



# ALTAIR FOR AUTOMOTIVE

[altair.com/automotive](https://altair.com/automotive)



The automotive industry is evolving at an unprecedented pace; a transformation driven by simulation. As a product development partner to the world's largest OEMs and suppliers, we work to accelerate product development, enhance passenger safety and experience, all while optimizing vehicle fuel economy and durability. Our technologies are changing the way vehicles of all types are designed.

## THE PROOF IS IN THE SIMULATION

### Create Robust Architectures During Pre-program

The Altair Concept 1-2-3 (C123) design process enables designers to confidently create innovative, next-generation architectures by using simulation to inform vehicle architecture, manufacturing processes, material selection, and platform strategies.

### Leverage High-performance Computing

OEMs and suppliers rely on HPC for a faster time-to-market and superior product quality. Altair PBS Works™ is a comprehensive workload management suite for clusters, supercomputers, and the cloud. Altair Access™ lets you remotely visualize and interact with your data and applications, even across networks with challenging latencies.

### Drive Even More Design with Simulation

Altair's next generation HyperWorks experience was created to enable your team to move from physics to physics, domain to domain and even create reports without ever leaving the model. Every tool in the suite delivers a solution-specific workflow with a meticulously designed and discoverable user-interface.



BMW Motorrad reduced lead time in model build process by automating crankshaft modeling using Altair SimLab™

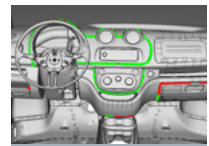
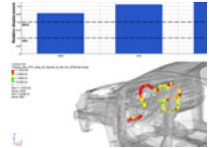
## IT'S A LONG ROAD. BE SAFE. BE COMFORTABLE.

### Increase Passenger Protection

In the age of autonomy and car sharing, new seating positions demand a fresh investigation of passenger safety using Altair Radioss™, an industry standard for automotive crash, impact, and airbag simulations. Altair MotionSolve™ helps chassis systems achieve vehicle dynamics targets and ensure safe maneuverability. With Altair FEKO™, vehicle connectivity and electromagnetic compatibility (EMC), which are essential to today's vehicles, can be verified.

### Improve Quality and Design Performance

Customers expect better vehicle performance, including minimizing noise, vibration and harshness (NVH), and the annoying squeak and rattle (S&R) phenomena. Altair's NVH Director reduces the full-vehicle NVH simulation time, freeing CAE engineers to optimize product design and performance. Altair Squeak and Rattle Director™ identifies and analyzes design alternatives to eliminate S&R causes.



SNRD enabled FIAT's NVH specialists to import linear models for their pre-existing vehicle range and correlate the simulation results with the known physical test data

### Create the Optimal Environment

In the past, engineers relied on wind tunnel tests during the design cycle to determine the effectiveness of heating, ventilation and air conditioning (HVAC) systems. Altair AcuSolve™ helps make more informed decisions earlier in the design cycle. Using transient computational fluid dynamics (CFD) simulation, it accurately models the air flow through the HVAC system, ensuring safer windshield defrosting capability, while optimizing the thermal management of electrical and mechatronic systems.

## HOW FAR AHEAD DO YOU WANT TO BE?

### Better Tools for Fuel Efficiency

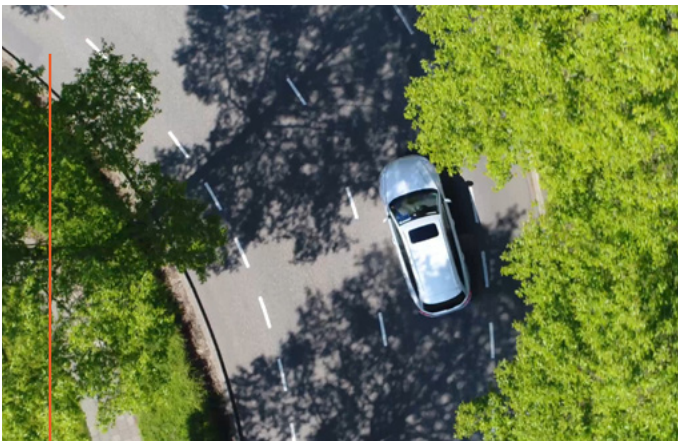
Automakers need a multipronged approach to achieve fuel efficiency, lighter structures and aerodynamics performance. Altair OptiStruct™ helps designers and engineers do just that, all while reducing costs and maintaining performance. Altair ultraFluidX™ improves external aerodynamic performance by applying GPU hardware to speed their decision making.

### Durability for Fleet or Personal Use

Future fleets of autonomous vehicles will cover more miles than personal cars for economic reasons: to cover the cost of expensive hardware and increase profitability by driving longer than a human would. Altair HyperLife™ provides a comprehensive toolset for durability analysis to enable the prediction of fatigue life under the repetitive loadings of a vehicle life. Vehicle durability loads can be extracted from Altair MotionSolve.

### Accelerate Powertrain Electrification

The move towards hybrid and full-electric powertrain systems delivers both business challenges and opportunities. Bringing BEV development cycles into alignment with traditional timelines require changes to engineering team structures and toolsets. Powertrains must be highly efficient and lightweight while meeting new regulations and growing customer expectations.



Hyundai MOBIS saved 33% of EMC simulation time through model decomposition and 3D analysis with FEKO

# HELPING THE INNOVATORS INNOVATE, DRIVE BETTER DECISIONS, AND TURNING TODAY'S PROBLEMS INTO TOMORROW'S OPPORTUNITIES.



## ALTAIR TRENDING IN:

Additive Manufacturing	Exascale
Autonomous & ADAS	GPU Solutions
Big Data	Lightweighting
Cloud Computing	Machine Learning
Data Transformation	Mechatronics
Digital Twin	Smart Product Development
e-Mobility	5G



**To us, Altair SimSolid™  
means efficiency.**

While the software quickly provides accurate simulation and optimization in one step it does not require any expert knowledge. No expertise in analysis is necessary and especially no meshing is required. Also, SimSolid helps our designer to shape chassis components with confidence based on the SimSolid simulation.”

**Anthony Reullier, Renault**



Altair is a global technology company that provides software and cloud solutions in the areas of product development, high performance computing (HPC) and data analytics. Altair enables organizations across broad industry segments to compete more effectively in a connected world while creating a more sustainable future.

To learn more, please visit [altair.com](https://altair.com)

