

Collaborative development of a multi-segment vehicle platform

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HORIBA MIRA

CATL



Vehicle Engineering Consultancy



Test Engineering Services



Technology Park

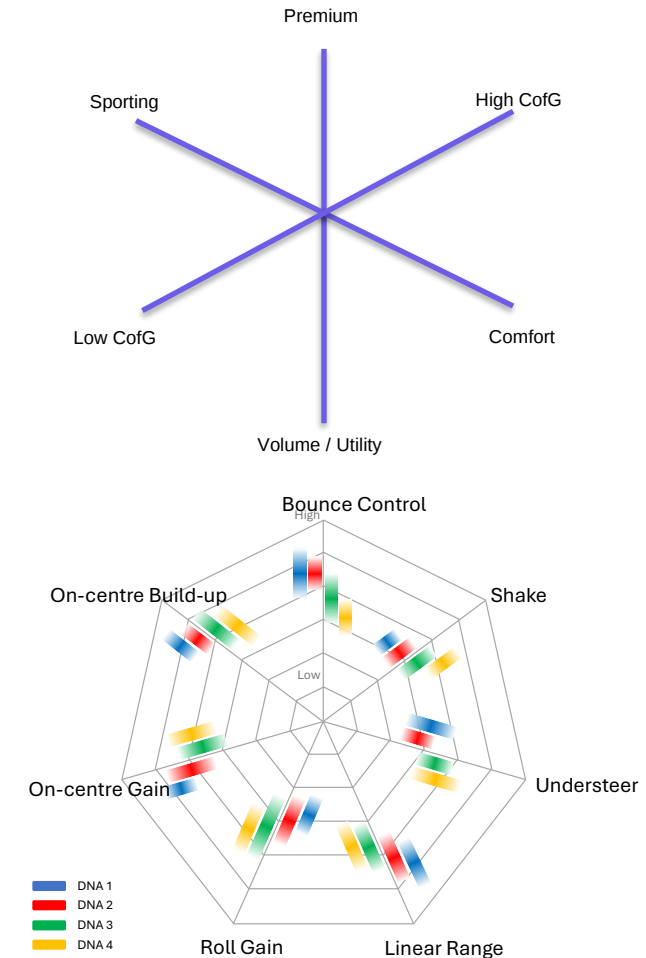


Platform Objectives

1. Sedan, SUV, MPV, etc., segment compatible
2. Wheelbase, track & ride height adjustable
3. Premium sports and luxury capable
4. Incorporate cell to chassis battery
5. Front &/or rear EDU options

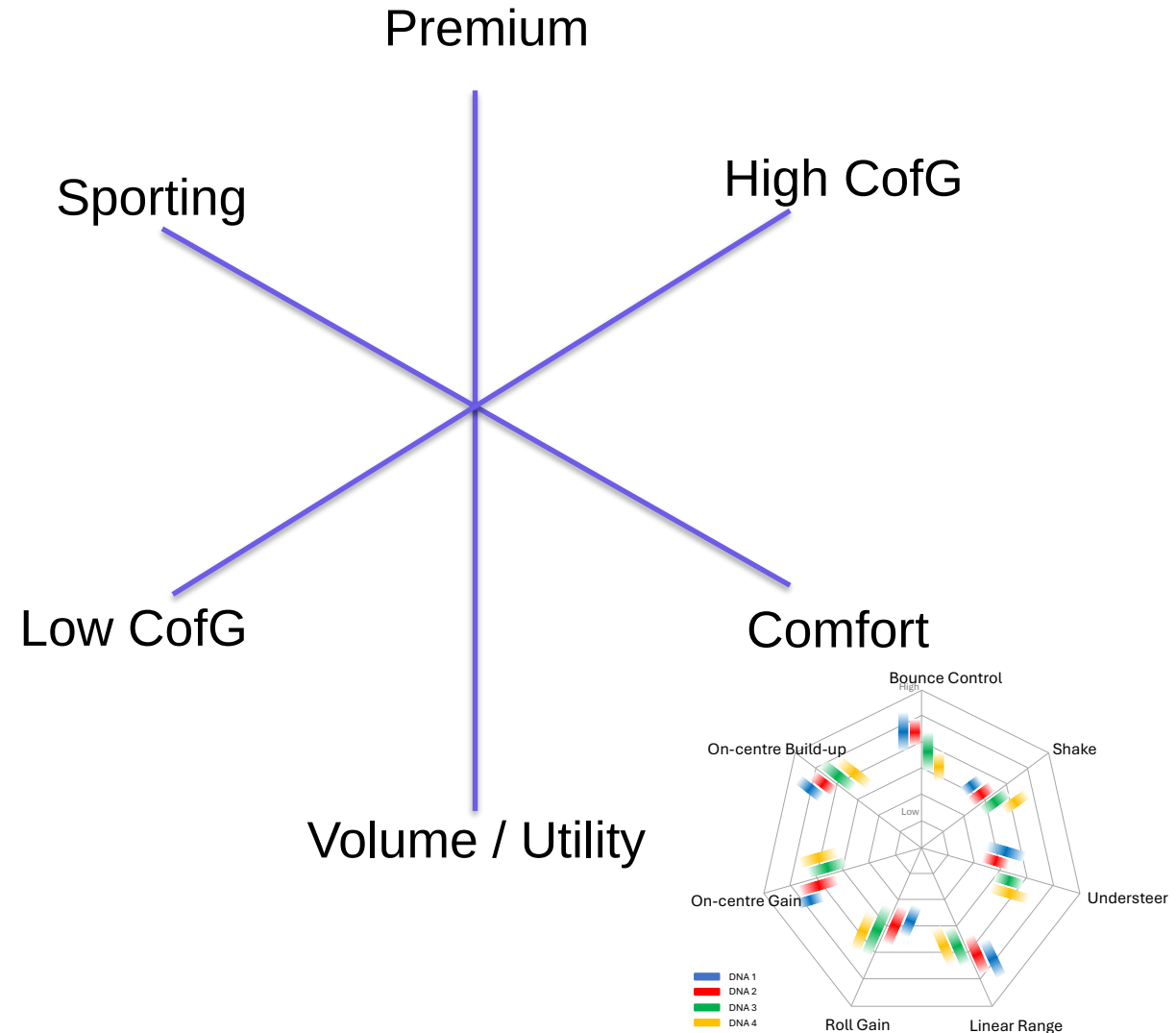
Physical Vehicle Benchmarking

- Customer perspective evaluations
- Range of vehicle segments
- Perceived brand DNA



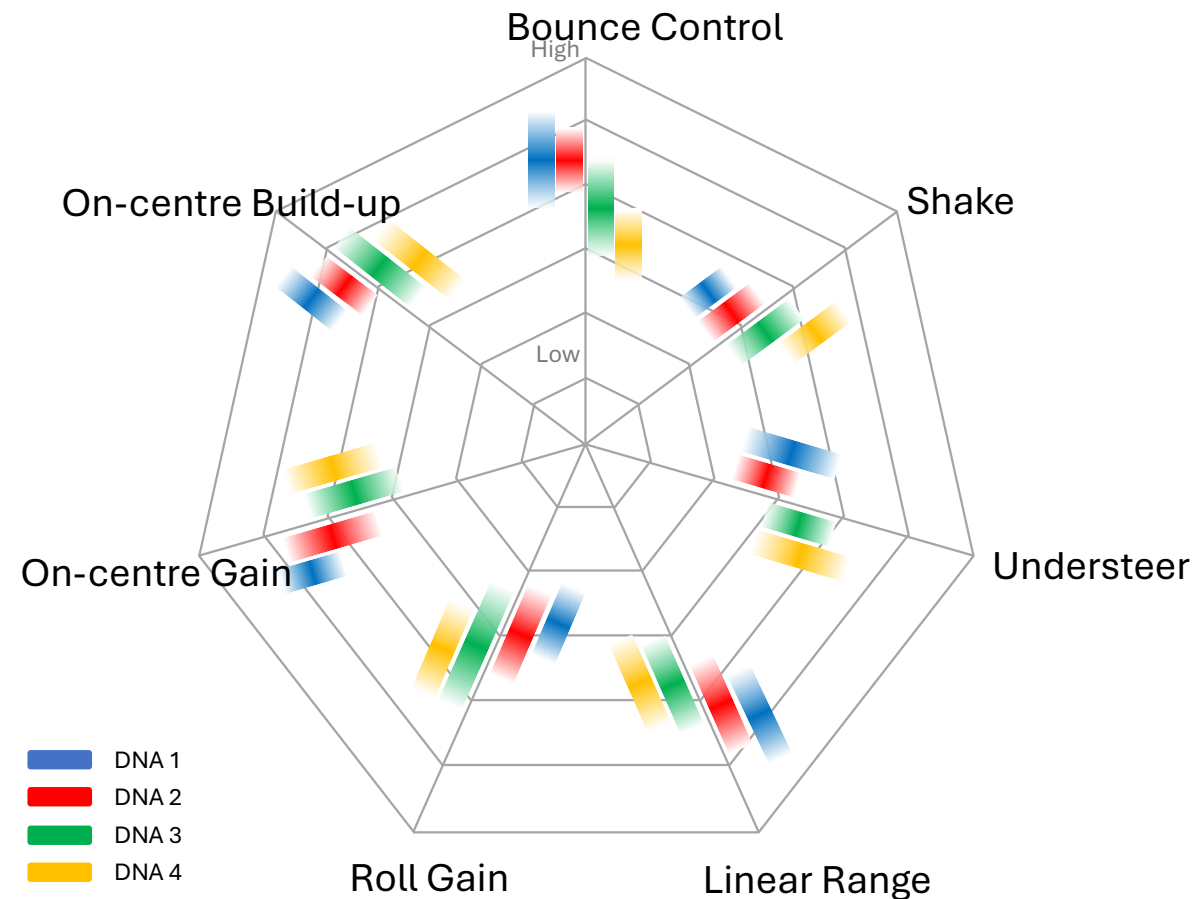
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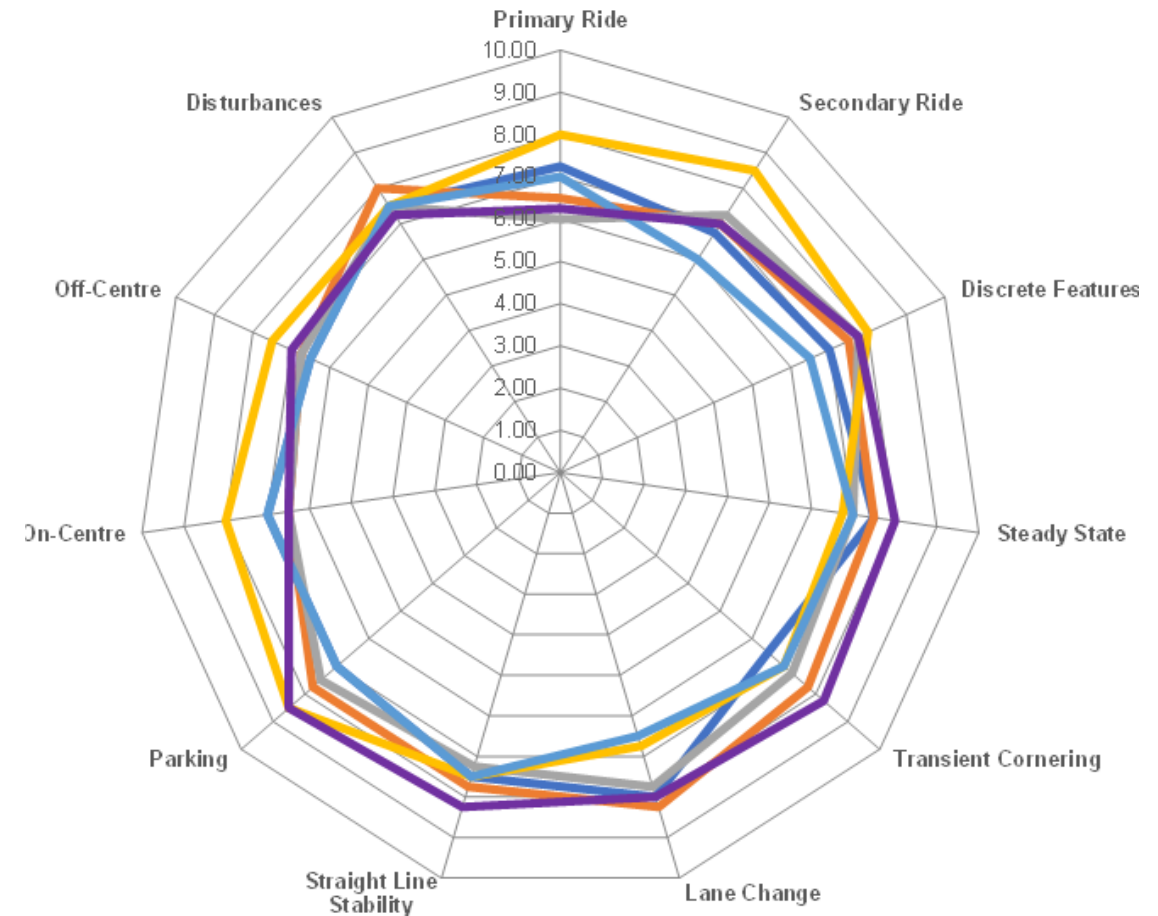


Digital twins created of key reference vehicles



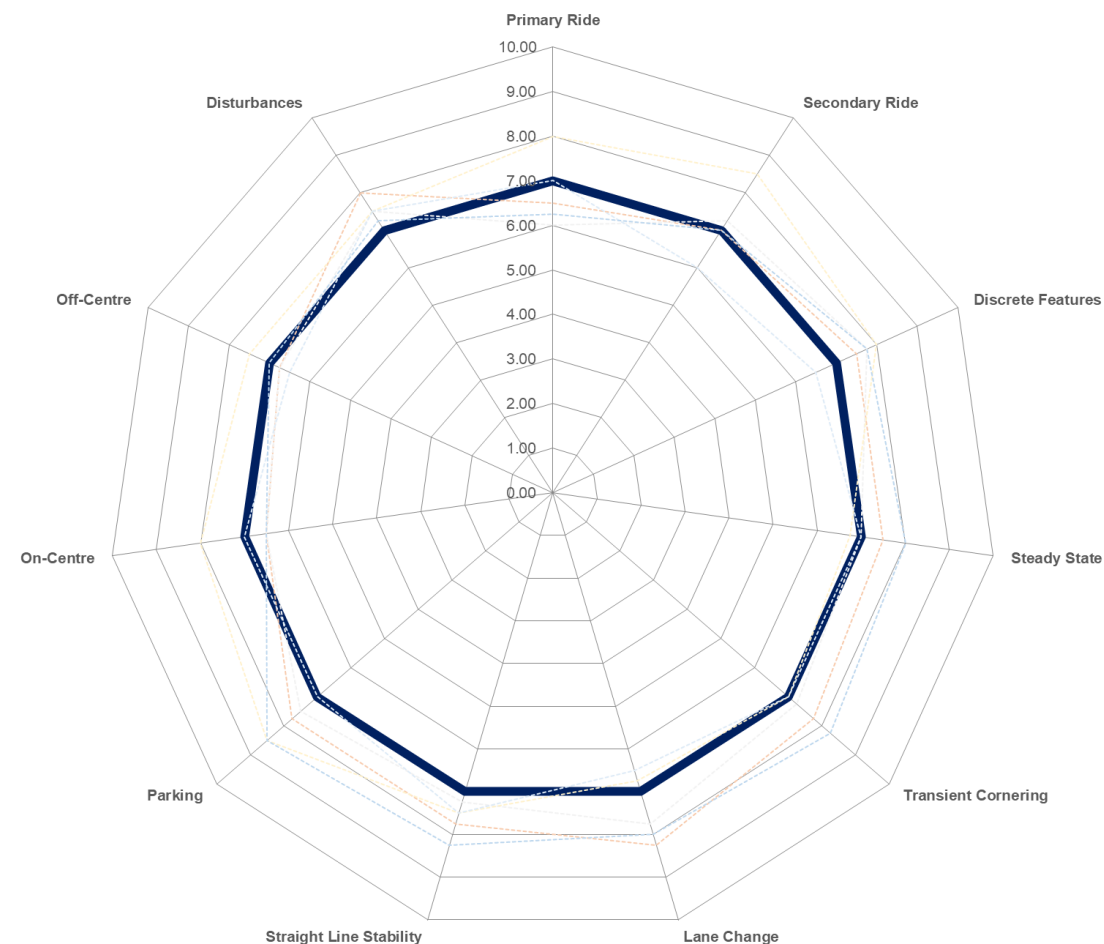
Vehicle level target generation

- Targets are subjective
- New opportunities and configurations explored on the DiM
- Analysis of core base platform requirements



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Variation in elements of the vehicles built on the platform

- Dimensions
- Mass properties
- Tyres
- Powertrain
- Active systems

The screenshot displays a vehicle configuration software interface. On the left, a 'Tree' panel shows a hierarchy of models under 'SedanCar', including 'SedanCar_body', 'SedanCar_front_suspension', 'SedanCar_rear_suspension', 'SedanCar_front_wheels', 'SedanCar_rear_wheels', 'SedanCar_steering', 'SedanCar_powertrain', and 'SedanCar_brakes'. The main panel, titled 'SubSystem File mids://SedanCar/subsystems.tbl/SedanCar_body.xml', contains several tabs: 'Header', 'Sprung Mass', 'Body Setup Data', 'Aerodynamic Forces', 'Cross Weight Adjustment', 'Default Sensors', 'User Sensor', 'Vehicle Graphics', 'Skidplate Point', and 'Spline Data'. The 'Sprung Mass' tab is active, showing a 'Wheelbase' of 2874.0. Below this, the 'Chassis Compliance' section includes checkboxes for 'Torsion', 'Lateral Bending', and 'Vertical Bending', each with associated stiffness and damping values. The 'Mass and Inertia' section features a table with columns for 'Full', 'Front', and 'Rear' properties.

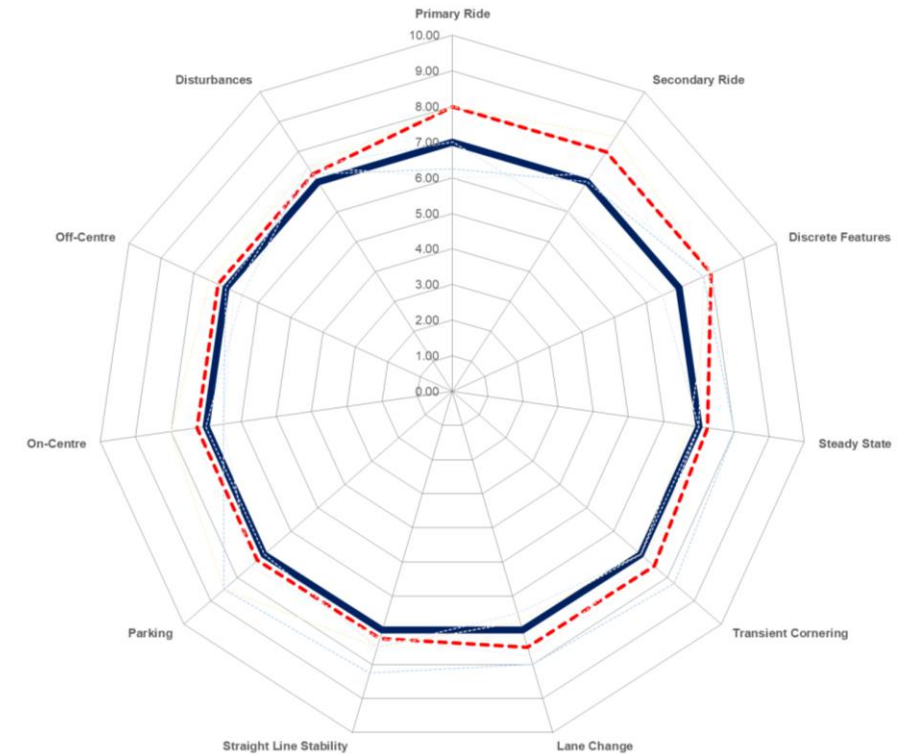
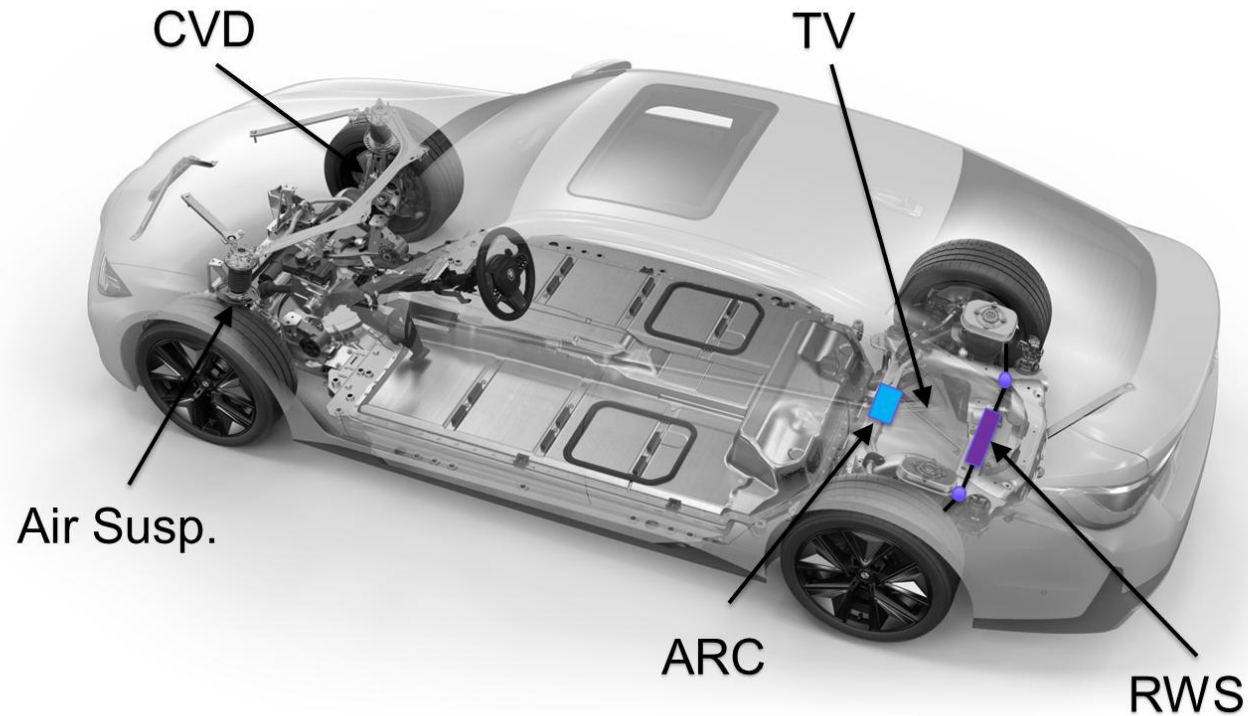
	Full	Front	Rear
CG longitudinal front wheel distance	1332.54471	1294.99	1294.99
CG lateral position	0.0239303211	0.0232559	0.0232559
CG height	626.606463	608.947	608.947
Mass	1760.30001	855.345	855.345
Ixx	527927421.0	256524000.0	256524000.0
Iyy	3071925150.0	1492680000.0	1492680000.0
Izz	2943608850.0	1430320000.0	1430320000.0
Ixy	-52483.7334	-25502.3	-25502.3
Ixz	59089.0902	28711.9	28711.9
Iyz	1150.90563	559.235	559.235

- The platform needs to be robust against variation

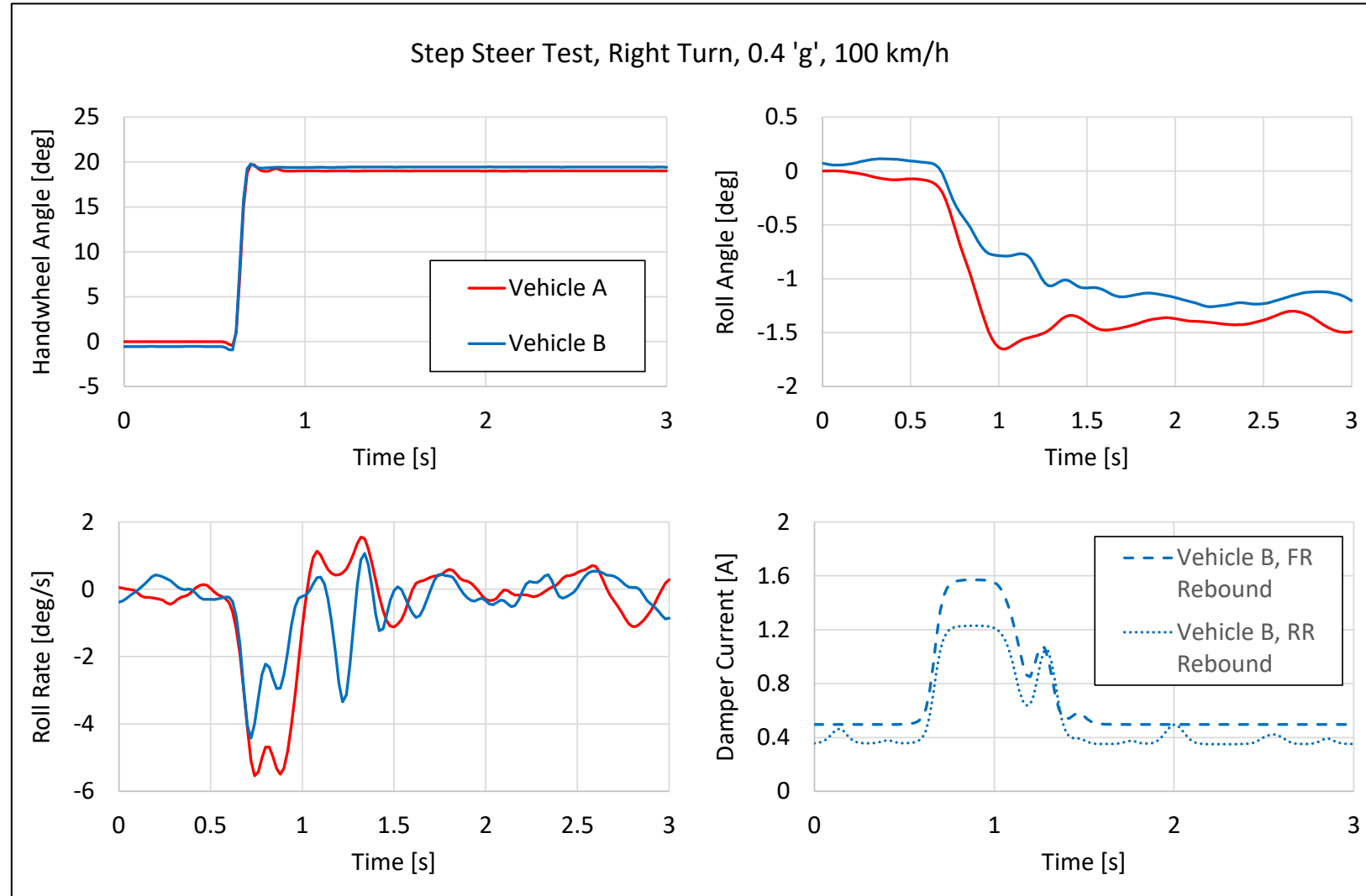
- The platform needs to be robust against variation
- A hardware deployment strategy

- The platform needs to be robust against variation
- A hardware deployment strategy
- Optional use of active systems

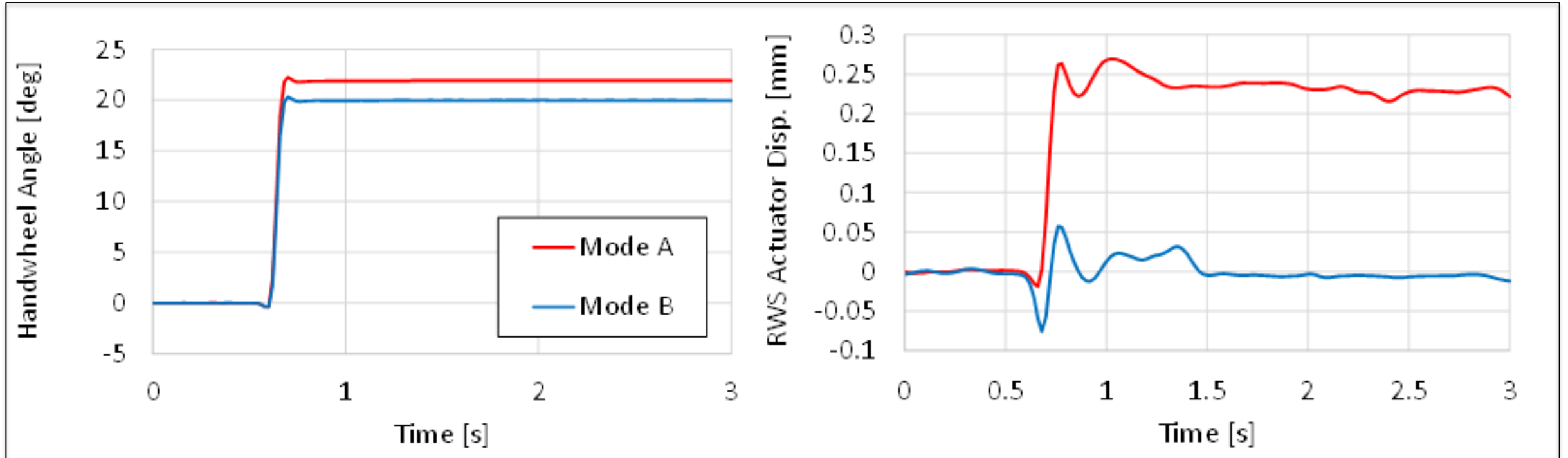
Active systems used to expand the performance envelope



Continuously Variable Damping



Rear Wheel Steer



Initial application of platform

- Initial application developed and driven in DiM
- Physical platform and vehicle built
- Fine tuning and validation testing completed in China by CATL and HORIBA-MIRA



Application evaluation, definition and tuning

- DiM is the ideal tool for evaluation of potential applications
- Effective target setting for all contributing elements of the vehicle.
- Active system selection and target setting



A car is mounted on a complex mechanical test rig inside a large, circular wind tunnel. The rig is dark and metallic, with various sensors and cameras attached. The car is positioned in the center of the tunnel, and the background shows the curved walls of the facility. The lighting is dramatic, with strong highlights and shadows.

HORIBAMIRA

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us on our stand.

Thank you for your attention

