Project SmartLoad - Increased Reliability for Highly Automated Electric Vehicles

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Federal Ministry of Education and Research

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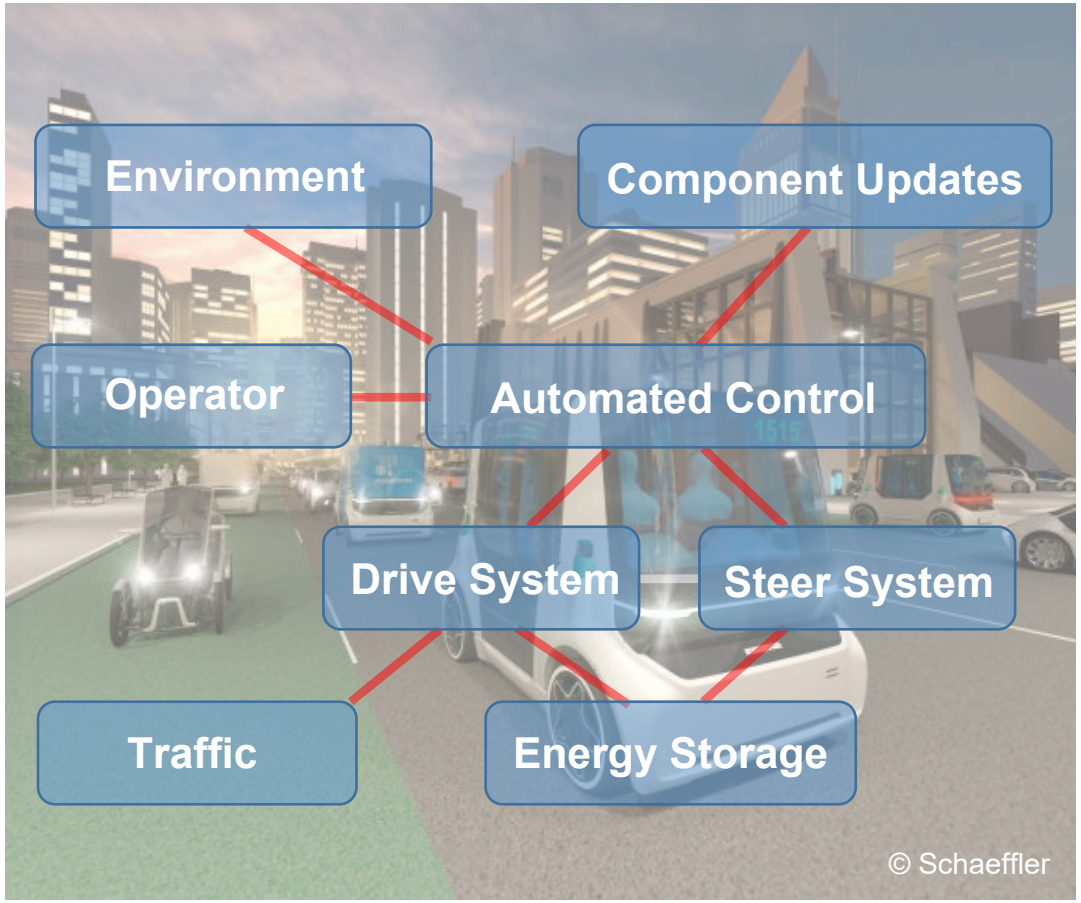
Motivation and Goals

SMARTLOAD

- Research into new concepts for functionally safe design
- Exploring robust software and system architectures
- Research on new modular and standardisable development methods



Project Approach Phase 1

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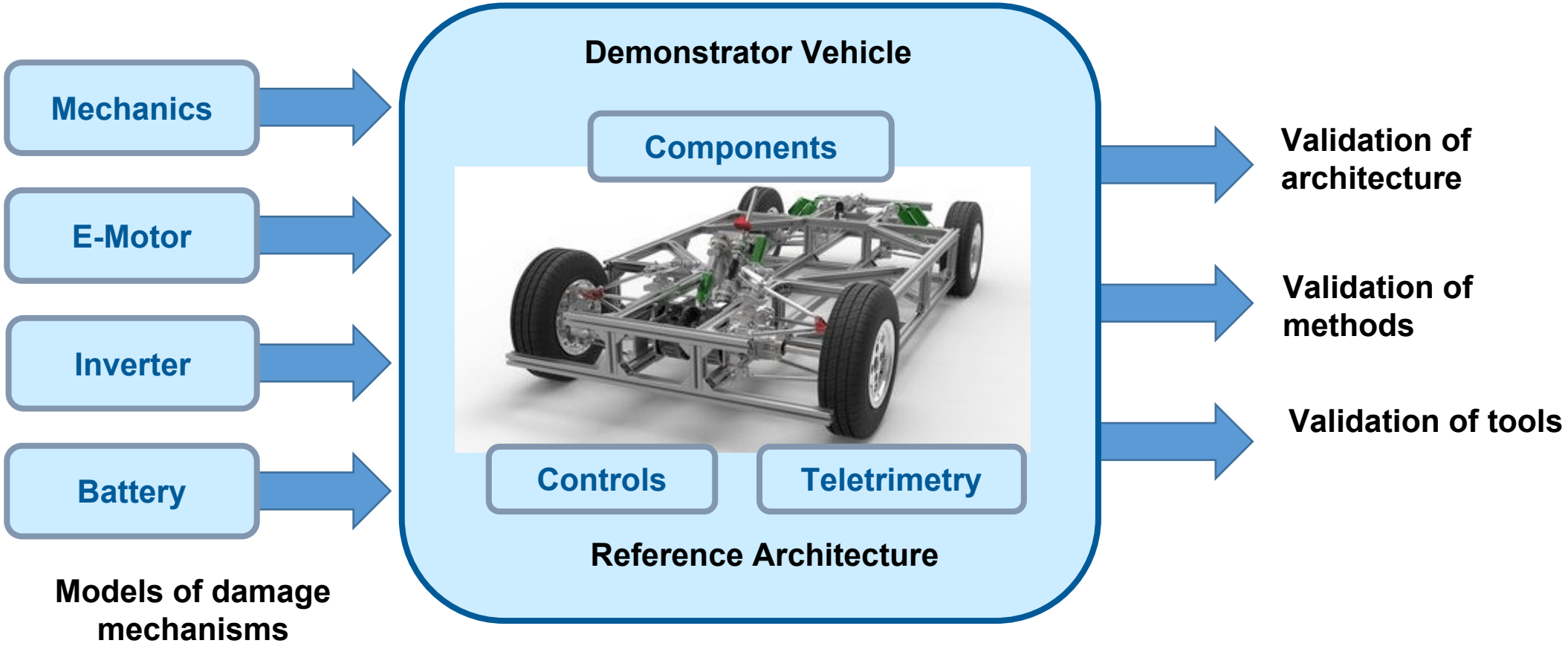

Project Approach Phase 2

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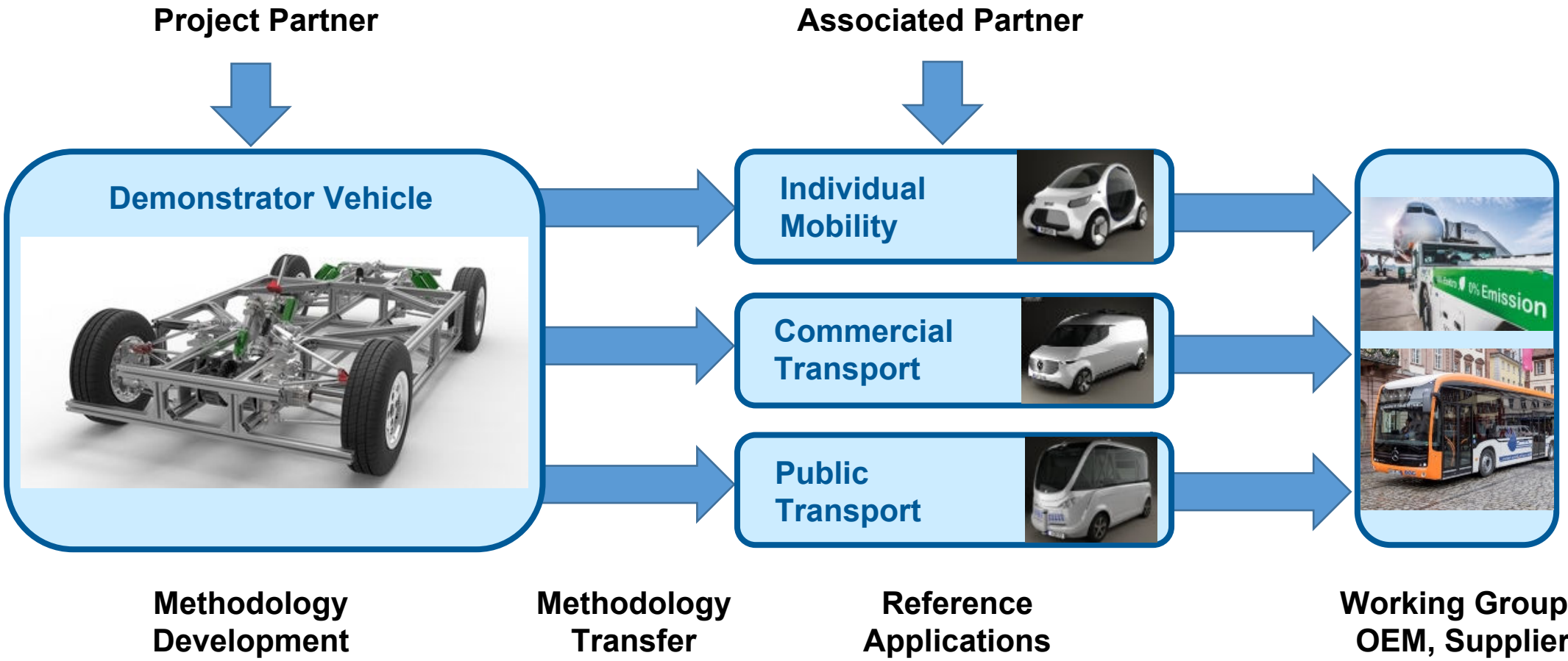

Reference Architecture

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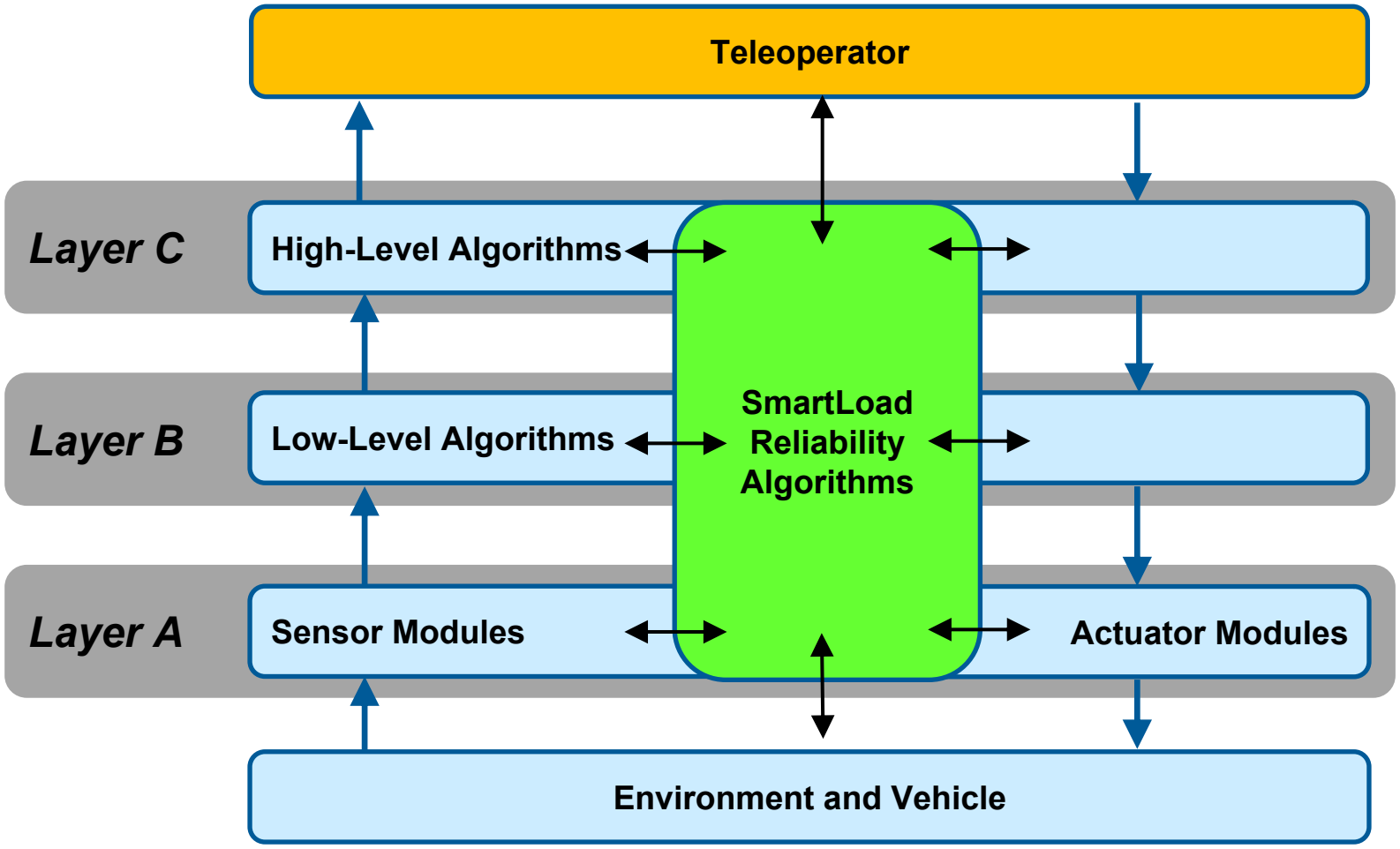

Example:
Driving Functions

Example:
Motor Controller

Example:
Motor Sensor

Development Methodology

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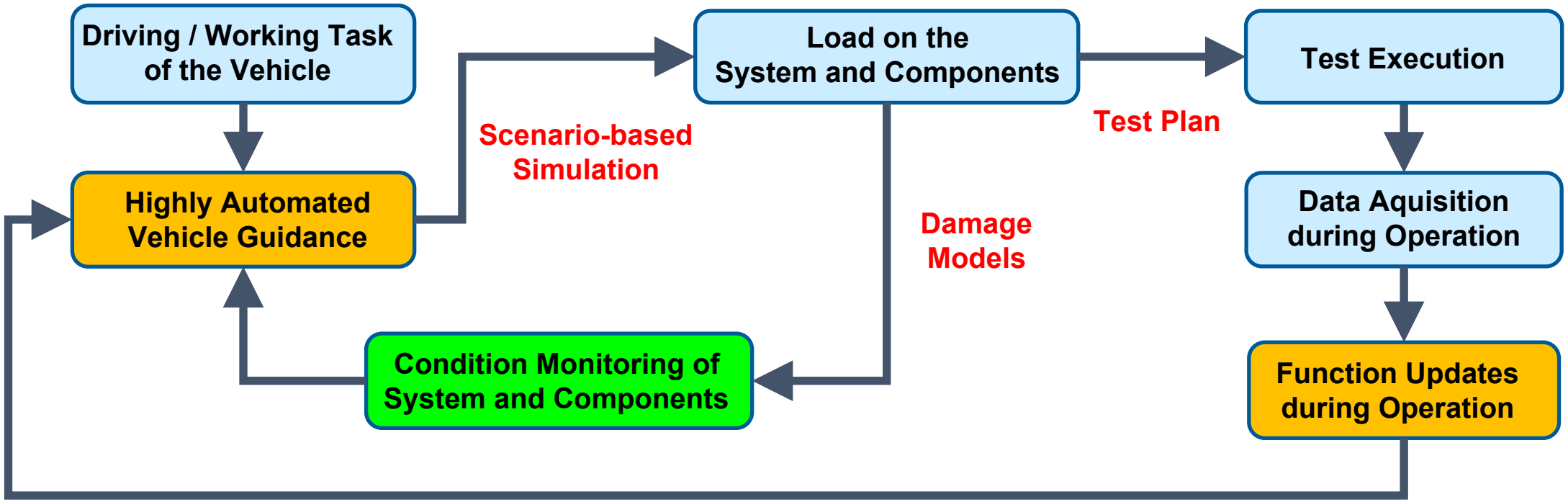

Reference Applications
Example Automated E-Tractor

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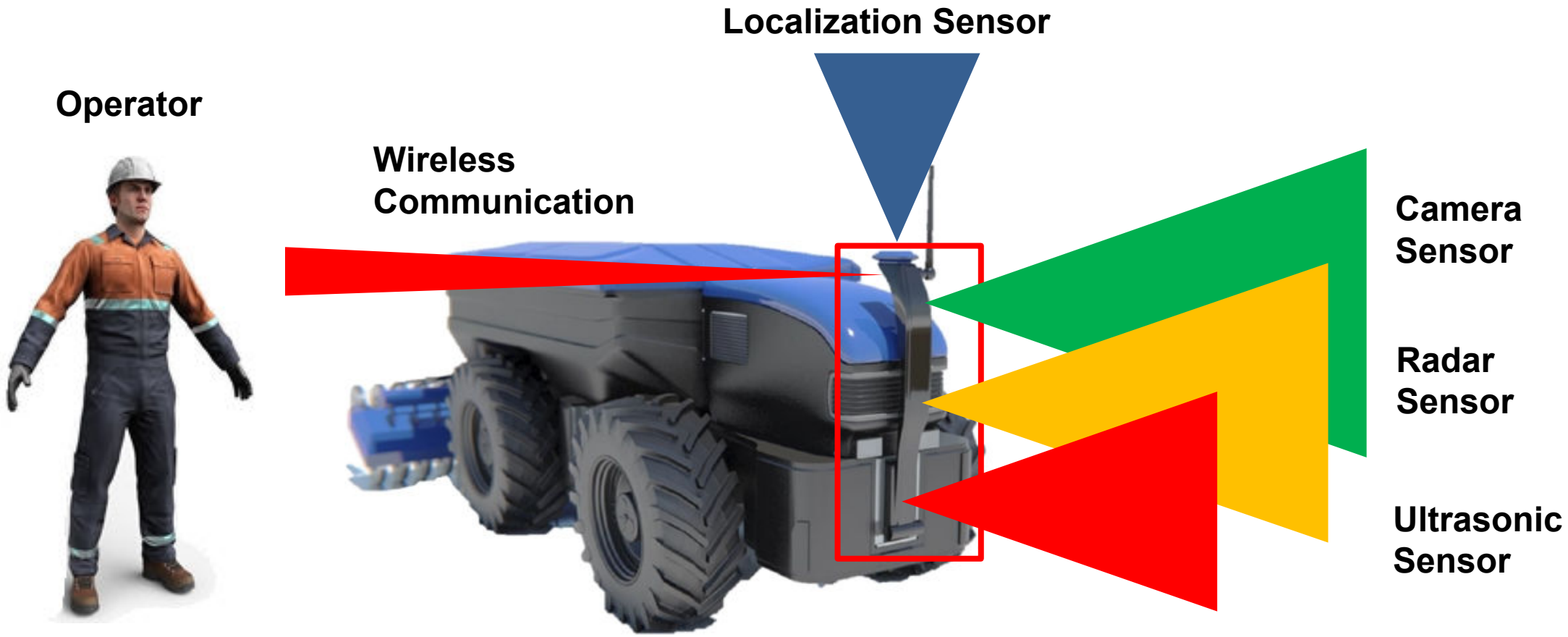

Validation on Connected Test Beds

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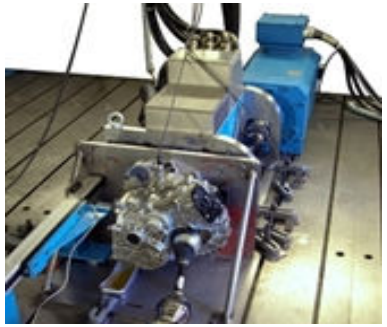
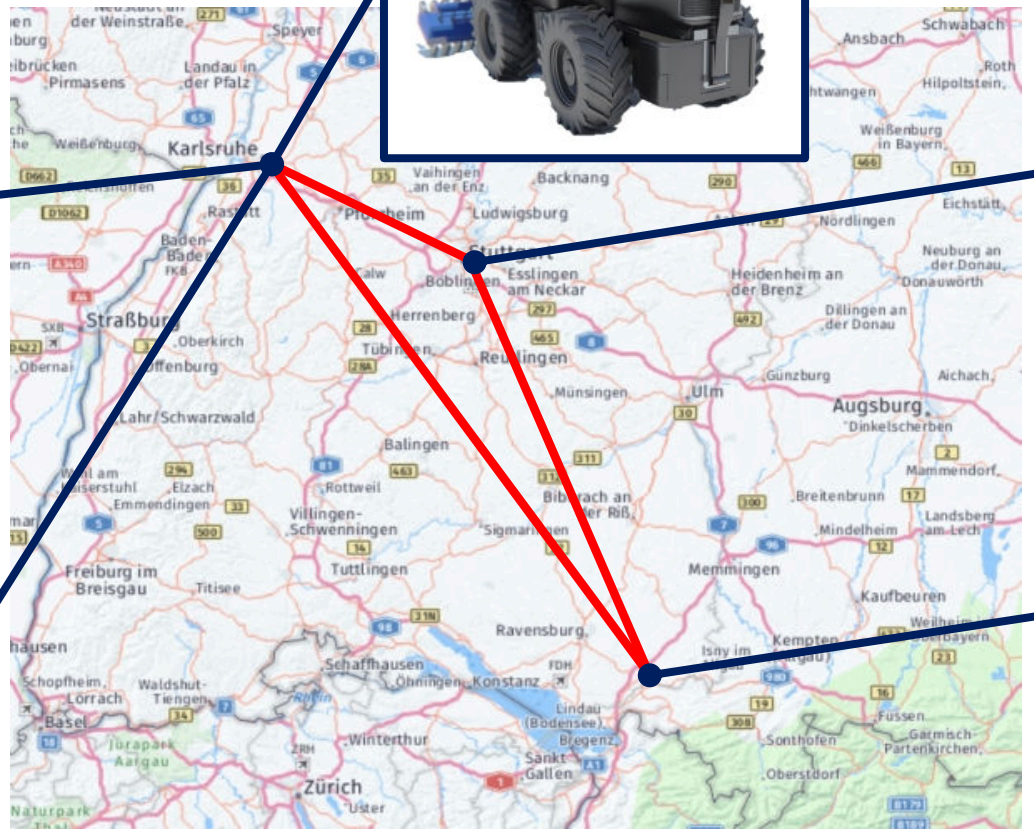
Virtual Vehicle
AVL Karlsruhe

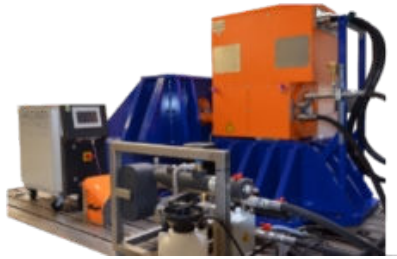
Drive Gearbox Test Bed
IPEK Karlsruhe



Steering Motor Test Bed
STAG Karlsruhe



Electric Motor Test Bed
IEW Stuttgart



Inverter Test Bed
SPS Wangen

Reference Applications
Scenario-Based Validation

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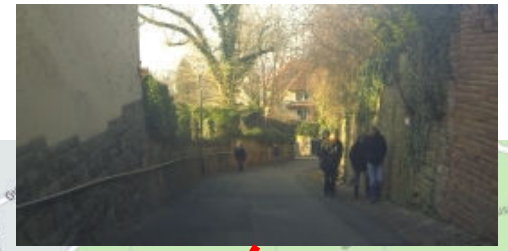

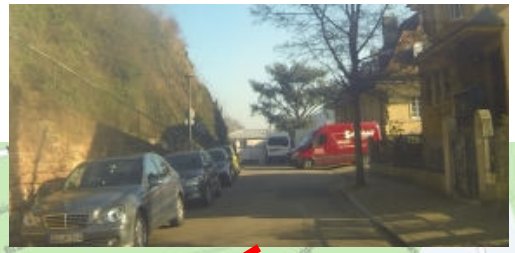

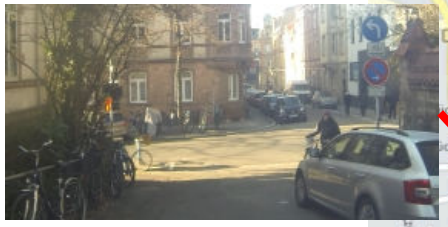

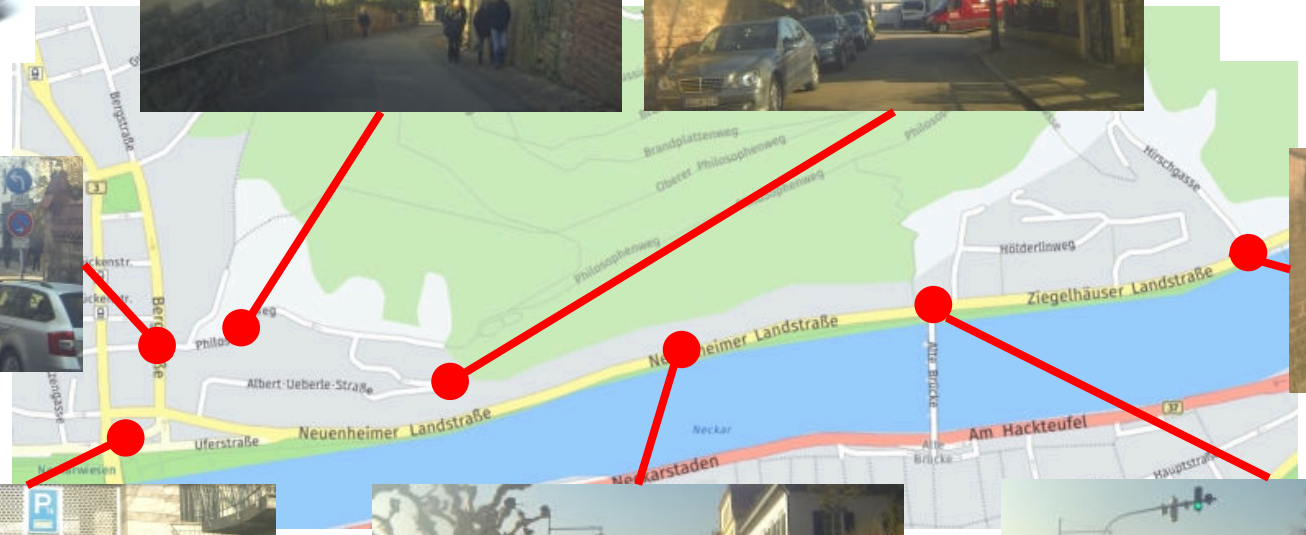

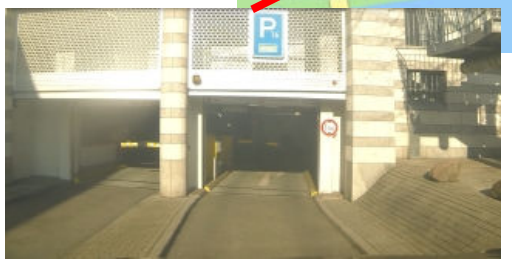

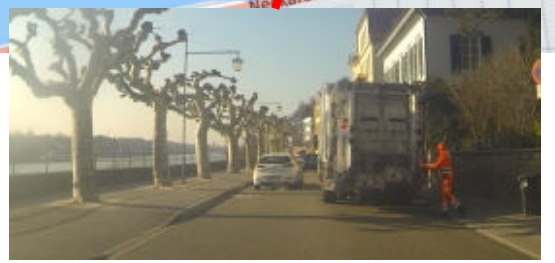

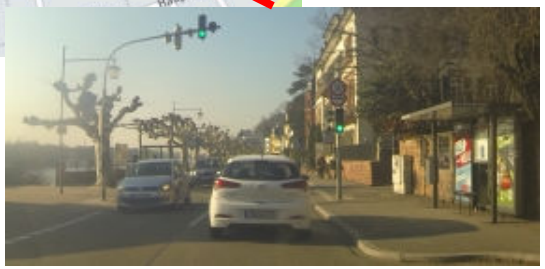

Summary and Outlook

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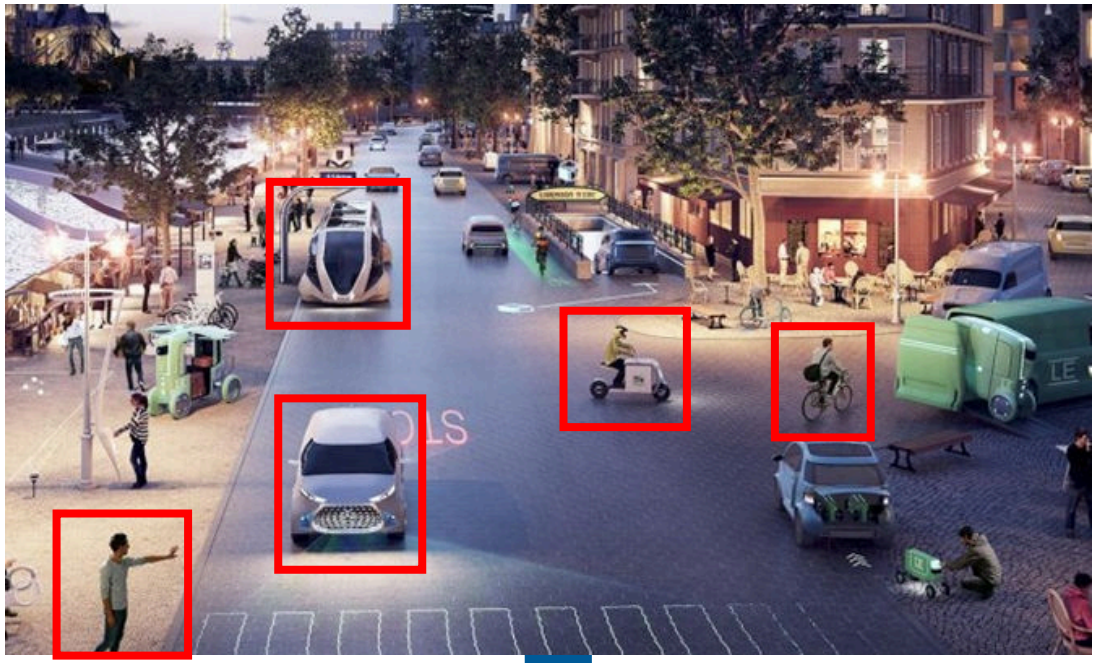

New Testing Methods and Tools to Ensure Reliability, Safety and Security