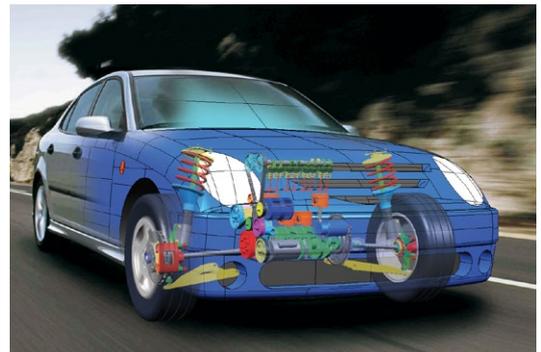


Adams-VTD Integration

Adams vehicle dynamics models can be ‘driven’ in Virtual Test Drive (VTD) to test safety-critical systems accurately from sensor to software

The cars of tomorrow will drive themselves. Although real road tests using physical prototype vehicles offer the highest degree of realism, the large amount of resources are needed to perform large-scale and extensive testing of vehicular networks, renders their use impossible. Simulations in large-scale virtual environments are essential to validate the performance of such solutions.

According to Mr. Aikido Toyoda, Toyota President, “It is estimated that some 14.2 billion kilometers [8.8 billion miles] of testing, including simulation, are required to reach the safety with the autonomous vehicles.” Furthermore, incorporating high fidelity vehicle physics in autonomous simulations provides an additional layer of confidence in these virtual approaches.



Virtual Test Drive

Virtual Test Drive (VTD) is the world’s most widely used open platform for the creation, configuration, and animation of virtual environments and scenarios for the training, testing, and validation of ADAS and Autonomous Vehicles.



VTD helps to develop the complex environments with complex traffic modules and intersections with more than 200+ participants in it. Also, the pedestrians with interaction with the environment can be added to the scenarios.

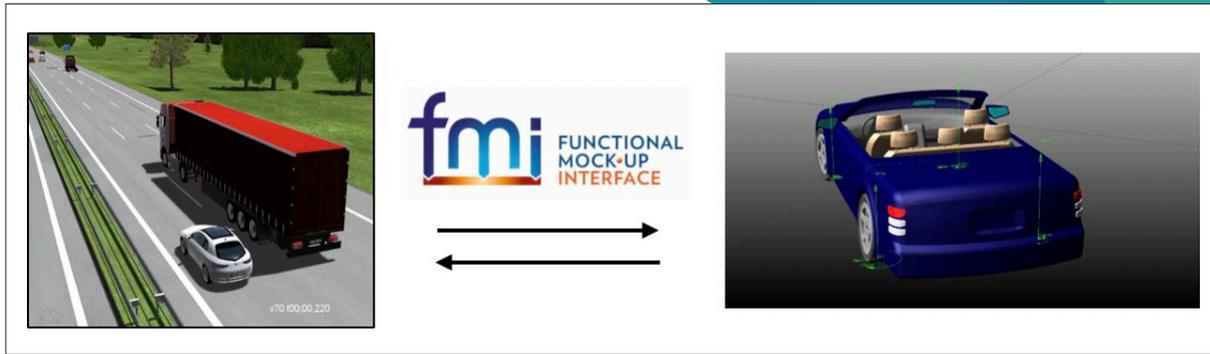
Adams

Adams from MSC Software is the industry gold standard for multibody dynamics. Over the past decades, Adams has helped engineers automotive simulate and analyze mechanism dynamics issues upfront in the design cycle.



Adams Car is extensively used in automotive industry, not only for handling analysis. Another common usage is to accurately predict loads in the system with Adams, loads that can later be used for stress and fatigue analysis. Other applications include evaluation of ride and comfort, and detailed analysis of powertrain and drivelines. Control systems can be integrated with the Adams model to more accurately evaluate and validate things such as active safety systems.

Adams – VTD Interface



Functional mockup interface (FMI) standard for model interoperability

Using the open Functional mockup interface (FMI) standard for model interoperability engineers can now couple Adams with VTD and include high fidelity vehicle dynamics in their autonomous simulations.

The Adams model is exported as a Functional Mockup Unit (FMU) and made available in the VTD environment. Since a tool independent standard is adopted, there is no need to create a specialized interface to ensure model continuity and tuneable model fidelity.

Adams models can now be used directly in VTD 2019.1 using the open Functional Mock-up Interface (FMI), with flexible configuration to simulate any vehicle including trucks with more than 4 wheels and trailers. VTD guarantees synchronicity for robust simulation with Adams at real time, or faster. Companies can now “bring their own AI” using an open interface to insert their driver-in-the-loop into VTD, then test and train their self-driving algorithms in a more accurate simulation with richer data.

Benefits of Adams-VTD Integration:

- Adams can be used to represent more advanced vehicle dynamics like rough roads, driving over a curb, and evasive maneuvers.
- More realistic representation for sensor behaviors (vibration causes blurry camera images)
- Sensor positioning and sensor location optimization
- Ride comfort study for driving simulator
- Chassis parameter tuning for optimal handling/turning performance

“ Simulation must be accurate to centimeters, not meters, because a split second makes the difference in the most complex of circumstances. With Adams-ready VTD, we have brought software development and automotive engineering together so the industry can move from ‘what should the vehicle do?’ to ‘can the vehicle cope with this command?’ And develop the next generation of safe vehicles.”

Luca Castignani,
Automotive Strategist, MSC Software

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon’s Manufacturing Intelligence division provides solutions that use data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagonmi.com.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us [@HexagonAB](https://twitter.com/HexagonAB).