



Using AI to improve Scenario-Based Testing

S3 – Integrating classical and autonomous systems

Niklas Braun

Introduction to AVL

Solutions

Engineering



Testing



Simulation Technologies



Elements

Combustion Engine



Transmission



Control Unit



E-Motor



Energy Storage, FC



Vehicle



Industries

Pass Car



Racing



2-Wheelers



On-/Offroad



Rail



Marine



Aviation



Defense



Power Generation



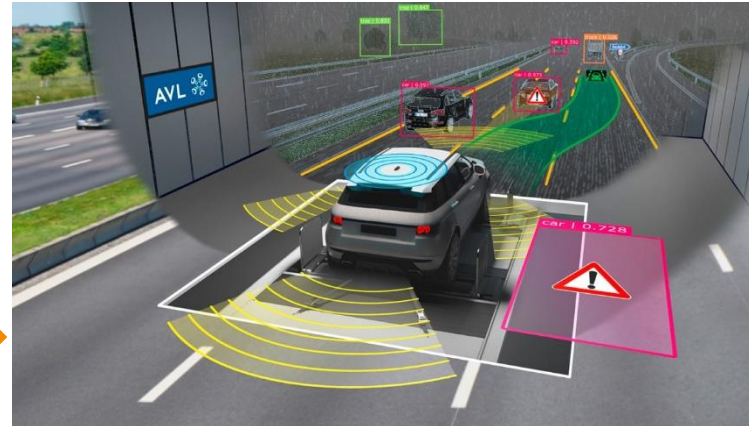
AVL DRIVINGCUBE

Powertrain Test Bench



Chassis Dyno Test Bench

AVL DRIVINGCUBE™
Complex cyber-physical system



Virtual Environment

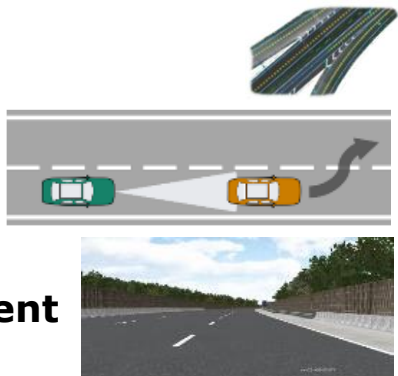
Cooperation TNO and AVL

Road

Traffic

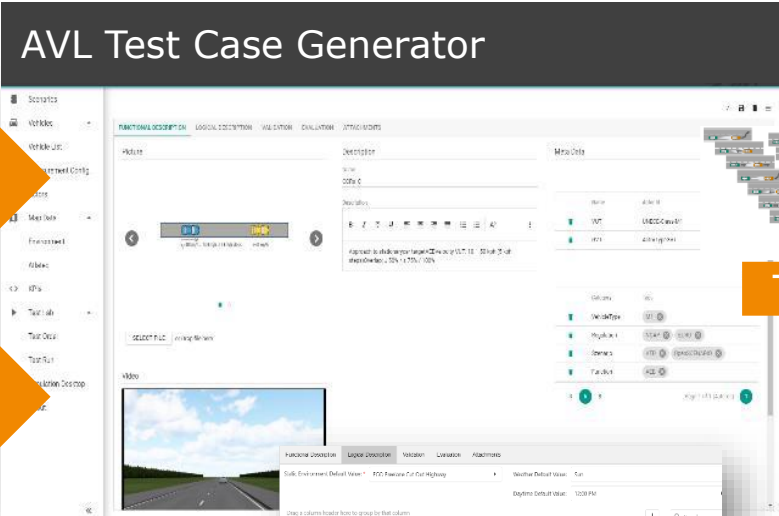
Environment

Scenario Database




Test Case Planning with
*realistic and relevant
parameter ranges*

AVL Test Case Generator



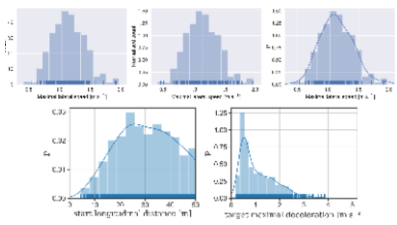
Testcases

Execute Simulation

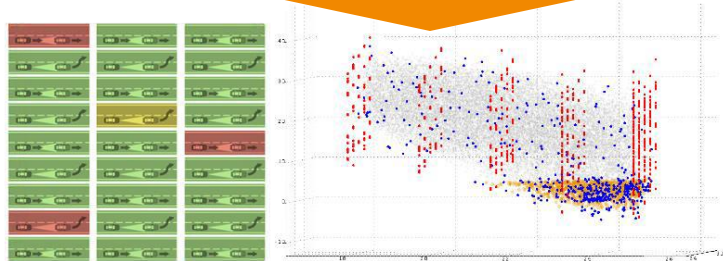


Identify critical situations

streetwise

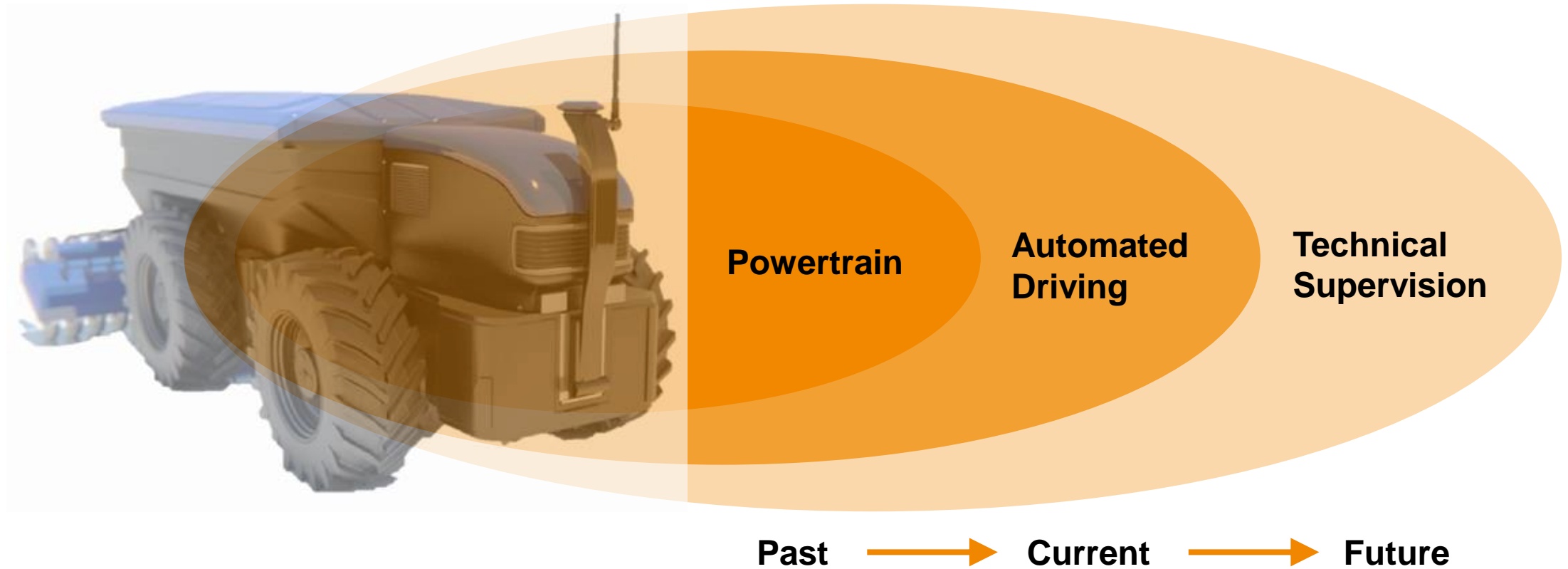


Real Road Statistics

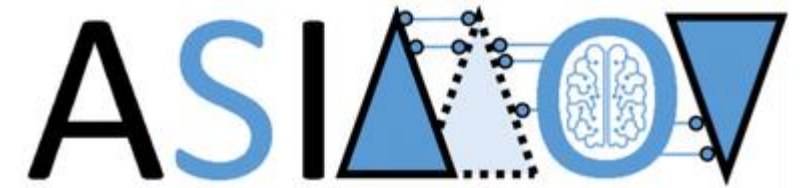


Identify appropriate criticality parameters:
Time-to-Collision, Time-Headway, etc.

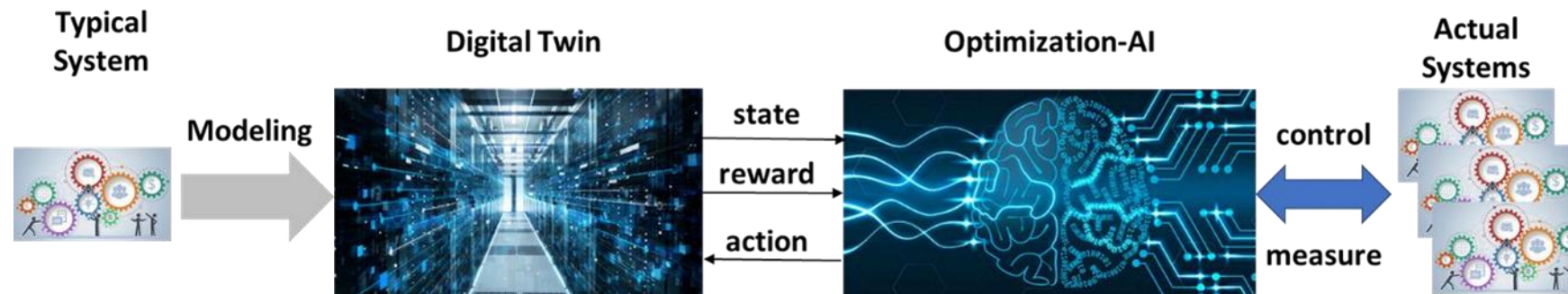
Unmanned Utility Vehicles



Research Project „ASIMOV“



- www.asimov-project.eu
- **AI** training using **S**imulated **I**nstruments for **M**achine **O**ptimization and **V**erification

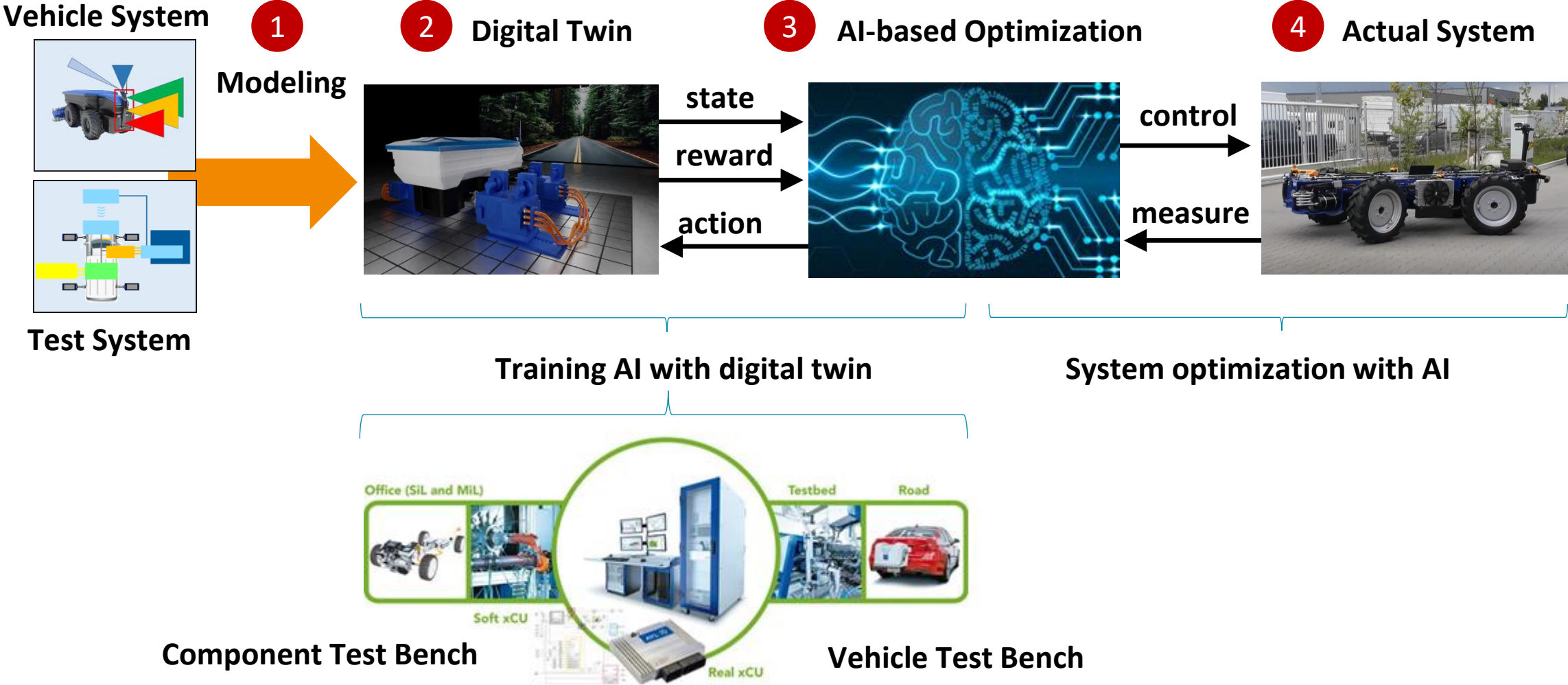


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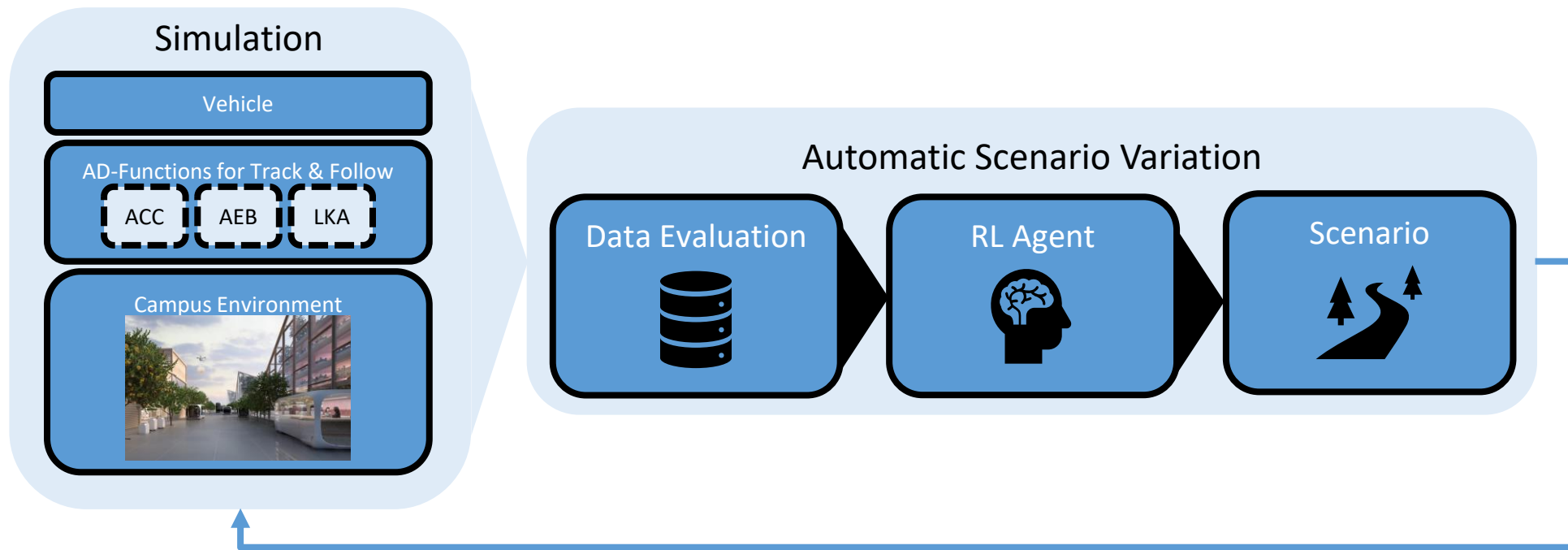
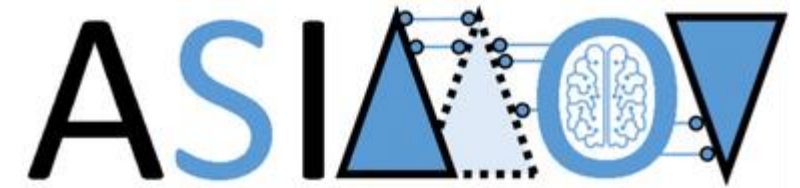


Federal Ministry
of Education
and Research

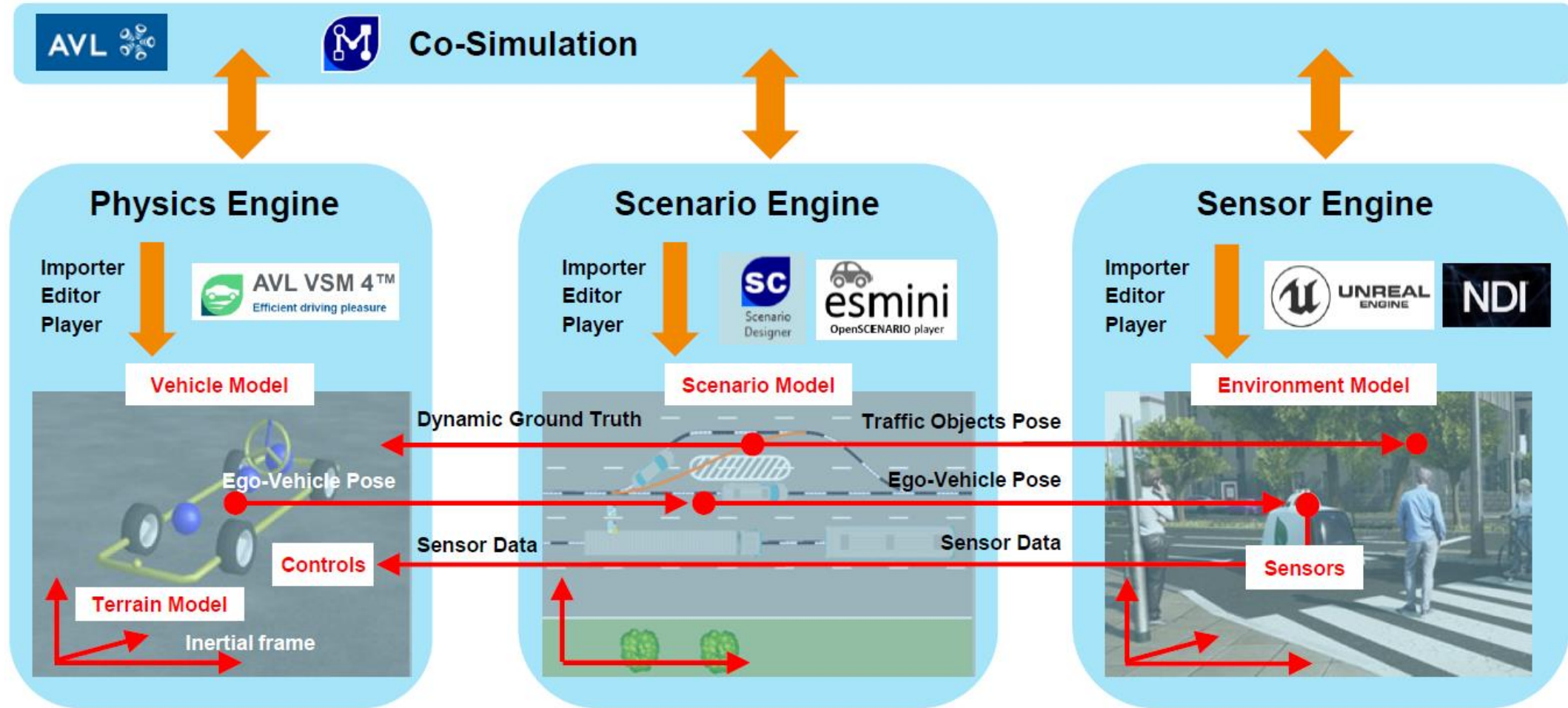
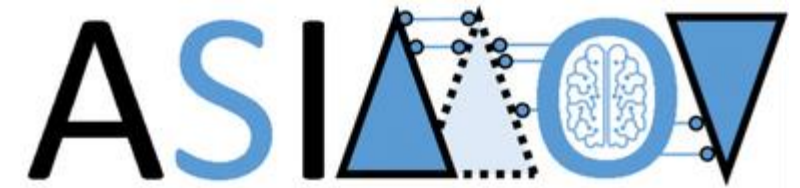
ASIMOV Solution Strategy



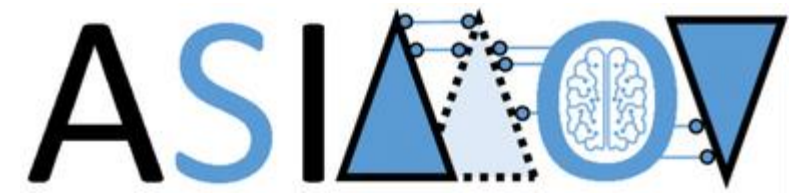
Research Project „ASIMOV“



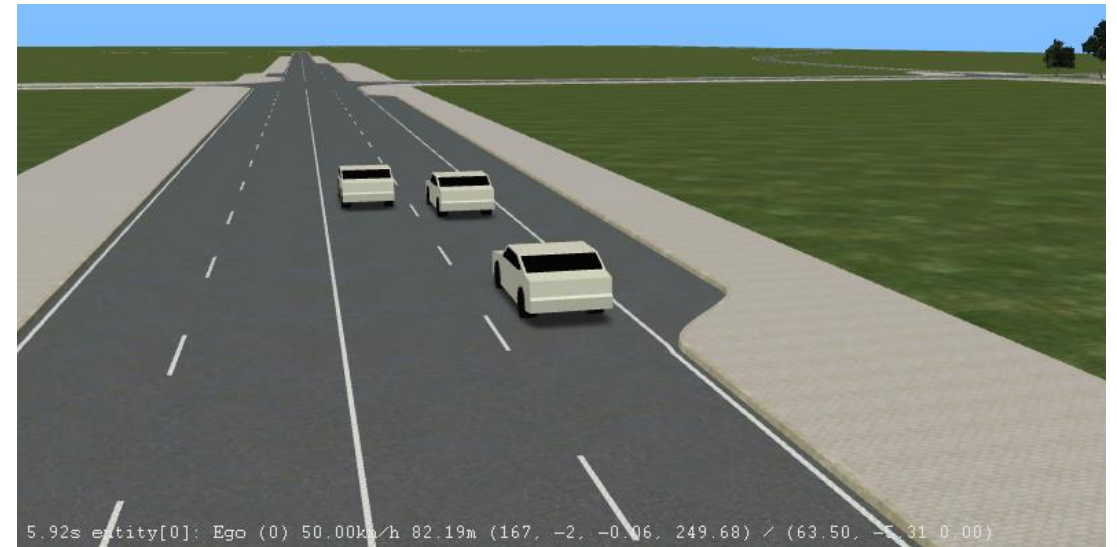
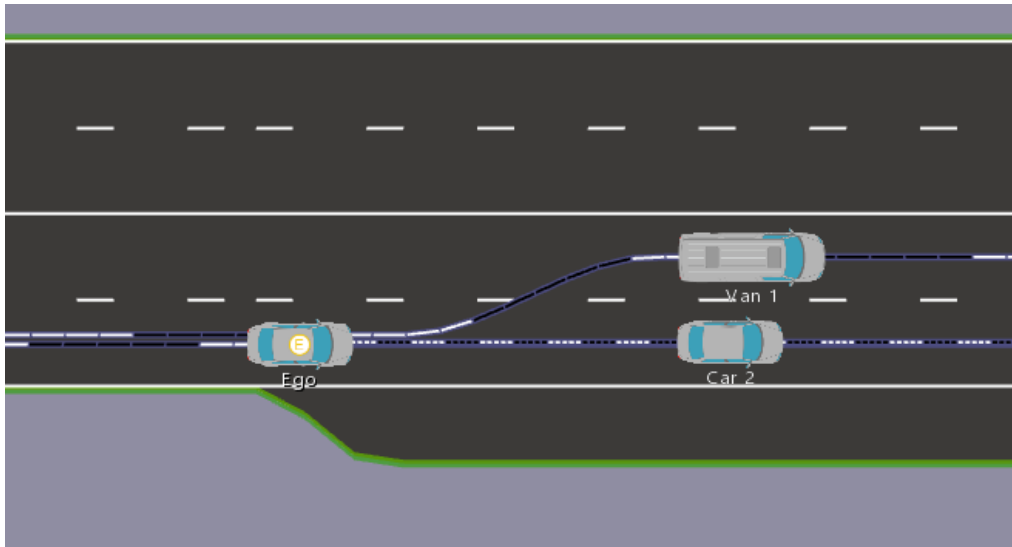
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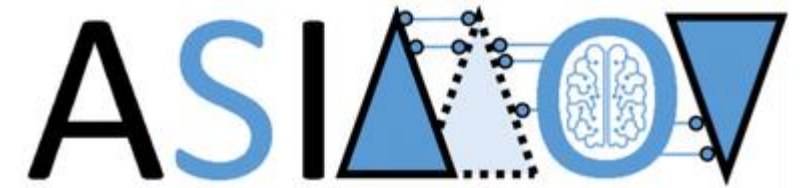
Research Project „ASIMOV“



Scenario Engine



Research Project „ASIMOV“



Sensor Engine



Thank you



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