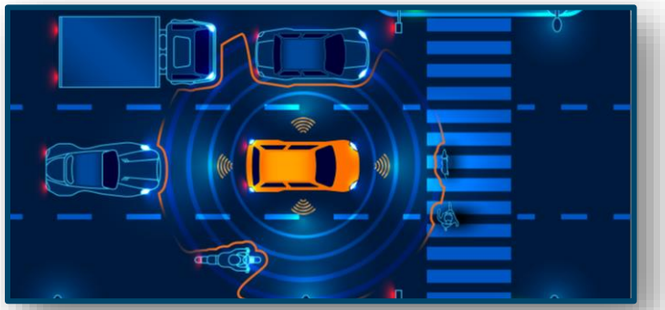
AUTOMATED DRIVING

System Safety

Automotive Use Case



3D MAPPING SOLUTIONS

asc(s) Automotive Solution Center for Simulation

SET Labs software enabled technologies

System simulations of Automated Driving functions are systems of **high complexity** – not only from technical, but also from **collaborative** point of view. State-of-the-art processes support credibility in M&S only vague, as they **lack of simulation governance and traceability**.

UPSIM will gain credibility in Automated Driving simulations by **introducing reference processes** and **model certification**, as well as applying specific **CI methods for M&S**.

AUTOMATED DRIVING

Driver Monitoring

Automotive Use Case

infineon

Sensors for complex automotive systems tend to be delivered as so called “intelligent sensors”, that is they execute signal processing on top of signal detection, which may include complex functionality like **neural networks**. When it comes to product release, reliable functionality is key towards trustful usage.

M&S can support the system reliability by simulating effects that can hardly be captured in real-world testing, like concept drift. UPSIM will add a **traceability of simulation input data**, to allow for comprehension of the training process: Which data has been used for training and why?

UPSIM UNLEASH POTENTIALS IN SIMULATION

BRAKE SYSTEM

Automotive Use Case

BOSCH

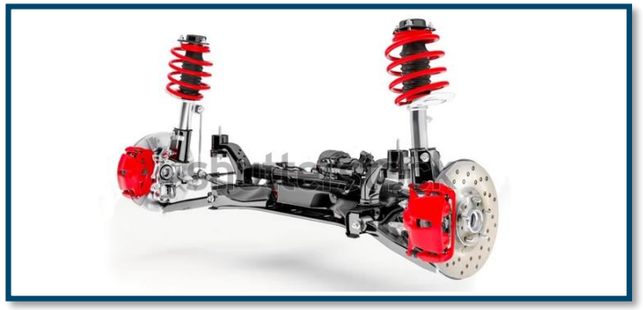
Universität Augsburg University

Brake Systems are representative of highly **integrated systems**, where requirements come from many different domains, posing different requirements towards accuracy, fidelity and computing effort of the simulation. State-of-the-art use cases **require real-time capability** of Brake System SiL models while providing **high accuracy** at the same time.

Credible **Hybrid modelling** approaches, where first-principle-models are enriched with neural networks can help resolving these trade-offs.

DRIVING DYNAMICS

Automotive Use Case



DLR

As state-of-the-art algorithms for active suspension systems lack flexibility, Reinforce-ment Learning agents may pose a valuable alternative for future semi-active suspension systems. However, Reinforcement Learning agents tend to exploit false characteristics of their environment and ingest it into their policy.

UPSIM helps to develop a credible policy by supporting credible simulation environments, supported by **Hybrid modelling** approaches, where first-principle-models are enriched with neural networks

UPSIM

UNLEASH POTENTIALS IN SIMULATION