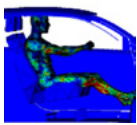


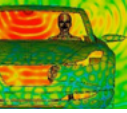
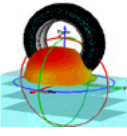
ANTENNA DESIGN & PLACEMENT FOR VEHICLES

SIMULIA Electromagnetic Solutions for Fast and Accurate Simulation Results



As vehicles evolve into connected, electrified, and increasingly autonomous platforms, reliable antenna performance is essential. At SIMULIA, we offer a comprehensive set of **electromagnetic (EM) simulation tools**, including **CST Studio Suite®**, for a wide range of applications. Our extensive solver portfolio—covering time-domain, frequency-domain, and hybrid methods—enables engineers to accurately model components across a broad frequency spectrum, from power electronics to radar and communication systems.

CHALLENGE	SOLUTION BENEFITS
 Antenna Placement Poor antenna placement in complex vehicle structures degrades signal quality and increases interference affecting V2X communication.	• FIT and BEM solvers with GPU acceleration for fast and highly accurate simulation of large models. • Quick and intuitive extraction of key antenna KPIs. • Antenna Placement App enables guided positioning directly within CAD.
 Multiscale Electromagnetic Simulation for Radar and ADAS Accurate modeling of broadband coupling across 6–7 orders of magnitude demands high numerical accuracy.	• Hybrid FIT/FEM/MoM solver engine with GPU support covers wide physics/frequency range. • Scalable solvers for parts from μm-scale to full vehicle. • 3DEXPERIENCE® platform enables seamless integration of CAD models. • Robust conformal meshing for large and complex structures.
 In-Cabin Sensing Modern in-cabin radar requires accurate simulation of wave interaction with human bodies inside an electrically large volume.	• FIT and BEM solvers with GPU acceleration for fast and highly accurate simulation of large models. • Detailed, poseable human body models and specialized material database.

CHALLENGE	SOLUTION BENEFITS
 Electromagnetic Safety Standards Stringent compliance standards for occupant safety require the consideration of multiple in-vehicle antennas.	• Seamless integration of high-fidelity poseable human body models with full vehicle data and antennas. • GPU-accelerated SAR post-processing with intuitive KPI extraction.
 Tire and Tire Sensor Simulation IoT-enabled autonomous vehicles require robust V2I/V2X communication with smart tire sensors to support safe and efficient maneuvering.	• Antenna simulation on detailed tire model from CAD including impact of deformation. • Specialized conformal meshing technologies for accurate simulation of curved multilayer structures. • Hybrid FEM/FIT solver engine to address challenges with small geometric details as well as large model size.
 System Integration & IP Security OEM-supplier collaboration demands IP protection while maintaining efficient model exchange.	• Seamless coordination via encrypted models for IP-protected collaboration. • Integrated workflows on 3DEXPERIENCE platform enhance data exchange between OEM and supplier.

Getting antenna integration right early in the design cycle is critical—not only to meet performance and compliance requirements but also to avoid costly late-stage redesigns and to deliver the seamless connectivity and safety features that consumers now expect.

Why Choose SIMULIA?

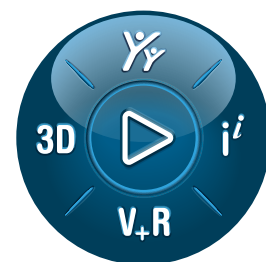
- CST Studio Suite technology
- Comprehensive solver portfolio with GPU support
- Robust conformal meshing
- Integrated multiphysics capabilities
- Advanced optimization and parametric analysis
- Guided workflows (incl. Antenna Placement App)
- Seamless integration of CAD models
- **3DEXPERIENCE** platform

Find out about [CST Studio Suite](#), and join the SIMULIA Community to learn more about [Antenna Simulation](#) and [Antenna Performance](#).

Dassault Systèmes is a catalyst for human progress. Since 1981, the company has pioneered virtual worlds to improve real life for consumers, patients and citizens.

With Dassault Systèmes' **3DEXPERIENCE** platform, 370,000 customers of all sizes, in all industries, can collaborate, imagine and create sustainable innovations that drive meaningful impact.

For more information, visit: www.3ds.com



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for Real Life**

