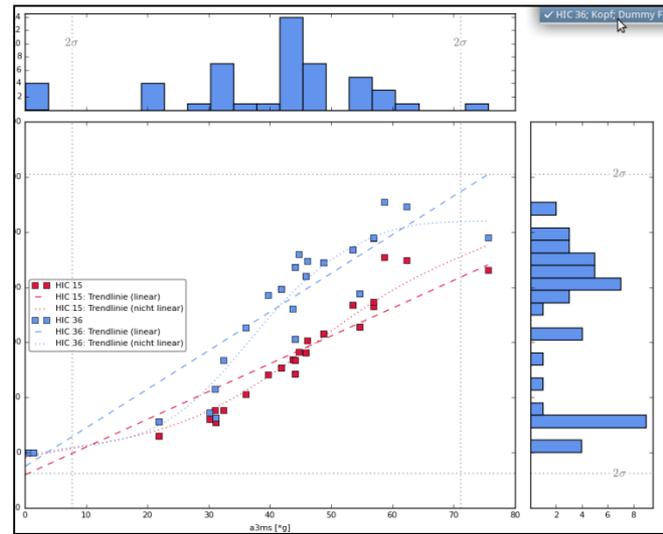


## [docx Reports]



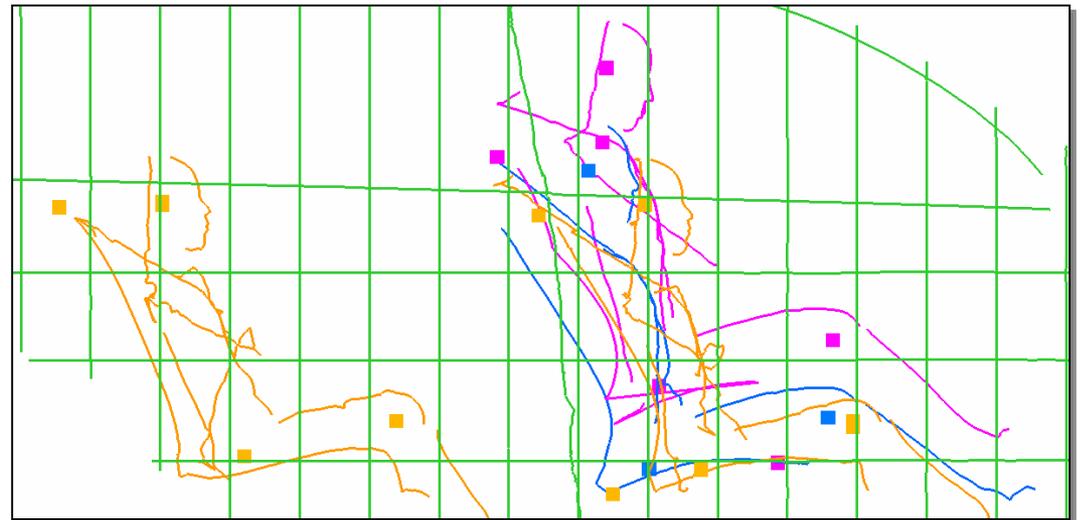
## PlugIn Example #1 Plotting

- Trend analysis
- Statistical parameters



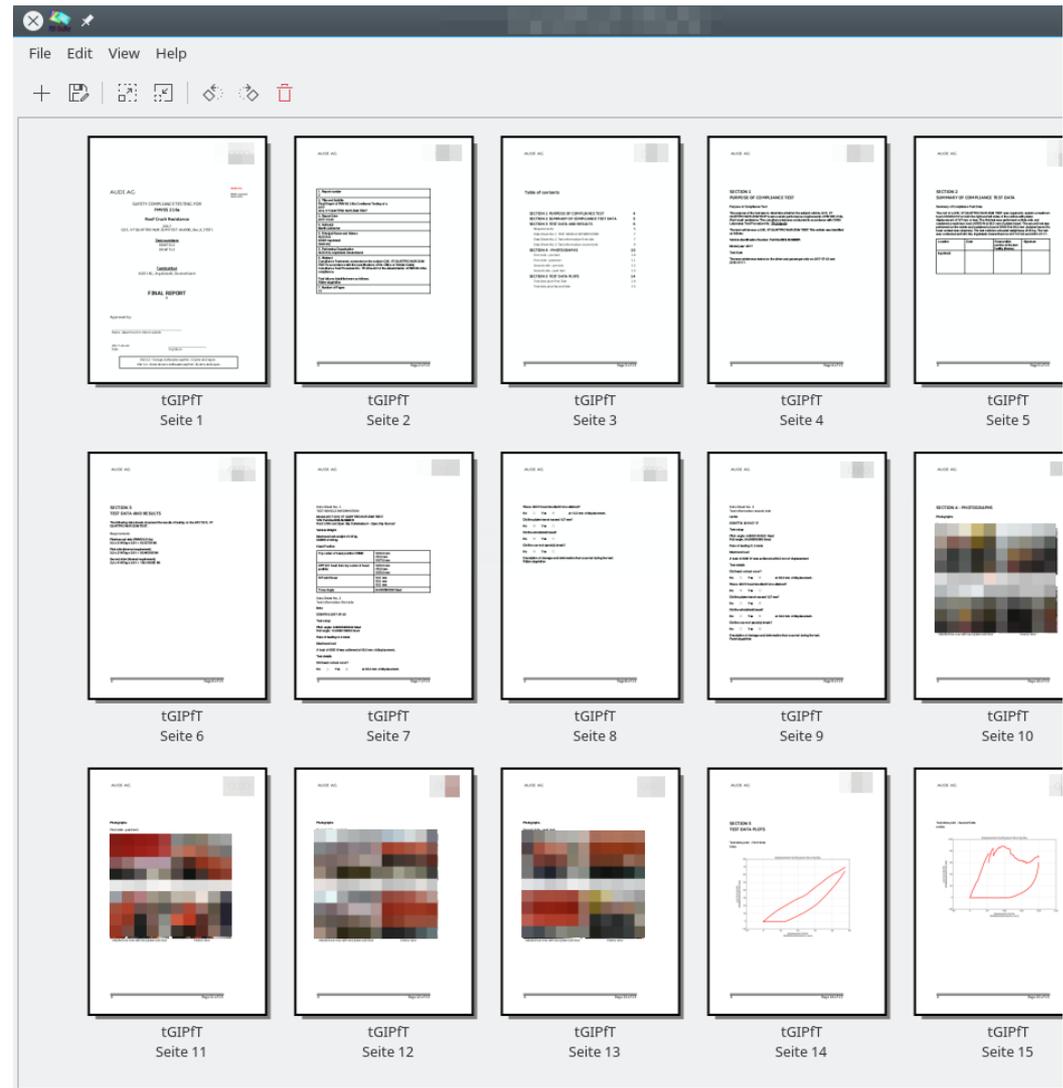
## PlugIn Example #2 Compare Dummy Positioning

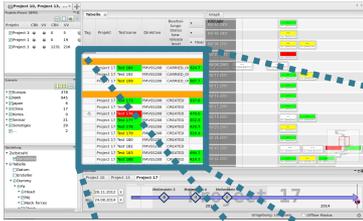
test vs. simulation



## PlugIn Example #3 Document Report

- Generates full test report for Directives [e.g. FMVSS]
- Includes data checks
- Comparison of test results vs. Requirements
- Compilation of the documents, including appendix [e.g. techn. specs.]





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

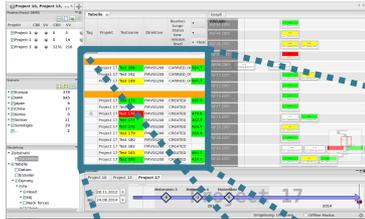
Kriterium	Ampel rot untere Grenze	Ampel gelb untere Grenze	Ist	Ampel rot Grenze
Chest Acceleration 3ms			490.0	4
Neck Compression Force			2030.0	20
Neck NTE			1.0	
Chest Deflection max			0.031	0

Tabelle

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

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

# 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**

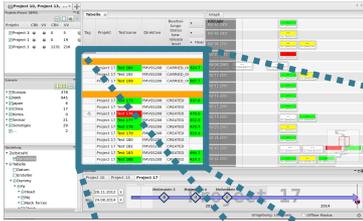
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		(1 value)																		
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Project 17	Test		SULTS_LI	265.5	0.259	199.6	-3663.381	298.4	0.209	1331.546	295.0	-3137.337								
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# CAViT: Evaluation, 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**

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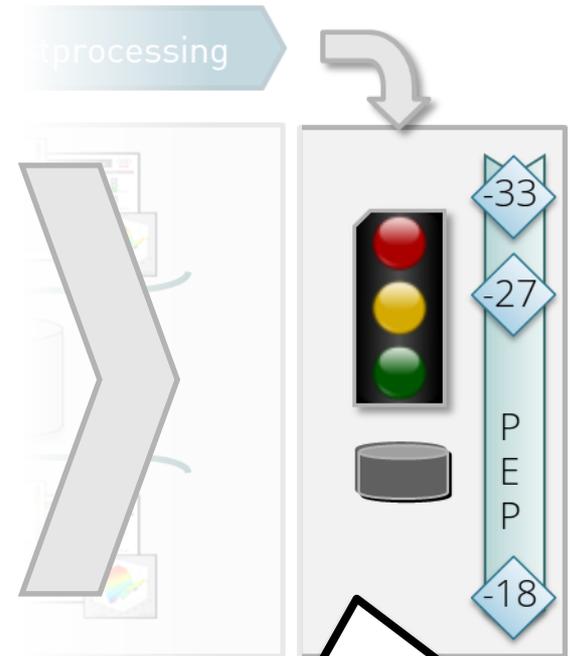
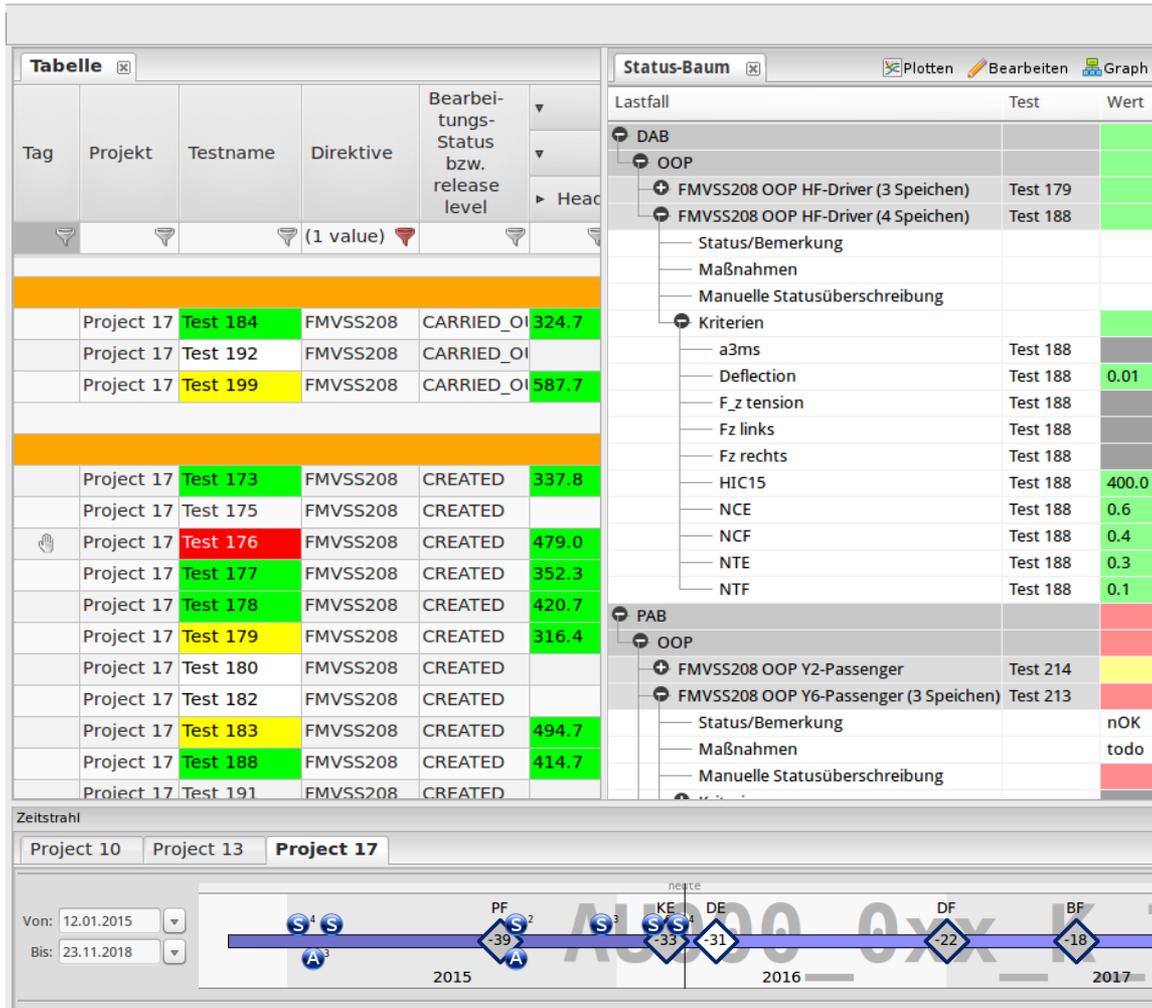
manual rating of test or simulation

suggested (aggregated) rating

Tag	Projekt	Testname	Direktive	Bearbeitungs-Status bzw. release level	Dummy									
					Fa					Bf				
					Head	Nij	Chest	Femur forces	Head	Nij	Neck forces	Chest	Femur f	
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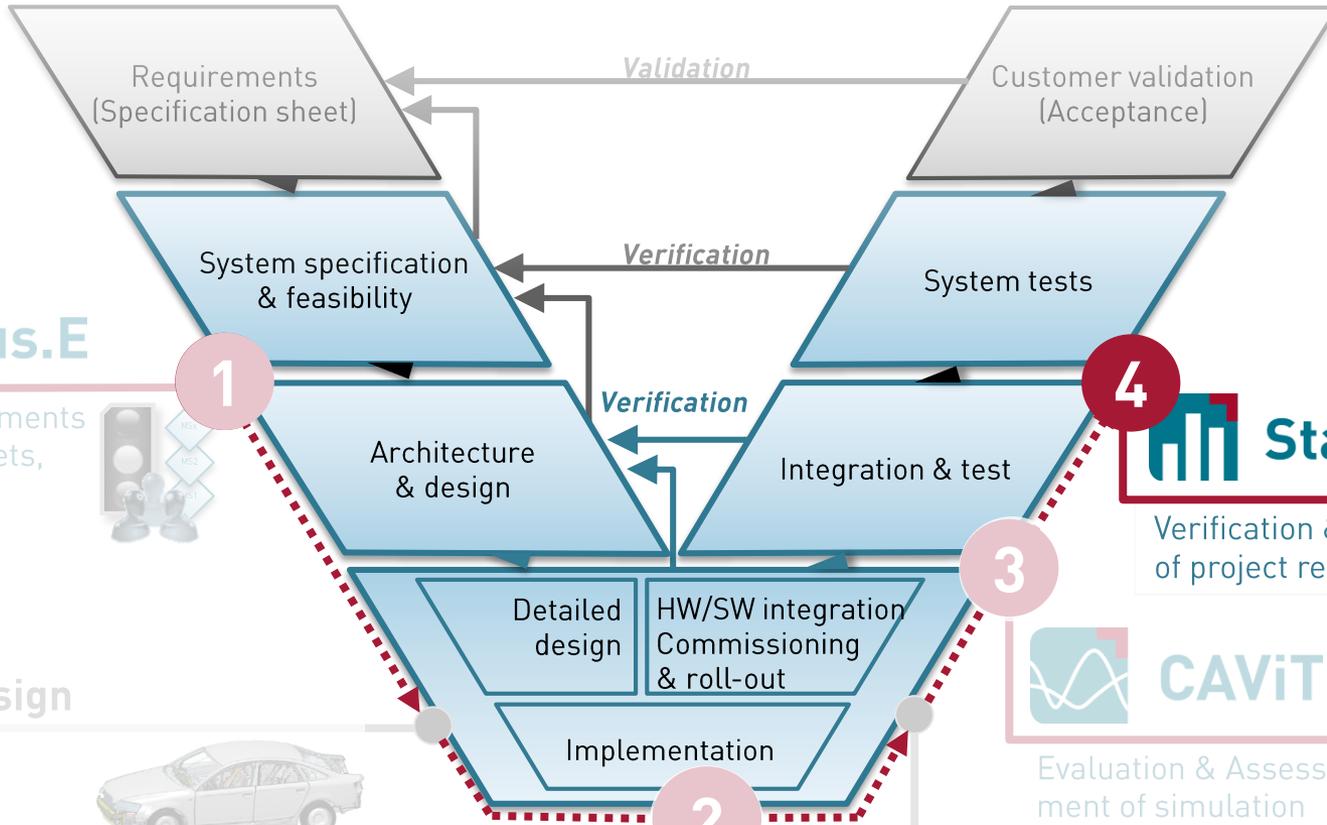


# CAViT: Evaluation, Assessment and Reporting



Report to Monitoring Application

# Status.E: Project Monitoring and Reporting



Setup of requirements and project targets, milestones and responsibilities



Verification & monitoring of project requirements

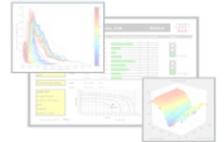


Detailed design

CAD / DMU



Evaluation & Assessment of simulation and tests, Reporting



Setup of simulation models and test prototypes

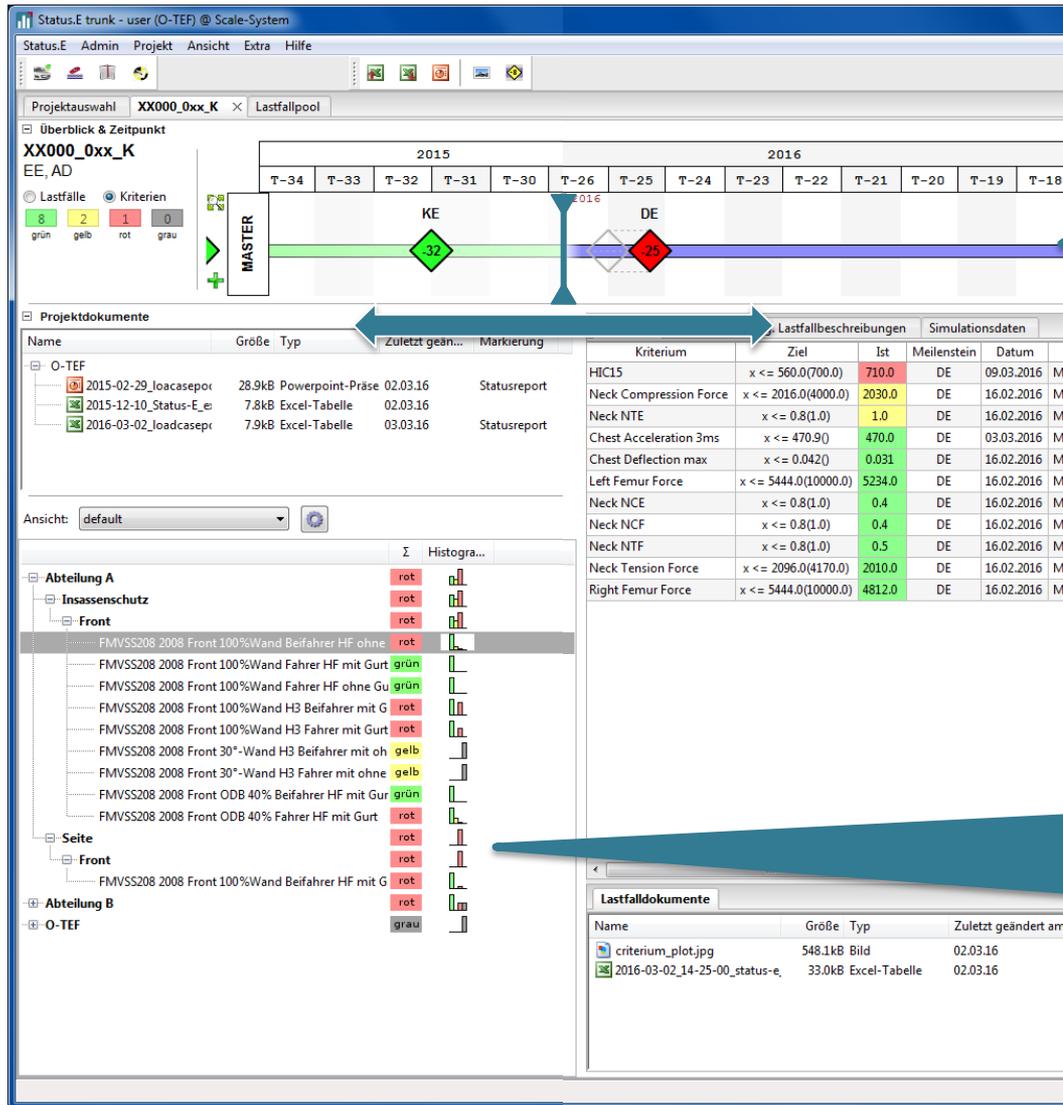


Solving / Testing

Perform simulation & test



# Verification: Monitor & Report Project Status



Report status for project milestone or date

Detailed view of individual test case criteria Imported from CAViT

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

# Tasks: Monitor & Report Project Status



- Task management system integration
  - Tickets can be generated and tracked per requirement

The screenshot displays a software interface for monitoring project status. The main window shows a table of test results for a crash test (Lastfallbewertung zum 22.11.2017). The table has columns for 'Kriterium', 'Ampel rot untere Grenze', 'Ampel gelb untere Grenze', 'Ist', 'Ampel gelb obere Grenze', 'Ampel rot obere Grenze', 'Einheit', 'Nutzer', 'Datum', 'Versuchsträger', 'Kommentar', and 'Jira'. A 'Ticket' button is visible in the 'Jira' column for the 'Head Acceleration (3ms)' row.

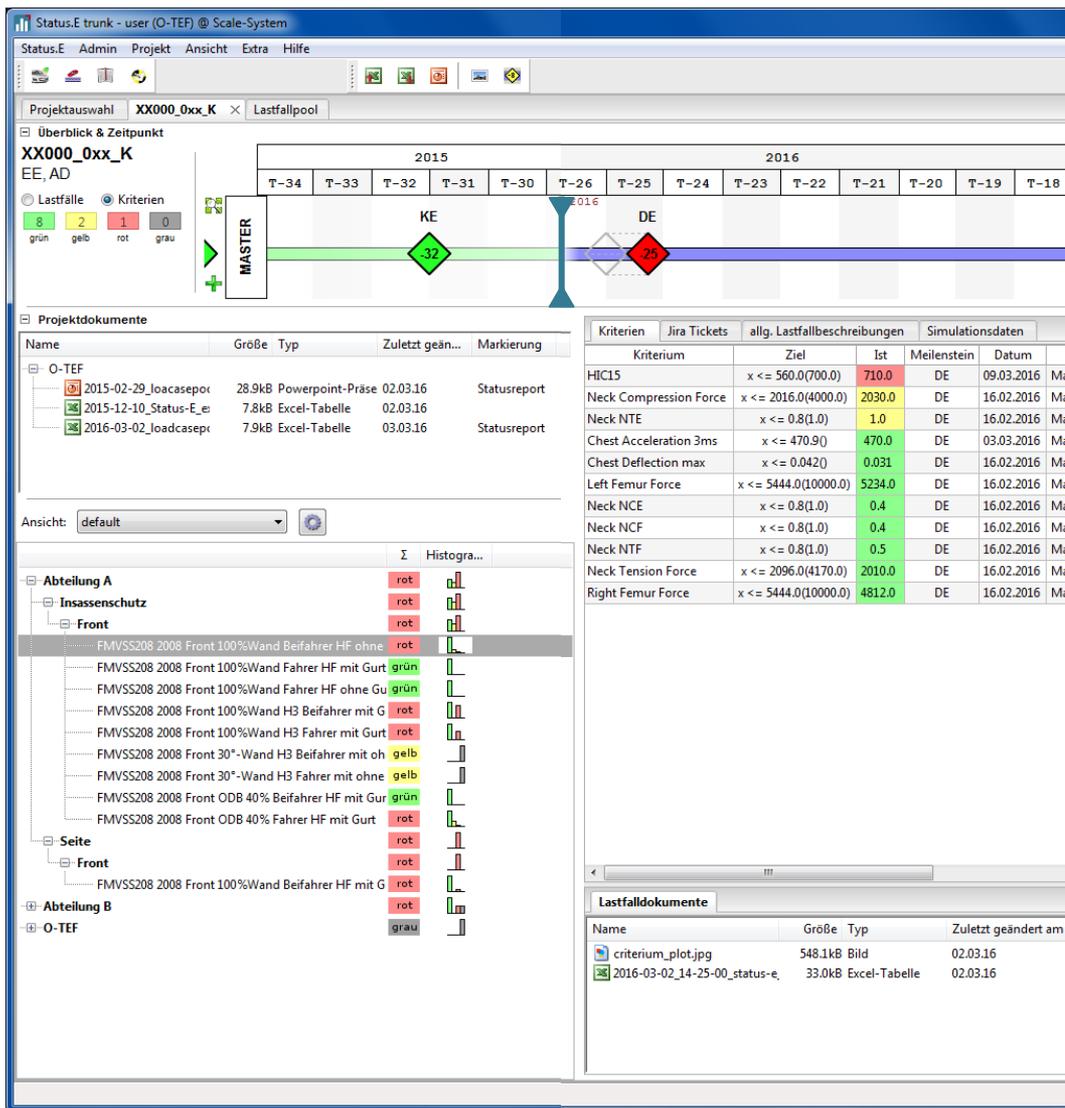
Below the table, a dialog box titled 'Neues Ticket erstellen' is open. It contains the following fields:

- Issue-Typ: Arbeitspaket
- Zusammenfassung: Frontklappe - Vorgabe 01b - Länge des umgebördelten Falzes
- Priorität: Mittel
- Fahrzeugprojekt: [Dropdown]
- Fahrzeugvariante: [Dropdown]
- Komponente: Karosserie
- Betrifft Version: SOP
- Problemdetaillierung: [Text area]
- Bearbeiter: [Dropdown]
- Quelle: [Text field]
- Bauteil: [Text field]
- Dokument: [Text area]

Buttons at the bottom of the dialog include '< Back', 'Finish', and 'Cancel'.

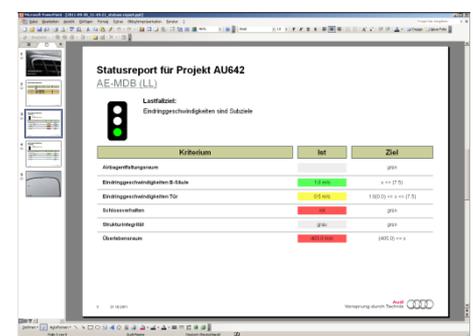
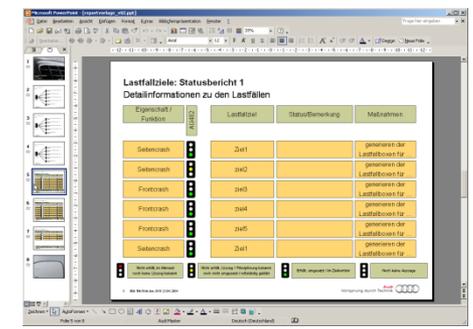
- Assign Tickets to Requirements and follow the status
- Tickets and the further process are handled by an external ticket system (e.g. JIRA)

# Verification: Monitor & Report Project Status

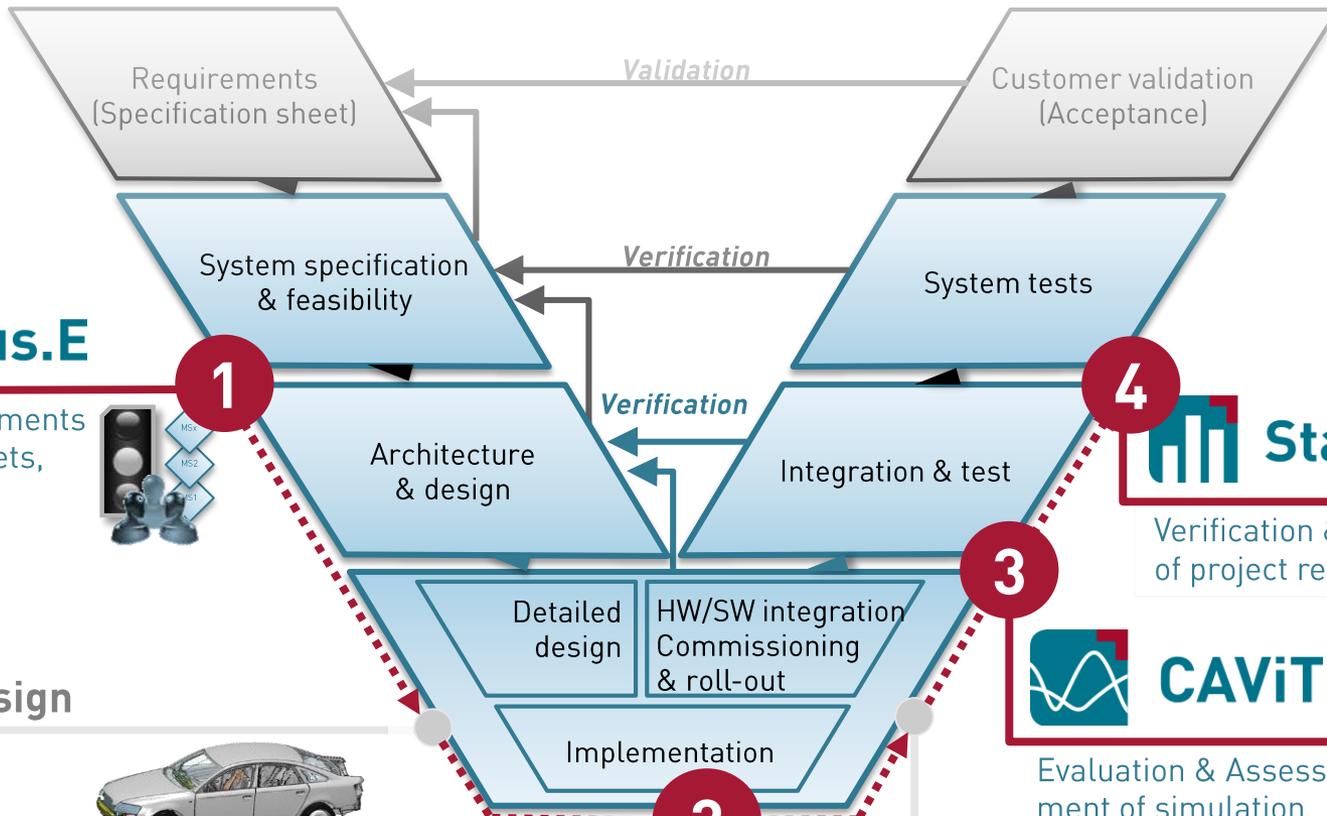


Generation of project status slides

[PPTX]



# Systems Engineering Process



Setup of requirements and project targets, milestones and responsibilities



Verification & monitoring of project requirements

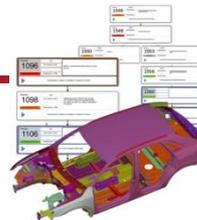


## Detailed design

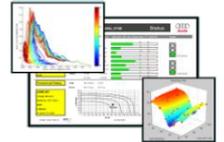
CAD / DMU



Setup of simulation models

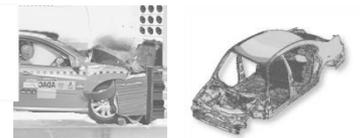


Evaluation & Assessment of simulation and tests, Reporting



## Solving / Testing

Perform simulation & test



Vielen Dank!

SCALE 