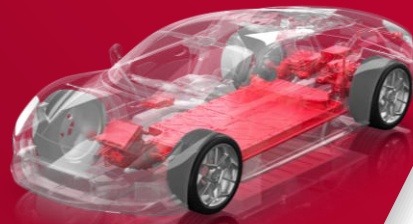# FEV Vehicle Motion Control Software for Centralized E/E Architectures

FEV propulsion

Improved driving experience by connecting chassis and powertrain features

FEV offers

❯ Complete Vehicle Motion Control (VMC) package or individual functions
– Determination of the vehicle's dynamic state via 2-track model
– Assessment of the status of all by-wire actuators
– Centralized controls to determine the driver's longitudinal and lateral demands
– Determination of optimized component setpoints via closed loop controls & unified motion management

❯ Additional services to meet your individual needs
– Tailored software functions
– Integration

Why FEV

❯ FEV is an established partner in both, chassis and powertrain domain and continuously evolving automotive industry projects throughout the last 40 years

❯ White box option to enable you to use FEV's solution as basis for your own development

❯ Customization by FEV to exactly address your needs

❯ Customer friendly license model, as one time license fee and tailored license scope
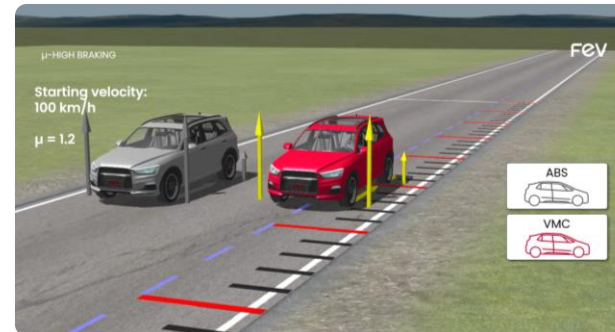
Reference Publications

FEV VEHICLE MOTION CONTROL

2024

33. AACHEN COLLOQUIUM SUSTAINABLE MOBILITY

Voßhall, Reckeweg, Dorn

VMC –Capabilities on connecting Chassis and Powertrain Features
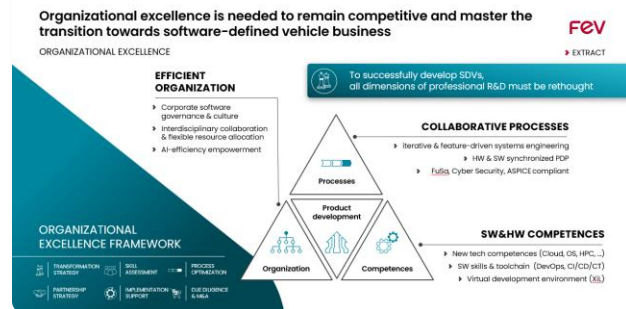
2024

EVS 37 SEOUL, KOREA 2024

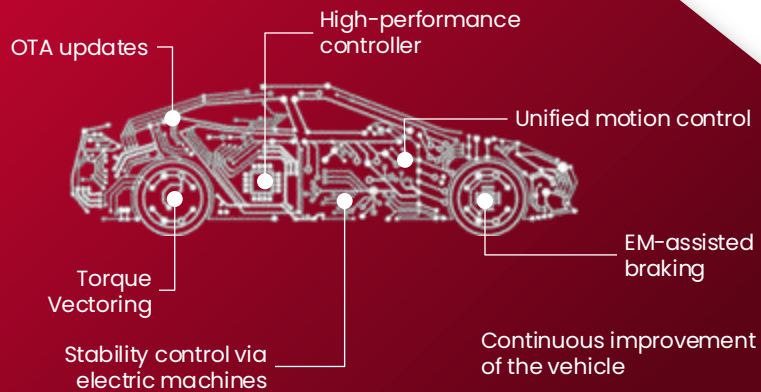Engelhard, Richenhagen, Reckeweg

SDVs and their Transformative Impact on Electric Powertrains

By connecting chassis and powertrain features, we improve the driving behavior through optimized function coordination

FEV propulsion

VMC continuously harmonizes and optimizes **actuator setpoints**, realizes **faster interaction** of **aligned software functions** due to reduced cross talk and leads to an **enhancement** of the dynamic vehicle capabilities

VMC

TRANSFORMATION

- OTA updates
- High-performance controller
- Unified motion control
- EM-assisted braking
- Torque Vectoring
- Stability control via electric machines
- Continuous improvement of the vehicle

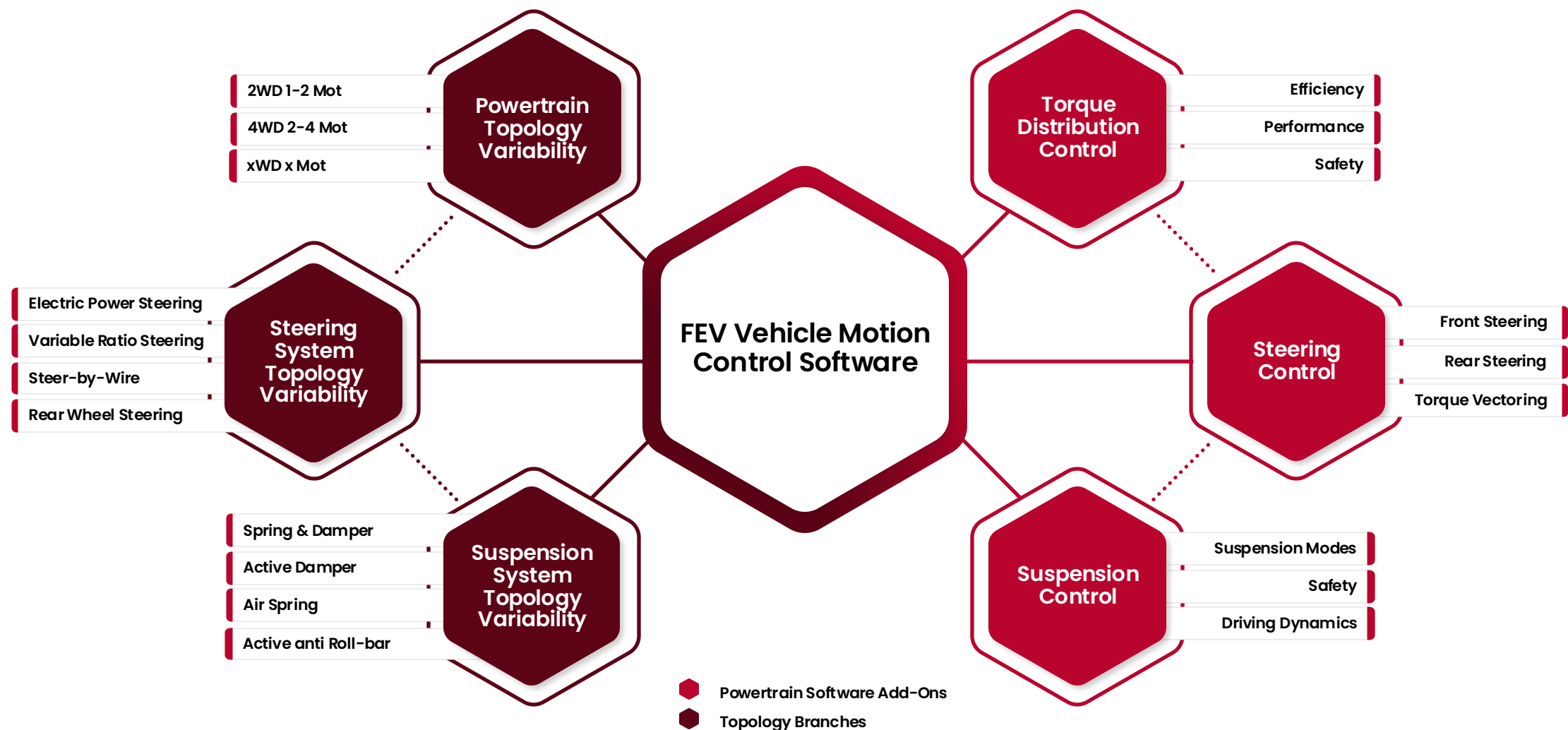## Main Targets

> **Ensure** synchronized chassis and powertrain controls and make use of the powertrain precision to control vehicle dynamics

> **Control** all existing vehicle domains closed loop to realize unified motion control

> **Transform** from central domain towards a software defined vehicle with zone-oriented architecture

FEV Signature Solutions

FEV's vehicle motion control functions

FEV Vehicle Motion Control Software

Powertrain Topology Variability
- 2WD 1-2 Mot
- 4WD 2-4 Mot
- xWD x Mot

Steering System Topology Variability
- Electric Power Steering
- Variable Ratio Steering
- Steer-by-Wire
- Rear Wheel Steering

Suspension System Topology Variability
- Spring & Damper
- Active Damper
- Air Spring
- Active anti Roll-bar

Torque Distribution Control
- Efficiency
- Performance
- Safety

Steering Control
- Front Steering
- Rear Steering
- Torque Vectoring

Suspension Control
- Suspension Modes
- Safety
- Driving Dynamics

Legend:
- Powertrain Software Add-Ons
- Topology Branches

Get in touch with us for further information

www.fev.com/en/
signature-solutions