



AUTOMOTIVE  
INTELLIGENCE  
CENTER



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# INTRODUCTION

The **Virtual Development Center** aims to be a reference in virtual design, development and validation of systems embarked in tomorrow's vehicle.

Starting from component or system modelling all the way to driver-in-the-loop simulation, the center is able to assist companies in their development process at various stages.



Component, system and vehicle modelling



DIL Simulation



Correlation with physical models

## WHY?

- Market demands are becoming more stringent in terms of safety, comfortability, connectivity and environmental impact.
- To address those demands novel solutions must be developed in a shorter-time, with a greater technological focus and without incurring excessive costs.
- Virtual tools allow for cost containment and deadline shortening at the initial and intermediate development stages.
- Additionally, they enable a greater understanding of the behaviour of the developed solution within the context of the complete vehicle, as well as its interaction with other embarked systems.

## TECHNOLOGICAL CAPABILITIES

The center is equipped with a **driving simulator** comprised of a six degrees-of-freedom motion system, a bottom and top platform connected through six electrical actuators, in front of a three-screen visual display system, complemented by an audio system.

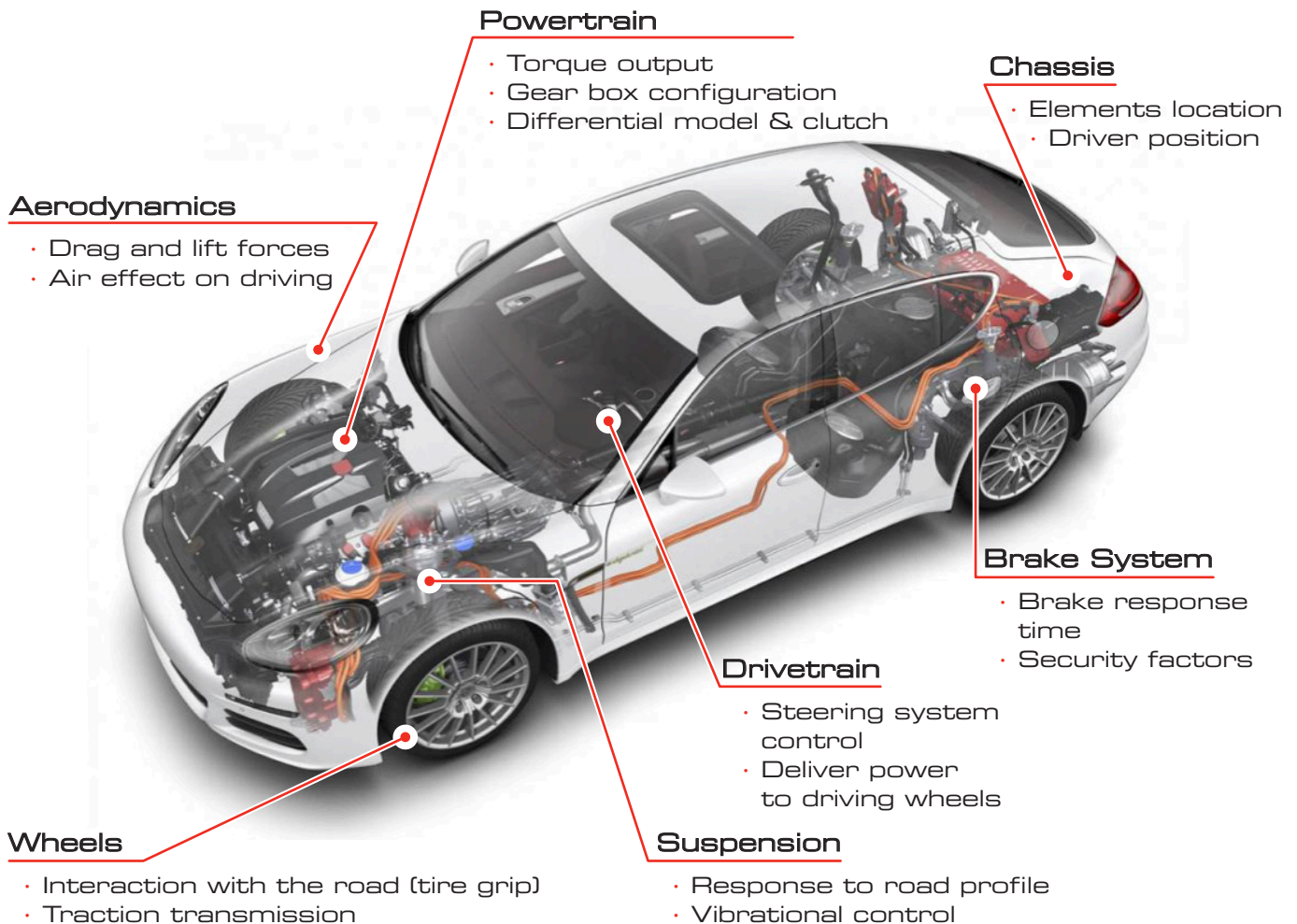
The modular software architecture controls the platform, executes the vehicle models and the rendering of the graphic environments.

The simulator enables the execution of industry-standard handling performance testing.



## MODULAR VEHICLE MODEL

The simulator allows to work with a modular vehicle model in order to study independently the different modules of a real vehicle. The elements that compose each of the systems can be parameterized to analyze their behaviour and their influence on the other modules.



## DRIVING ENVIRONMENT

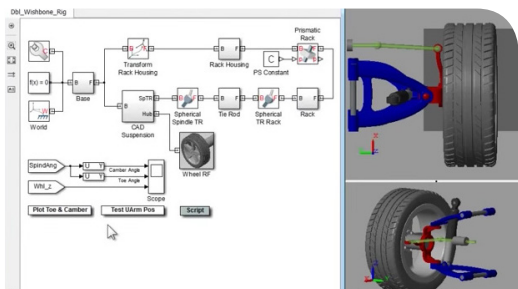
The driving environment is essential to create more realistic experiences. All kinds of 3D environments can be recreated, and the surface can be parameterized to simulate different driving situations.

## INTEGRAL SERVICES

- 1 Industrial company projects**  
Companies that want to validate their own models or need support in the development of a project.
- 2 Collaborative projects**  
Companies looking for partners to develop a R&D project.
- 3 AIC projects**  
AICs in-house virtual simulation R&D projects.



# DOMAIN AREAS



## COMPONENT, SYSTEM AND VEHICLE MODELLING

Validation of the dynamic behaviour of different vehicle models. It allows to improve the design and features of the vehicle systems.



## RIDE COMFORT

Driver isolation from the road irregularities to control vibrations for comfort and motion sickness.



## HANDLING PERFORMANCE

Check the vehicle response to different initial conditions. Alternative driving situations can be recreated without putting the driver at risk.

# AIC-AUTOMOTIVE INTELLIGENCE CENTER

AIC is a European center generating value for the automotive industry. It is based on the concept of open innovation where companies improve competitiveness through cooperation. Clearly market-oriented, it integrates knowledge, training, technology and industrial development under one umbrella.

To encourage and consolidate cooperation, members locate their innovation, training, R&D and industrial development units at the AIC facilities, where they work in an independent but coordinated way to come up with projects of common interest in a broad range of areas.



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