ADAS @ NTT GROUP
prostep ivip Systems Engineering Day Japan 2019

Jens Krueger, Head of Global Automotive Engineering Center of Excellence
Global Automotive – Engineering Center of Excellence

Global presence

- Global expert team to support global accounts such as BMW, VW, Daimler, Tier 1 suppliers or Japanese OEMs outside Japan
- Global business strategy in Engineering domain (PLM, CASE) including offering development / innovation, vendor & partner management, group company support
- Coordination of global proposals
- Global sharing of innovation & best practices

Head: Jens Krueger – NTT DATA Germany

- 20 years at NTT DATA Germany
- Product Lifecycle Management (PLM), Systems Engineering
- Project experience includes BMW, Audi, Airbus, Yazaki, Autoliv

PLM partnerships

- PLM: Traditional PLM portfolio including AMS / DevOps and software development covering all domains.
- PLM4CASE: MBSE, ADAS validation, AI for CAE, embedded software

Mission

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Portfolio: PLM4CASE

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ADAS Validation Platform

NTT DATA Germany Simuloop
Cloud-based platform for ADAS validation

AV Simulation

NTT DATA Germany
CARLA-based simulation of environment & ego-car in Azure

Scenario recognition

NTT DATA Germany
Recognition of driving scenarios in AV sensor data stream

Data logistics / Ingest

NTT DATA Germany, HP, IAV
Test data ingest and preprocessing with micro datacenter and NTT Cloud

Scenario Verification

CATS ZIPC GARDEN
Scenario-based AV vehicle verification

HD Map

NTT DATA, TRI-AD, Maxar
Automated Mapping Platform based on satellite images

Simulator

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HW & SW for (automated) driving simulation

Hybrid Cloud IT platform

NTT Group
Hybrid cloud IT platform with ingest, compute, storage, network
Simuloop is a cloud-based ADAS validation platform

<table>
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<th>Challenge</th>
<th>Solution</th>
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| • Development and validation of autonomous driving (AD) vehicles requires billions of kilometers test drives  
  • this can not be done in real life                                  | • Cloud-based service for AD development and testing  
  • Open approach for multiple simulation tools, e. g. CARLA, TESIS  
  • Leverage AI for scenario identification  
  • Test planning and workflow management                               |
| ➔ most of the test drives for AD vehicles can be done in a virtual world |                                                                                              |

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<tr>
<th>How it works</th>
<th>Benefits</th>
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| Simuloop Full Stack Platform                                               | • Accelerate vehicle development & test  
  • Apply agile principles to automotive engineering (continuous delivery)  
  • Use well defined test scenarios  
  • Reduce cost for computing, storage and network                            |

How it works:
- World (Content)
- Service
- Infrastructure
- Integration
- Web UI
- Simuloop Partners
- Simuloop Users
- Simuloop Software