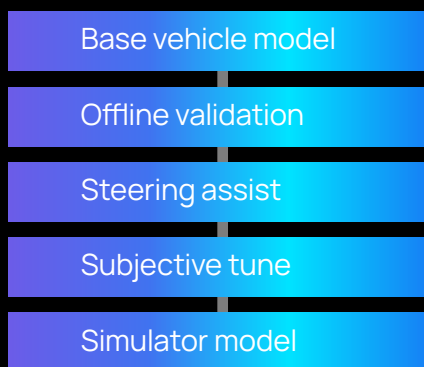# Digital Twin Provision

We offer bespoke digital twinning services to help you create virtual vehicle models for use in driving simulator applications.

These models known as 'digital twins' are based on physically measured vehicles where design intent data is not available, often a competitive benchmark vehicle.
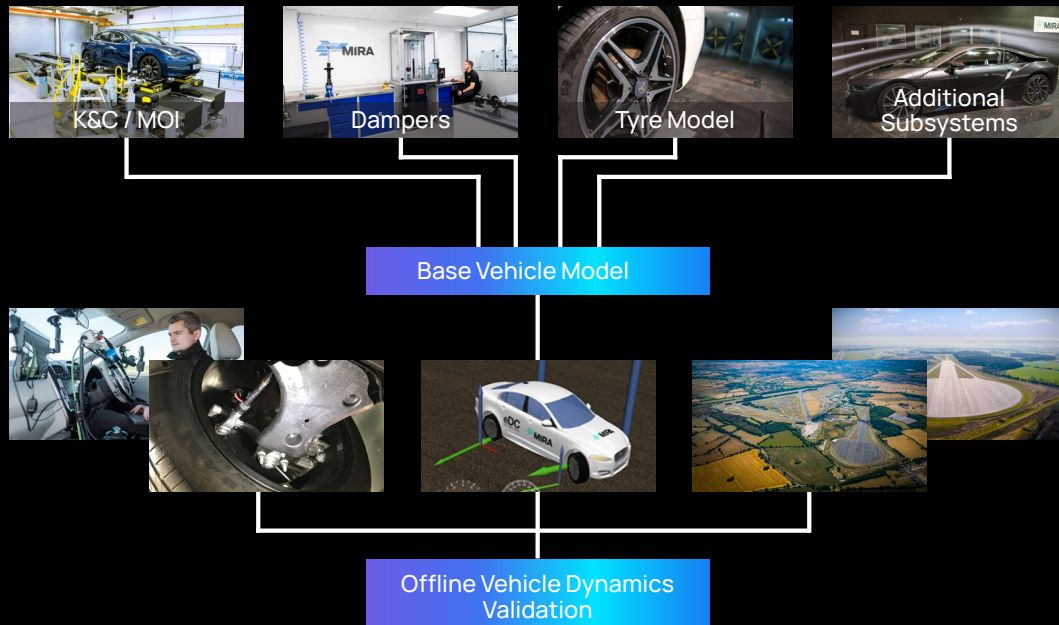
Improved Driving Simulator Development Process

Virtual Models

Physical Vehicles

Design

Benchmark Digital Twin

Benchmark

Driving Simulator Models

Digital Twin Process

- Base vehicle model
- Offline validation
- Steering assist
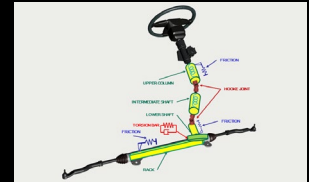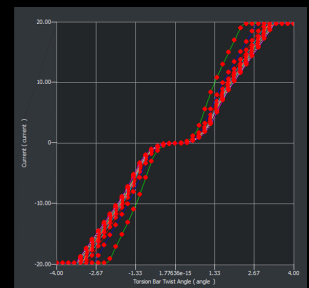- Subjective tune
- Simulator model

- Model is built in cost effective and efficient manner

- Only full vehicle representation required

- Created without needing access to majority of individual component data

- Particular focus on steering feel which is key interaction on Driver-in-the-loop (DiL) simulator

- Overlaps with typical benchmarking programme

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K&C / MOI   Dampers   Tyre Model   Additional Subsystems

Base Vehicle Model

Offline Vehicle Dynamics Validation

Advanced Steering Model

- Advanced VI-CarRealTime 'rack-pinion model' (Pfeffer) populated from full vehicle objective data

- Required for optimum driving simulator assessments

- Representative of complete steering subsystem

- Best solution without access to EPAS control model

- May require subjective tuning to determine best compromise on parameters

- *Alternatively EPAS model can be co-simulated if provided by OEM / Tier 1 supplier*

Benefits of Digital Twin and Applications

- Back-to-back assessments between physical vehicle and digital twin model to understand and subjectively calibrate against simulator response

- Replicate physical driving scenarios using scanned surfaces available within HORIBA MIRA's Virtual Proving Ground

- Model can form basis of early design concepts and be modified to determine key design vehicle parameters, setting targets or assess alternative subsystems

- Use digital twin model in offline simulations as well as driving simulators

- Suitable for Tier 1 suppliers to develop control systems or components (e.g. active chassis systems, ADAS features, tyre models)

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