Multi-Moby

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Innovation and industrialization challenges of next-generation EV components: the Multi-Moby project

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Multi-Moby: Project Factsheet

Multi-Moby: ***Safe, secure, high performing, multi-passenger and multi-use affordable electric vehicles***

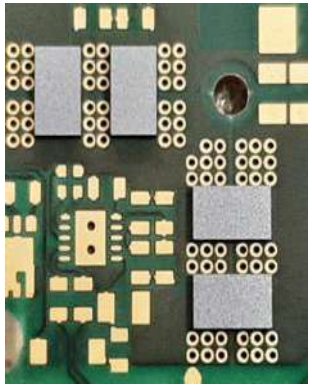
- Funding scheme: H2020 GV-08-2020
- Status: Project started on December 1st, 2020
- Duration: 3 years
- Consortium: 9 participants
- Total budget: approx. 7,800 k€
- Coordinator: Infineon Technologies Austria AG

Multi-Moby: Objectives

- Three multi-passenger 4-door M1 vehicles with a 4-wheel-drive on-board centralized powertrain architecture, with two 15 kW 100 V air-cooled highly efficient powertrains based on permanent magnet assisted synchronous reluctance motors
- Three multi-purpose vans, namely an L7e-CU prototype (4-wheel-drive, with 7.5 kW 48V air-cooled powertrains and a low-cost belt-based transmission system) and two N1 versions (4-wheel-drive, one with two 15 kW 100 V air-cooled powertrains, and the second one with two 15 kW 48V liquid-cooled powertrains). One of these vehicle will be for the transport of general goods, while the other two vehicles will target the delivery of food

Multi-Moby: Electric Powertrains

- 100 V powertrain by DANA TM4
- 48 V powertrain by Valeo Powertrain Systems
- Simulation-based optimisations, vehicle installation and testing



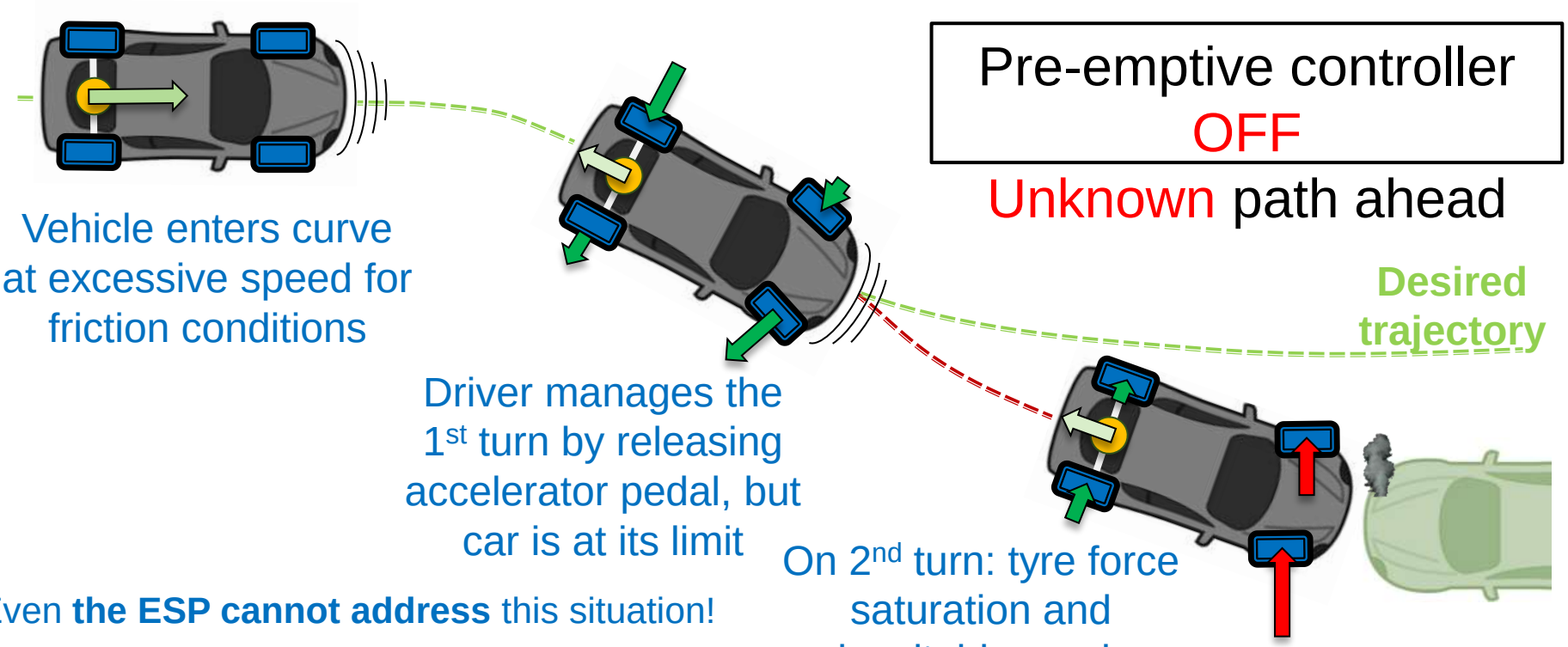
Multi-Moby: Passive Safety

- High strength steel structure combining its low cost with high energy absorption capability and very high stiffness
- Different products of Dual Phase steel family are suitably combined
- FEA followed by physical crash tests




Multi-Moby: Active Safety

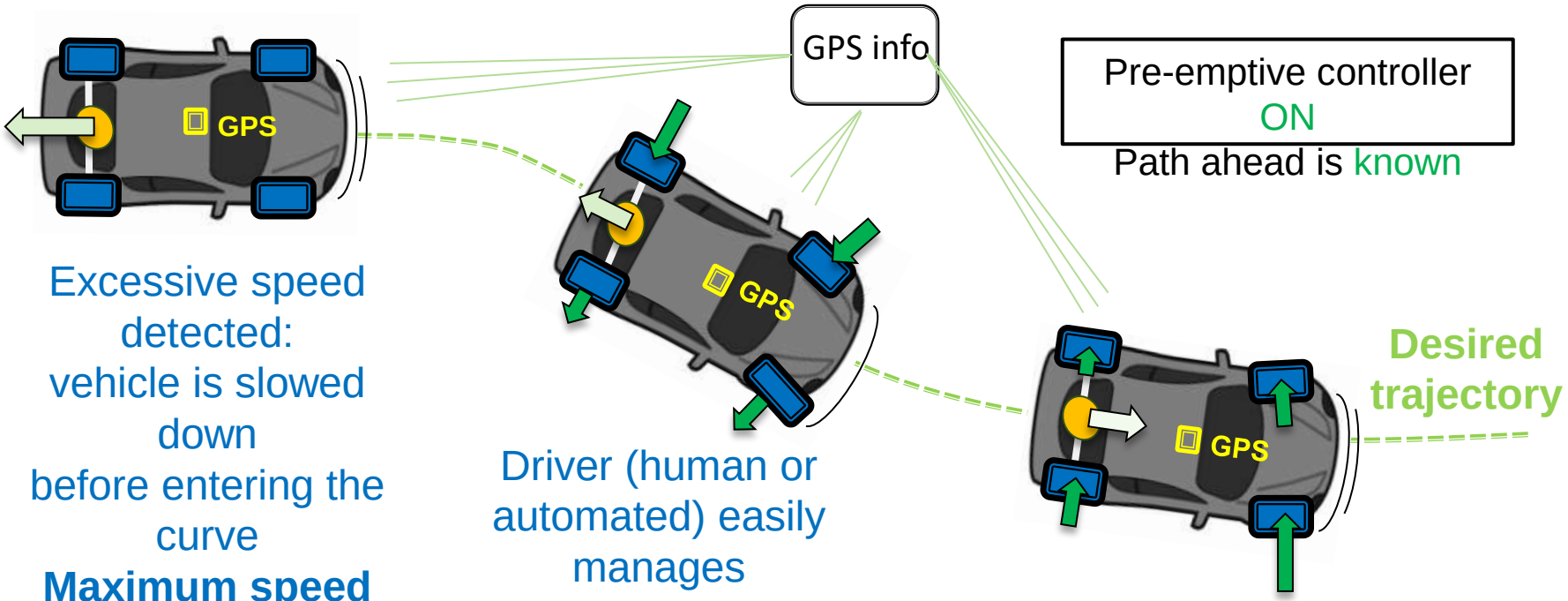
- Multi-Moby targets simple, cost-effective and smart powertrain, sensing and control solutions, including connectivity and partial driving automation



Even **the ESP cannot address** this situation!

Multi-Moby: Active Safety

➢Example of Multi-Moby function: **pre-emptive trail braking control**



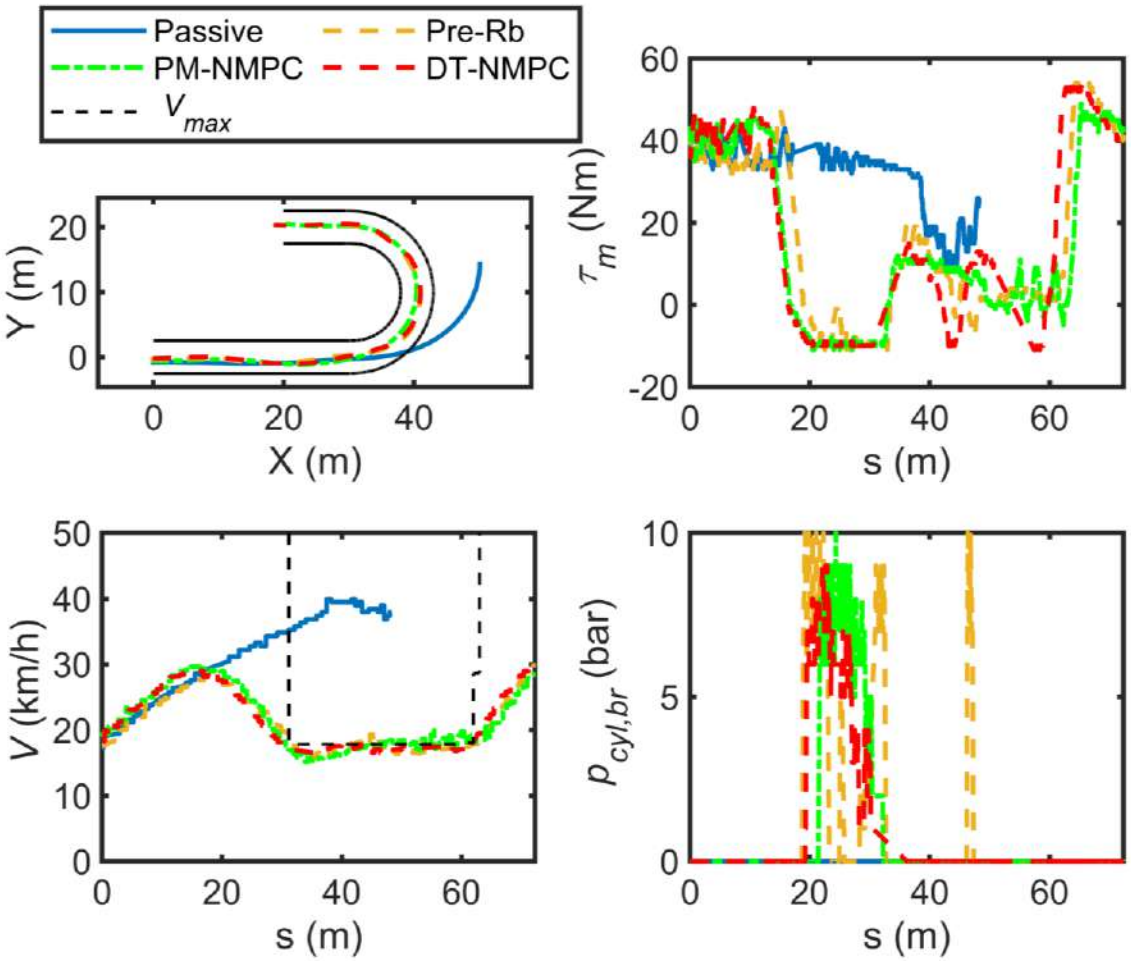
Excessive speed detected:
vehicle is slowed down
before entering the curve
Maximum speed computed for path ahead

Driver (human or automated) easily manages
the 1st turn as speed is now acceptable

On the 2nd turn: vehicle under control; driver can start re-accelerating

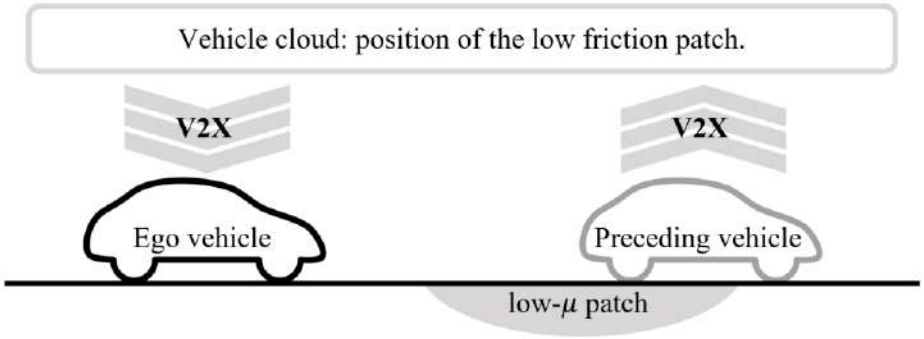
Multi-Moby: Active Safety

➢ **Pre-emptive trail braking control**: preliminary experimental implementation

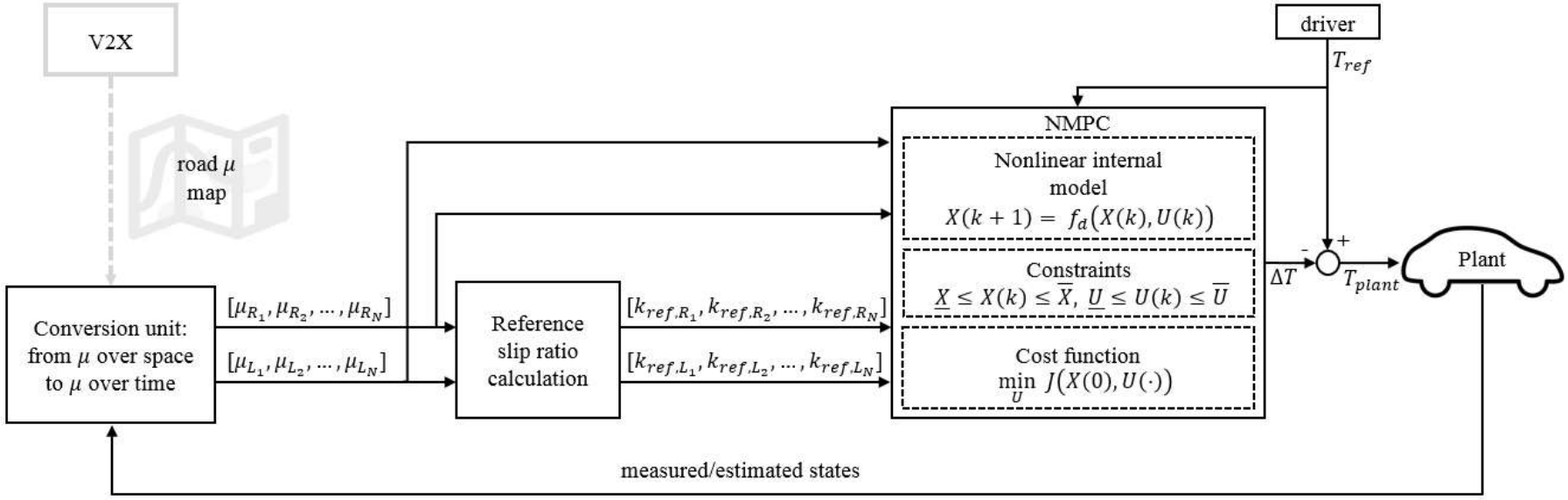


Multi-Moby: Active Safety

➢ **Traction control** based on tyre-road friction preview

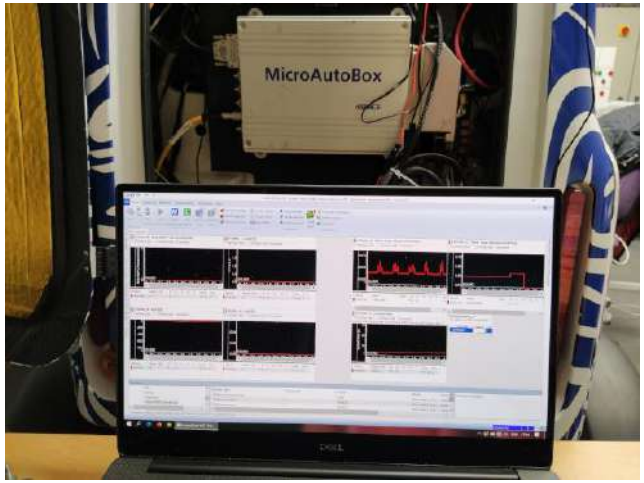


Compensation of the effect of the powertrain dynamics and pure time delays in high-to-low tyre-road friction transitions

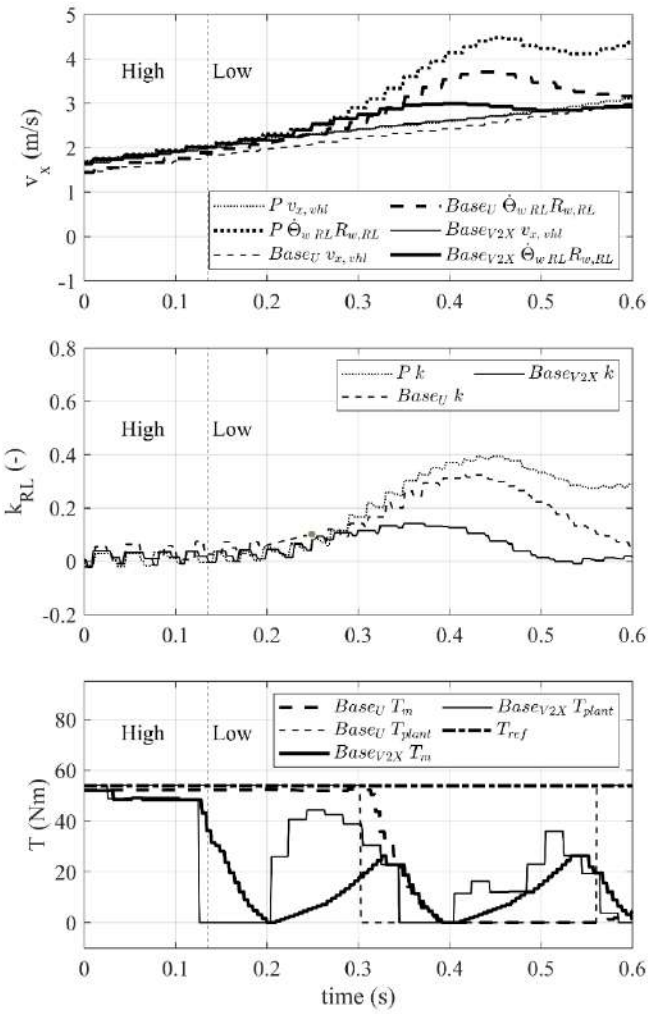


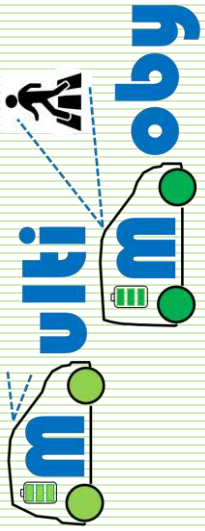
Multi-Moby: Active Safety

- **Traction control** based on tyre-road friction preview



- Clear pre-emption of the torque reduction phase
- Evident reduction of the peaks of slip ratio and rear wheel speed
- Further testing ongoing
- Developments to ‘robustify’ the algorithms
- Algorithm preliminarily installed also on the I-FEVS vehicles





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THANK YOU

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