Software & Testing Solutions

xCAR™

Packaged Powertrain applications on STS virtual experimentation platform

xCAR™

xCAR™ supports you at each step of the development process

The increasing powertrain complexity combined with the new requirements de ined by evolving emission legislations are intensifying the challenges to be accomplished within the calibration process and consequently are leading to a much higher number of physical tests in different scenarios.

With xCAR™, optimize your effort, focus on what matters!

Features you will like inside xCAR

RT Model Library
Proven real time models to address longitudinal, lateral and vertical vehicle dynamics
$c_W \times A$

Flexible Structure
Switching from one vehicle architecture to another with a single click

Benschmark data
Ready to use template vehicle parameters and cycles database to make your first step

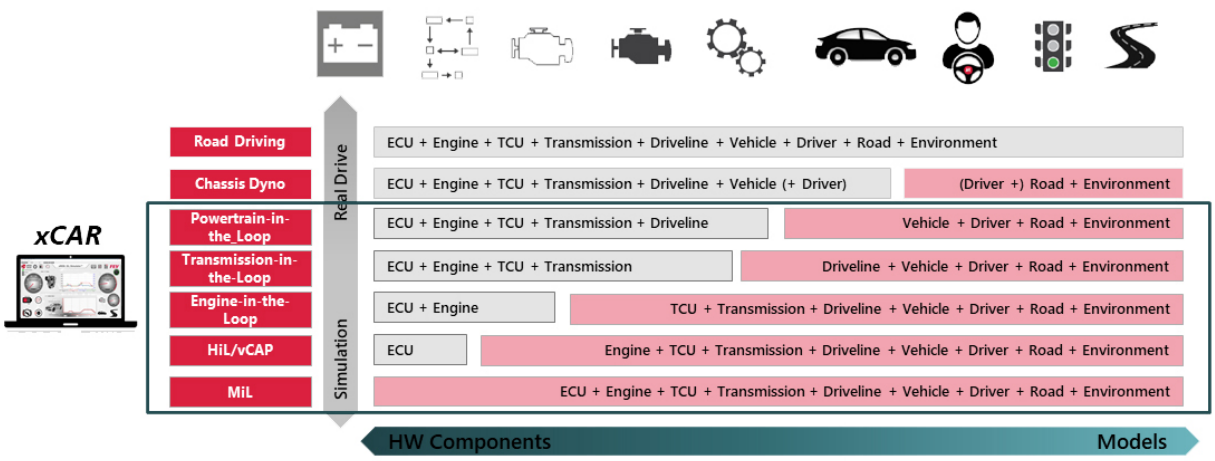
Ready to Use Application
No needs to do any models assembly. From conventional to electric a dedicated application is ready to be used.

Openess
Connection with any automation system and integration of any customer specific models

Powerful Framework
FEV's xMOD framework ensuring extreme performance and MiL to HiL continuity

Solution

To help you overcome these challenges, we developed xCAR™, packaged powertrain applications for virtual testing embedded in xMOD, the STS co-simulation and virtual experimentation platform. xCAR™ is the cornerstone of our continuous x-in-the-loop process (see figure below), ranging from the design stages (purely virtual) to road tests (fully real) and introducing, step by step, the right share of virtualization for every stage of the development process.



The xCAR™ XiL application offers a model structure describing the entire vehicle for any type of powertrain, with e.g. an engine block, a battery block, an electrical block, a vehicle block, a transmission block, an energy management system block and a driver block. The interface has been created to be used not only by simulation specialists but also by calibration engineers and test bench operators. In this user-friendly interface, the needed architecture can be easily selected – combustion engine, hybrid or electric motor. It enables an online modification of the parameters for each component (gearbox, brakes, wheels, vehicle etc.) as well as importing customized RDE cycles.

“STS Powertrain Expertise inside.”

Benefits

> Cranktrain
> Valvetrain
> Piston and Ringpack
> Timing and Accessory Drive
> Geartrain
> TEHD Bearing analysis
> Load prediction
> Firing order optimization
> Friction and wear prediction
> NVH analysis

Use cases

> Desktop simulation for concept exploration and components sizing
> Virtual hybridization of complete vehicle concept on engine test bench
> Exhaust aftertreatment screening on engine test bench
> OBD calibration on engine test bench
> E-motor performance in different vehicle layout and powertrain architecture on an e-motor test bench
> Objectified longitudinal drivability calibration on a powertrain test bench
> And so on, letting your imagination simulate the multiple possibilities