

openMDM[®] as base for the test data management for validation and homologation of autonomous driving functions

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Peak Solution – About us

Motivation

OpenMDM[®] as base for ADAS / AD test data management

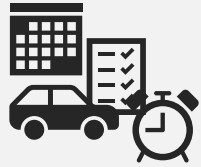
Glimps on a possible solution

Next steps



Peak Solution – About us

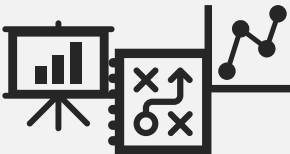
Peak Solution – Your partner for comprehensive test field management



Test management

- Resource management
- Test order management
- Task management
- Test planning

Test execution by specific test providers



Data analytics

- Management of analysis scripts
- Conduction of evaluation
- Test coverage

Measurement data management

- Data ingestion
- Data retrieval
- Data exchange



 ASAM ODS

Test management

Peak Solution enables you to transparently plan and control all your test activities and resources in your automotive test labs globally.

Measurement data management

Peak Solution offers you an open, flexibly adaptable platform that enables you to save test data from different sources in a standardized (ASAM ODS) way and to search, document and evaluate it locally and globally

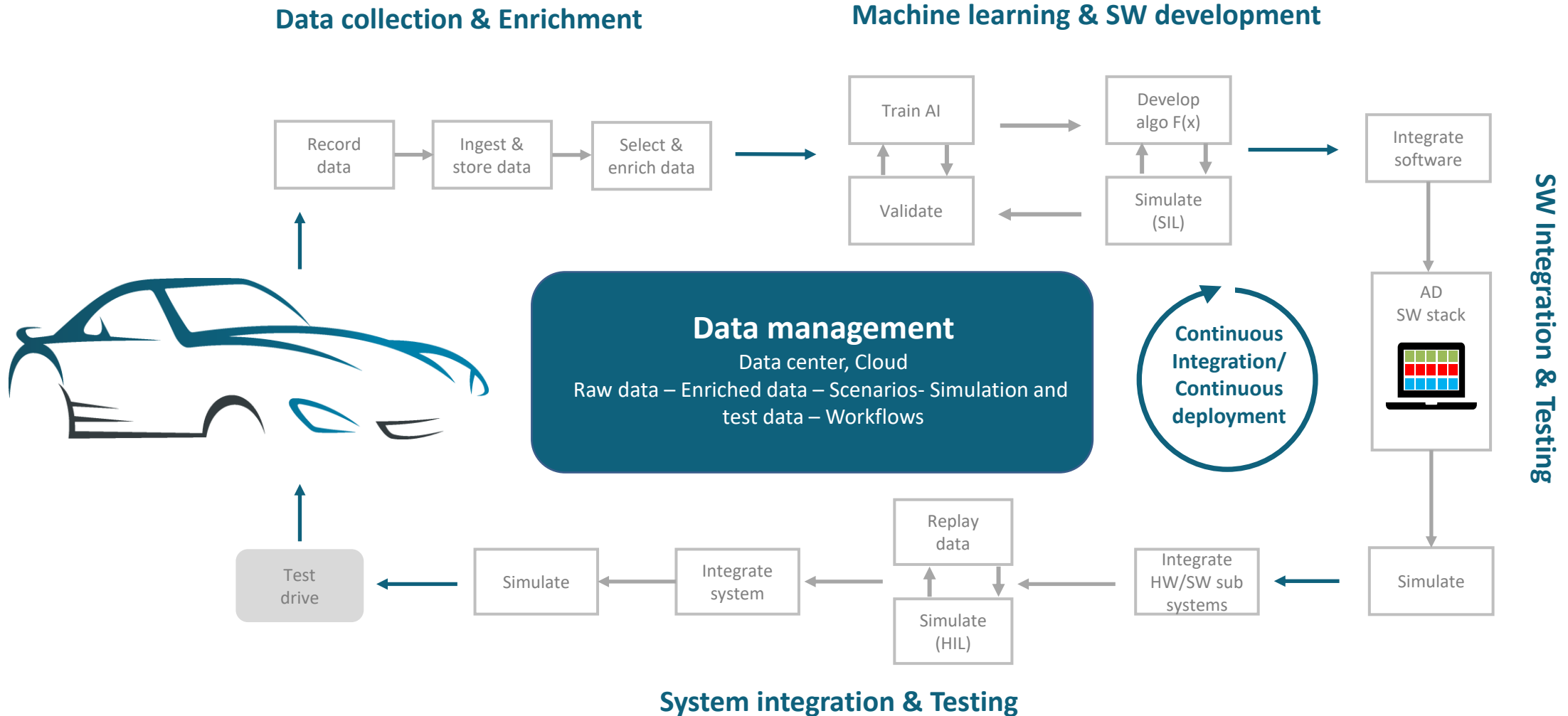
Data analytics

Peak Solution offers you the right platform to manage and execute server based analysis scripts in your ODS or ODS Big data environment.



Motivation

Test data driven development of ADAS / AD functions



Test Data Management as Base for Release and Homologation

Not one standard set of approval tests but audit of test strategy

Due to rising complexity of the driving functions it is no longer possible to select a „representative“ set of tests for approval but the overall test strategy needs to be verified in the argumentation for safety.

Interactive verification requires dynamic inside into test results

During the verification of the argumentation of safety interactively the test strategy is validated. Therefore type approvers might raise requests for additional material to approve the test strategy.

Need for common standard enhance the verification of testing strategies

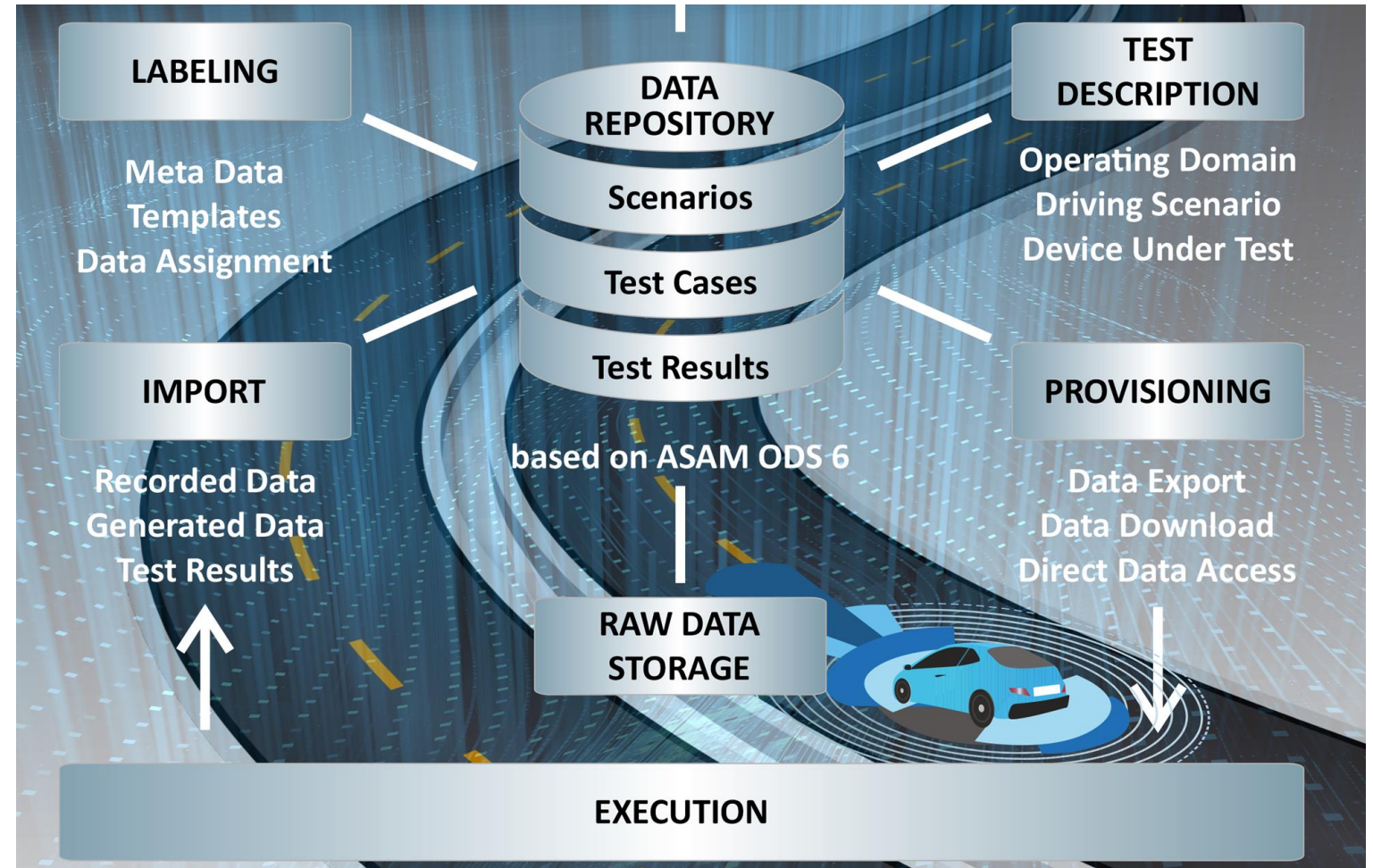
The standard of communication between type approver and function provider is moved from a testing standard to a standard of test data management.



OpenMDM[®] as base for ADAS / AD test data management

Open MDM - DATA REPOSITORY for SCENARIO BASED TESTING

- Management of scenarios
- Management of test cases
- Management of test executions
- Management of recorded data
- Provide data to partners and type approver
- Access of data via REST API





Glimps on a solution

openMDM[®] – Management of scenarios


openMDM5 Web Administration

Navigator Default ▾

- ADASDEMO
 - Scenario catalogue
 - city
 - Crossing Pedestrians
 - Follow cyclist
 - Follow cyclist**
 - Take over on highway
 - open traffic situations
 - Test Case
 - Test Data

Details MDM Search QuickViewer X/Y-ChartViewer Files

General Unit under test **Test sequence** Test equipment Sensors



0:07 / 0:20

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openMDM[®] – Management of test cases

openMDM5 Web Administration Language English ▼ About ⌂ Logout (Demo)

Navigator Default ▼

- ADASDEMO
 - Scenario catalogue
 - Test Case
 - DIL
 - HIL
 - Open road
 - collision1
 - cross road
 - crossing pedestrians
 - Moderate Brake1
 - overtake cyclist1
 - adas_teststep**
 - overtake cyclist2
 - traffic jam
 - Proving ground
 - SIL
 - Test Data

Details MDM Search QuickViewer X/Y-ChartViewer Files

General Unit under test **Test sequence** Test equipment Sensors

Name	Ordered	Measured
application/x-asam.aotestsequencepart.phase.phase		
speed_ego	30.0	km/h
speed_target1		
speed_target2		
application/x-asam.aotestsequencepart.testcondition.testcondition		
numbertracks	1	
precipitation	no precipitation	
lightcondition	clear day	
condition_comment		
test_track	city route	
road_surface	paving stone	
test_ground		
visual_condition	no line of sight obstruction	
road_condition	dry	
clouds	no clouds	
sun_position	low sun frontal	
application/x-asam.aotestsequencepart.expected_result.expected_result		
Description		
file_attachment		
application/x-asam.aotestsequencepart.scenario.scenario		
Name	Overtake cyclist	
Description	a traffic situation where the Ego passes a cyclist	
picture		
entities	cyclist,vehicle_ego	
maneuver_groups	Ego speed 30km/h; cyclist stops; Ego passes cyclist with speed 30km/h	
openScenario_file		
openCRG_file		
openDrive_file		
openLabel_file		

Shopping basket ADAS Scenario ▼

openMDM[®] – Management of test executions

openMDM5 Web Administration Language English v About ↗ Logout (Demo)

Navigator Default v

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 - overtake cyclist2
 - traffic jam
 - Proving ground
 - SIL
 - Test Data
 - open road
 - Follow cyclist 1
 - Follow cyclist 1 setup**
 - bus log
 - coordinates
 - event stack
 - image streams
 - reports

Details MDM Search QuickViewer X/Y-ChartViewer Files

General **Unit under test** Test sequence Test equipment Sensors

Name	Ordered	Measured
<div style="display: flex; justify-content: flex-end; align-items: center;"> ✎ v </div>		
<div style="background-color: #f2f2f2; padding: 2px;"> application/x-asam.aounitundertestpart.vehicle.vehicle </div>		
Name	WOB-2341	WOB-2341
vehicle_fzg_nr	FZG234GHRL	FZG234GHRL
vehicle_manufactor		
vehicle_type	Golf	Golf
vehicle_code	8765-12D	8765-12D
vehicle_categorie	COUPE	COUPE
<div style="background-color: #f2f2f2; padding: 2px;"> application/x-asam.aounitundertestpart.ecu_control.ecu_control </div>		
ecu_hw_nv	HW-123-DF1	HW-123-DF1
ecu_interface	HW-123-DF1 IF6d12	HW-123-DF1 IF6d12
ecu_comment	Please use the newest software version	
ecu_sw_rev	34	34
sw_partnumber	P-345DRT-ERT12	P-345DRT-ERT12
ecu_parameter	SP 12; 345F; -7 km/s²	SP 12; 345F; -7 km/s²
ecu_partnumber		
ecu_categorie		
software_version	32	32
software_file	software.hex	
calibration_file	calibarion.a2l	

Shopping basket ADAS Scenario v ✎ 📄 📁 🗑️ ⊕ ⏴ ⏵ 🔍 📁 📄 ➔

openMDM[®] – Searching through the test data

openMDM5 Web Administration Language English About Logout (Demo)

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Details MDM Search QuickViewer X/Y-ChartViewer Files

Search filter ADAS city scenarios Search

Source ADASDEMO Result type Test

Full text search

Advanced search

Global search attributes

Project	Name	=	Scenario catalogue
Subproject	Name	=	city

Results ADAS Scenario 0

	Name (scenario)	Description (scenario)	entities (scenario)	maneuver_groups (scenario)	videosummary_file (scenario)
No records found.					

1 / 10

Shopping basket ADAS Scenario



Next steps

Further task to develop openMDM as ADAS / AD repository

Further cooperation with ADAS / AD component and function provider

Definition of MDM® models to store ADAS / AD specific information

Definition of necessary openMDM® components to support additional ADAS / AD specific use cases, e.g.

- Viewing and editing scenarios
- Import of openScenario files
- Exchange of test cases and scenarios
- Test data labeling
- Assistance in creation of homologation deliverables
- others

WHAT'S NEXT?





Thank you very much for your attention!

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