



PRODUCT UPDATES 2024.1

RELEASE 2024.1



GENERAL INFORMATION

- Major release coming soon
- Supporting updated versions of third party solutions
- Windows 11 certification
- NVH Simulator renamed to VI-**NVH**Sim

Matlab	2018b 2022b
SimWorkBench	2022.2 2023.1
Adams	2022.1 2022.3.1 2023.2
SCANeR	2021.1
rFpro	2022b
TameTire	6.2..3
CDTire	2021.1.2
FTire	2023.3
RIDEtire	21.1
MFTyre	2306
Veristand	2021r2 LinuxRT
Simulink Realtime	2021b 2022b
dSPACE® RCP & HIL	2021a
Unreal Engine	5.1.1
RoadRunner	2021b 2023a

RELEASE 2024.1



VI-DRIVESIM 2024.1

VI-DriveSim

- FSS Simulator support
 - NVHSim bridge
 - SimSoundX support
 - FSS control panel
 - FSS motion control
- RealTime volume control enhancements
 - Mixer configuration for each vehicle sound, instead of global mixer
- SimWB 2023.1 support
- rFpro 2022b support

VI-Motion Cueing

- AoR calculation
- Additional VI-MotionCueing outputs
- FSS Simulator support

VI-Certified

- Updated protocol to support FSS platform
- Updated protocol to support Positional Cueing
- Updated Simulation Manager to retrieve vehicle information at startup

VI-Dashboard

- Mixed reality mode
- New layouts



VI-WORLDSIM 2024.1

VI-WorldSim

- Migration to Unreal Engine 5
- New world illumination
- New physics for traffic agents
- New documentation
 - Unified with offline
 - HTML & PDF format
- Improved configuration management running multiple processes on a single node

VI-WorldSimModkit

- Custom vehicle creation pipeline
- Support for RoadRunner 2023a
- Support for preinstalled Unreal Engine



VR/XR

- Support for XR HMD
- Support for virtual dashboards

Vehicle Library

- Improved vehicle library visual
- New archetypes aligned to CarRealTime shared models

Sensors

- Faster execution
- Environment objects detected by Radar

Environments

- New European highway

VI-NVHSIM 2024.1

VI-NVH Sim

- Full Spectrum Simulator integration with VI-DriveSim
- Additional FRF for Contribution Sound Objects
- Easier performance modelling for Load2, RPM2, etc.
- Support for SEA transfer functions exported from ESI VA One
- CAE Auditor support for RPC III (.rsp) Filetype
- Updated & Expanded Change Modeller
- Pack & Go and Relocate for QNX LiveAMP objects
- 48 kHz Runtime Sample Rate support
- Road Surface Mapping for all Sound Object Types

Data Prep

- Various EV Modelling workflow enhancements
 - Static Cursor type for displaying "Orders to Extract"
 - Add to Order list from Single Order Cursor
 - Improved Filter Optimization for EV extraction
- Major RPM Autotracker improvements
 - RPM Autotracker updated for improved high-frequency performance
 - RPM Autotracker 'Profile Enhancer'
 - Scale Factor calculators for RPM Autotracker
- Operating Path Analysis for enhanced Road Noise Decomposition
- Gear Mapping in NVH Simulator Export
- Easy configuration for Full Spectrum Simulator NVH models

VI-SimSound

- Full Spectrum Simulator integration with VI-DriveSim



VL-CARREALTIME 2024.1

VI-CarRealTime

- Actuator Subsystem with user defined expression
- FMU subsystem
 - UI driven coupling
 - FMU parameters accessible from UI
- File Driven Event VDFParameters
- Partial Subsystem Import
- Model Diagnostic Tool
- Webhelp:
 - compatibility with modern browsers
 - refreshed style

- FMU based workflow for NI-PXI
- Windows 11 certification
- Adams 2023.2 compatibility

Investigation mode

- faster generation of input files
- faster generation of results file
- Matlab parameters available as DOE candidates

Tires & Roads

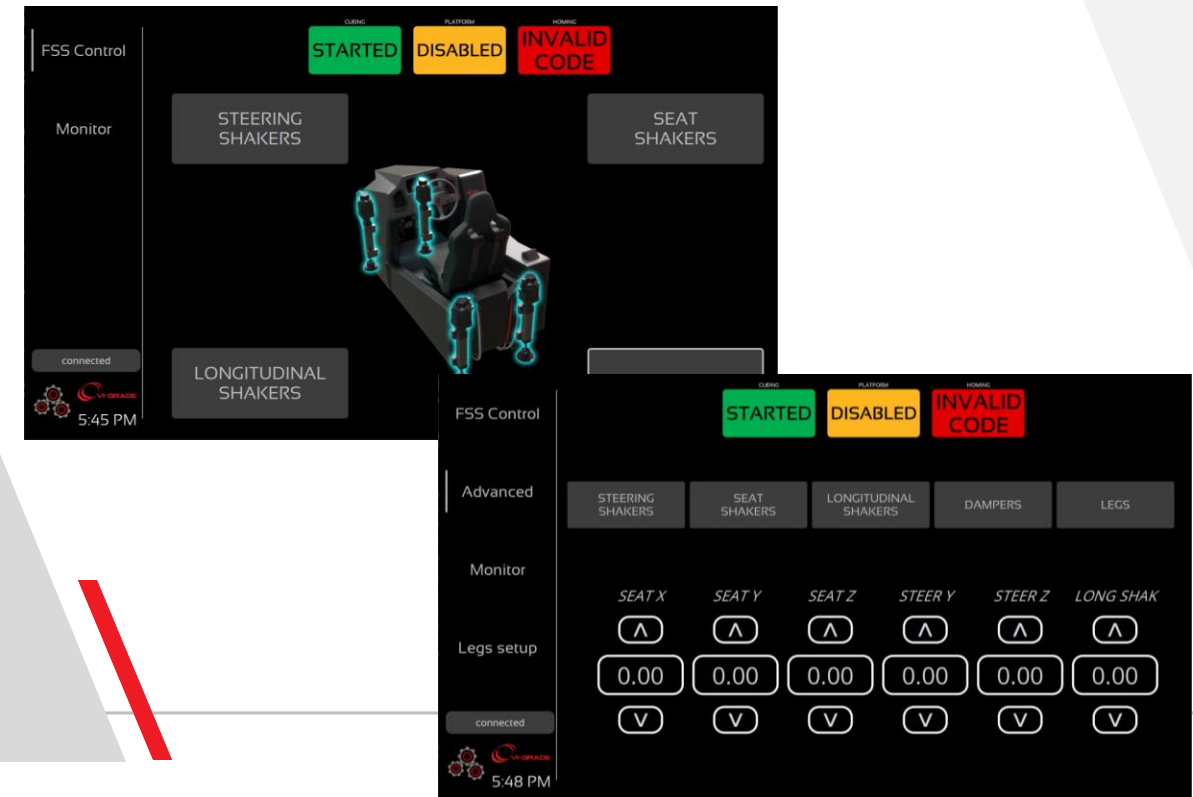
- FTire 2023.3 support
 - Improved realtime efficiency
 - More stability
- Updated 3rd party tires version



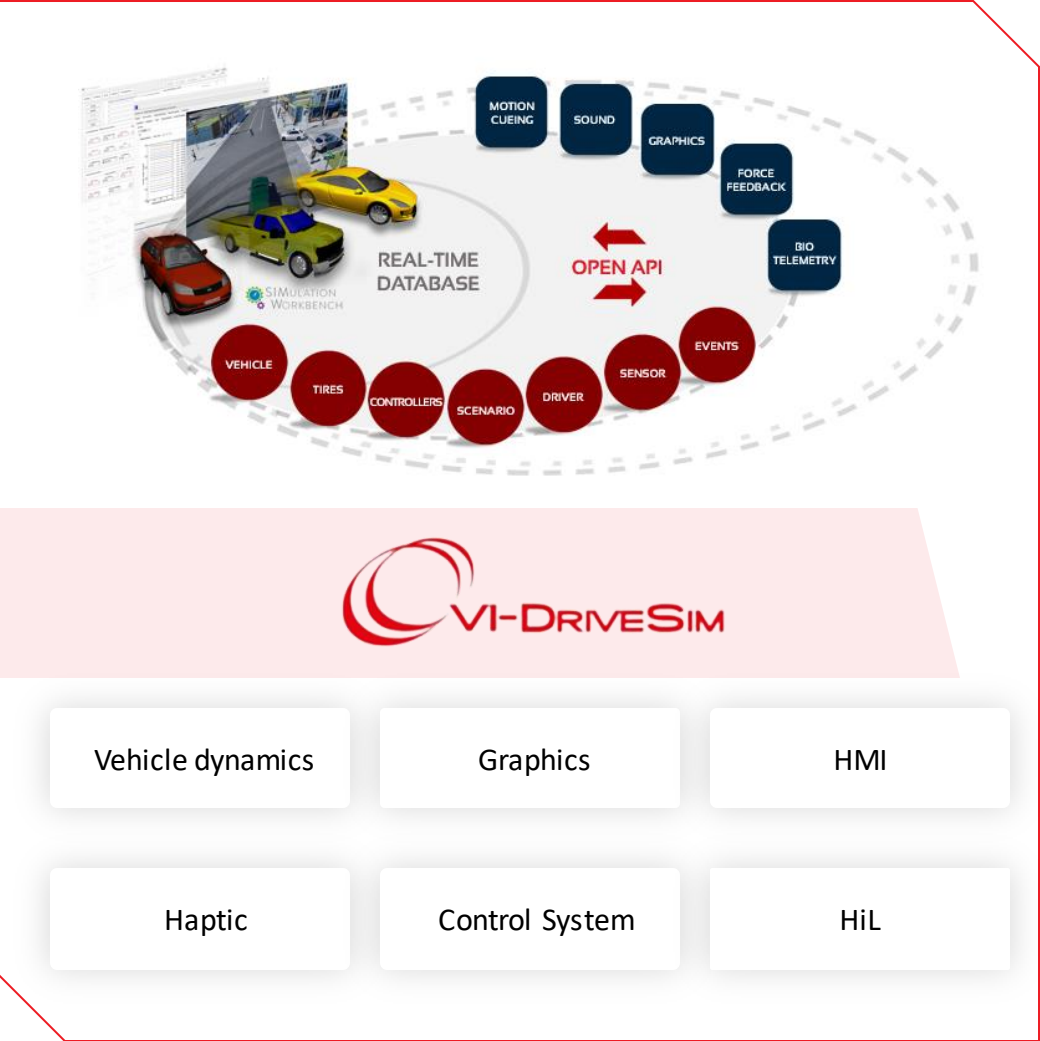
COMPACT FSS SIMULATOR

THE SOFTWARE BACKBONE

- Dedicated Motion Cueing and Control interface



MULTI-ATTRIBUTE ECOSYSTEM



Bridge
process



VI-NVHSim

Sound Vibration

- Model creation
- Interactive editing



VI-SimSoundX

Sound Vibration

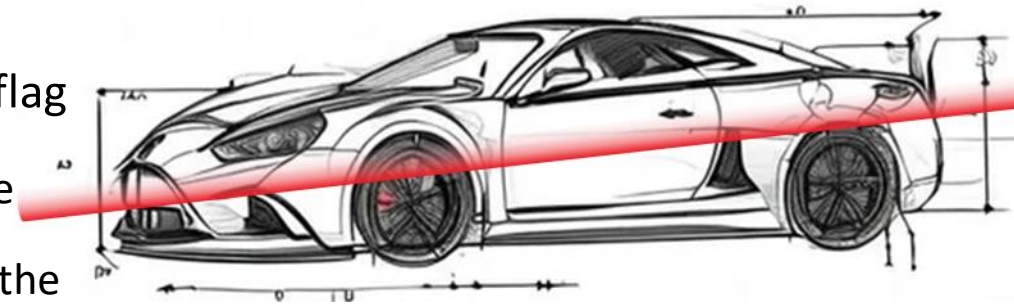
- Play models
- Fully controlled by VI-DriveSim

VI-DRIVESIM 2024.1

AUTOMATIC AXIS OF ROTATION



- **Previously**, for each vehicle model (and cockpit mounted on the platform) it was needed to calculate the Axis of Rotation based on:
 - **CoG** of the vehicle
 - **Pitch Center** of the vehicle
 - **Roll Center Height** at front and rear suspension
 - **Driver Hip Positions** on the real vehicle and on the simulator
- **Now, AoR** can be automatically calculated by enabling the relative flag on the vicue file, while:
 - **vehicle parameters** are automatically calculated during start-up of the simulation (*if VI-CarRealTime is used*)
 - **Cockpit parameters** are stored in a **json file** and loaded at start-up of the simulation
- **VI-Certified** tools can populate the vehicle parameters through a dedicated **json file**, processed at simulation startup



VI-DASHBOARD VR



Car displays configurable with VI-WorldSim ModKit



VI-Dashboard bindings to VI-WorldSim



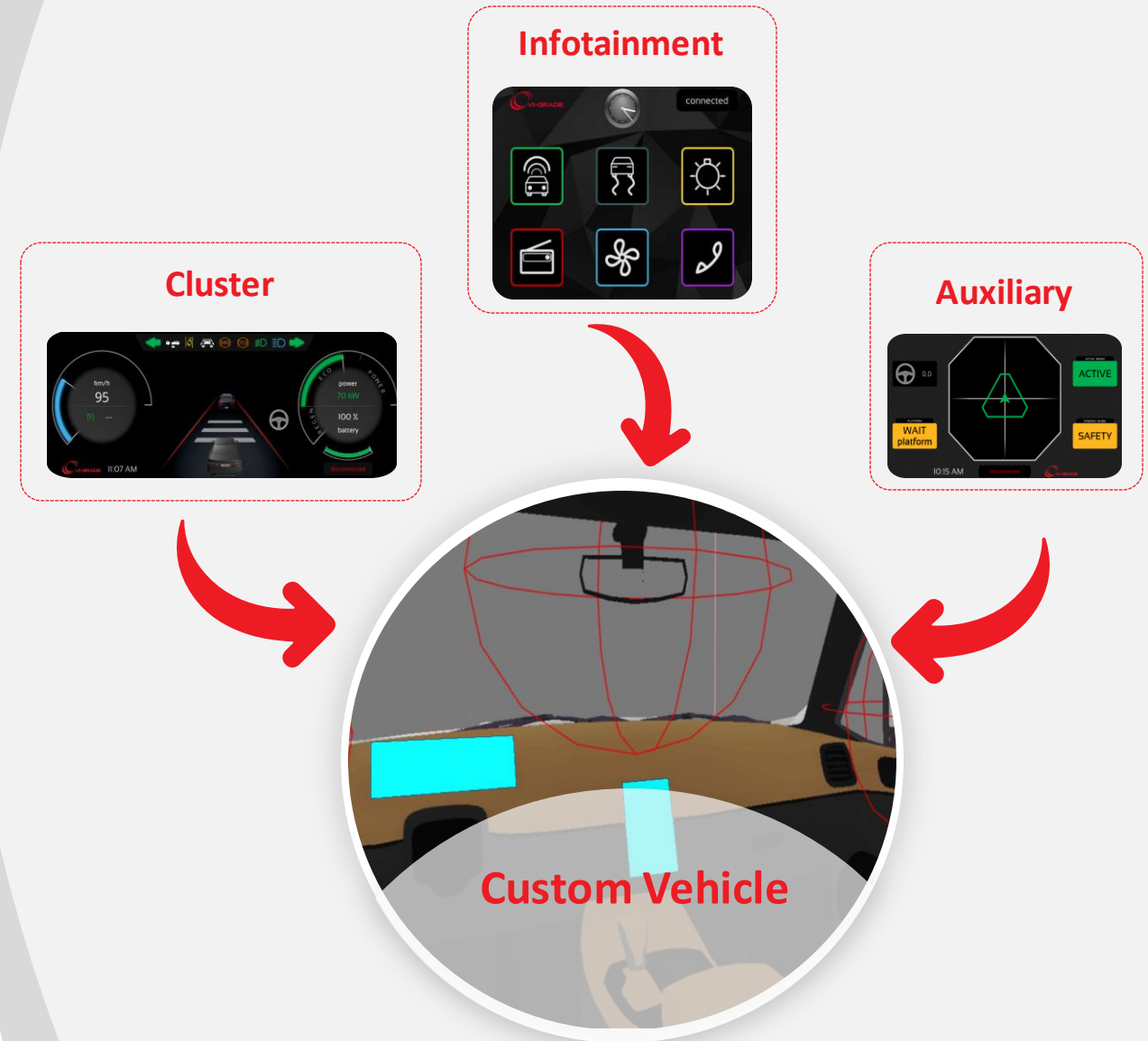
Support for existing layouts



Dashboard control through VI-DriveSim UI



Free mix of virtual vs physical displays



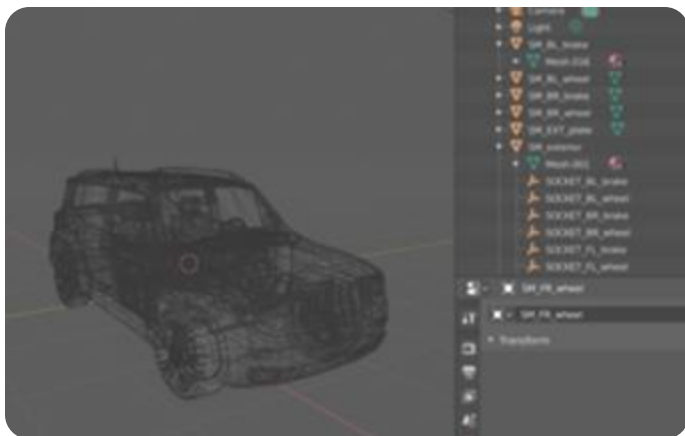
VI-WORLDSIM VEHICLE MODKIT

CUSTOM VEHICLE CREATION PROCESS



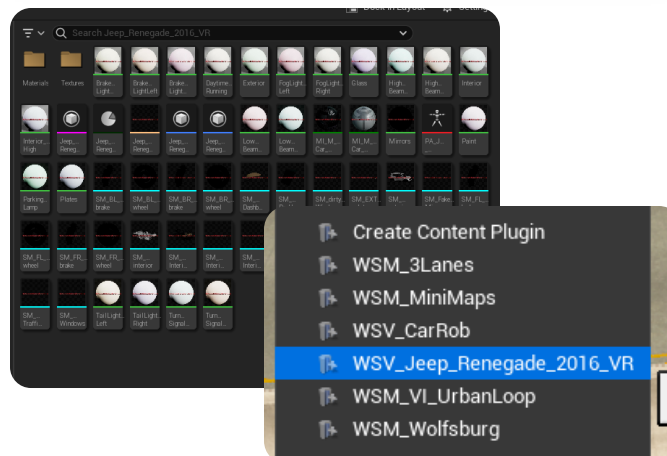
3D Asset Creation

- Use the preferred 3D modeler to create the reference asset



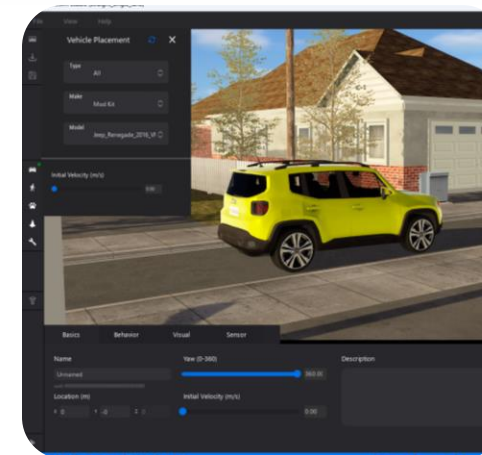
Processing with WorldSim ModKit

- Generate the full Unreal content
- Refine model properties
- Export vehicle mod

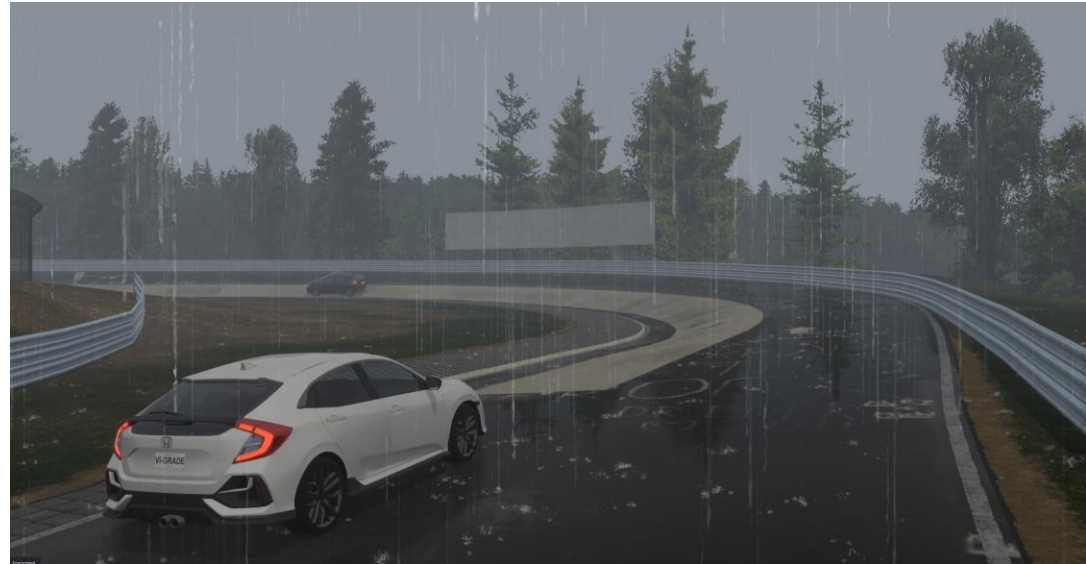


Add on for WorldSim

- Deploy custom vehicles in regular WorldSim installations



IMPROVED LIGHTING



THE XR EXPERIENCE

URBAN LOOP

- Unreal 5
- Open XR
 - Varjo XR3
 - Newer HMDs
- Compatible with VI-WorldSim environments library

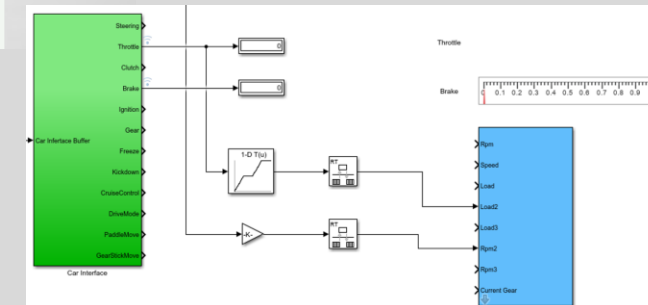
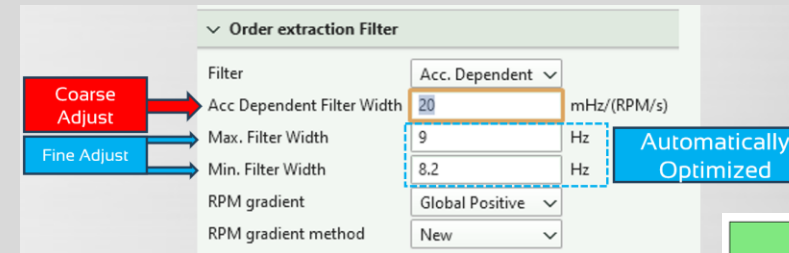
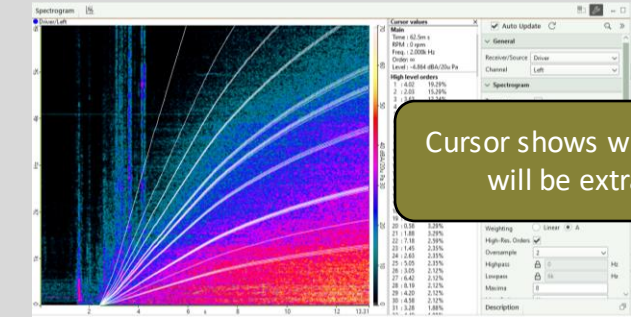
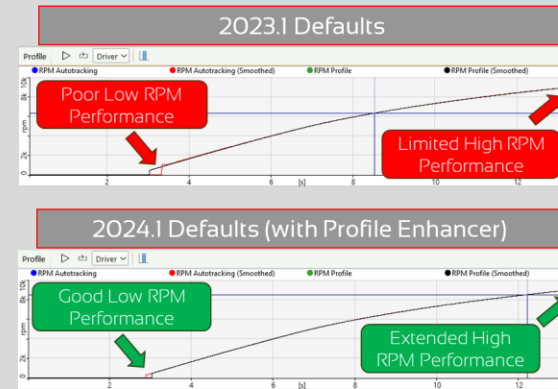


VI-NVHSIM 2024.1



EV MODELLING

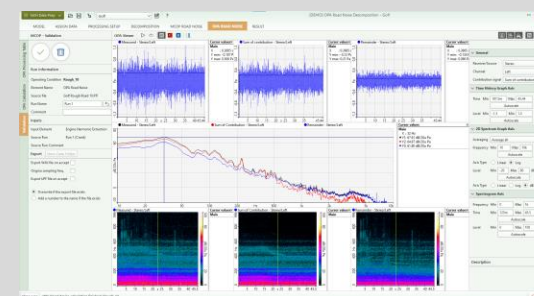
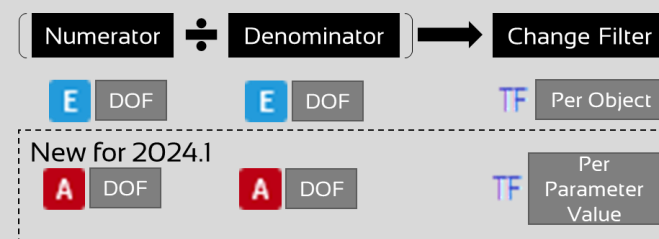
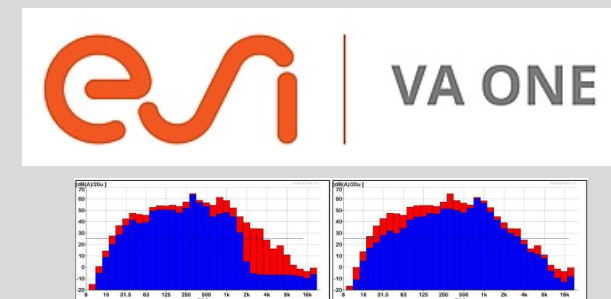
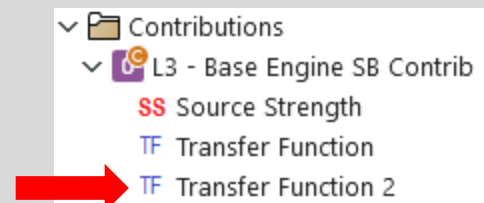
- **RPM Autotracking** improvements
 - Enhanced algorithm for higher accuracy and immediacy
 - Built-in scale factor calculators
- **“Orders to Extract”** static cursor type
 - Easily view the order list on the spectrogram
- Enhanced **Filter Optimization** for EV Order Extraction
 - Easier workflow for filter settings
- Semi-External **Performance Modelling**
 - Use RPM2, Load2, etc. from External model concurrently with built-in VPD



VI-NVHSIM 2024.1

ADVANCED ANALYSIS AND CAE

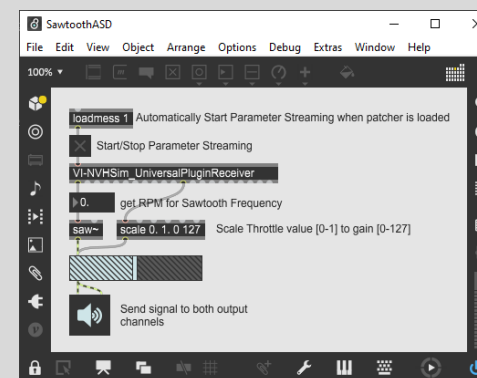
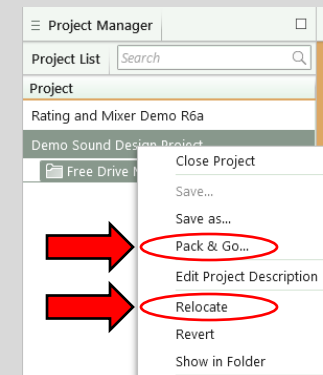
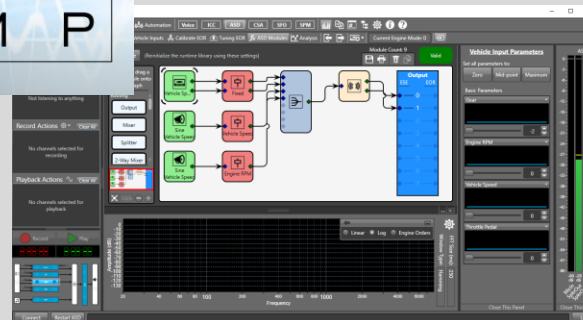
- **Dual FRF** for contribution objects
 - Enables roll-up studies for double-isolated mounting, better compatibility with CAE data, etc.
- **ESI VA One** SEA transfer function support
 - Experience changes modelled in VA One
- Enhanced and expanded **Change Modeller**
 - Array sound object input
 - Ratio Filter mode for use with Test/CAE Data
- Operating Path Analysis for enhanced **Road Noise Decomposition**
 - Improved results vs. MCOP method
 - Steady state (constant speed) and transient (impact)



VI-NVHSIM 2024.1

SOUND DESIGN

- Relocate, Pack & Go support for **QNX Sound Design**
 - Improved portability of QNX designs between PCs
- **Open Sound Design** Tool Integration
 - Max/MSP abstraction for Universal Plugin Protocol
 - VirtualASIO Software-in-Loop audio sharing

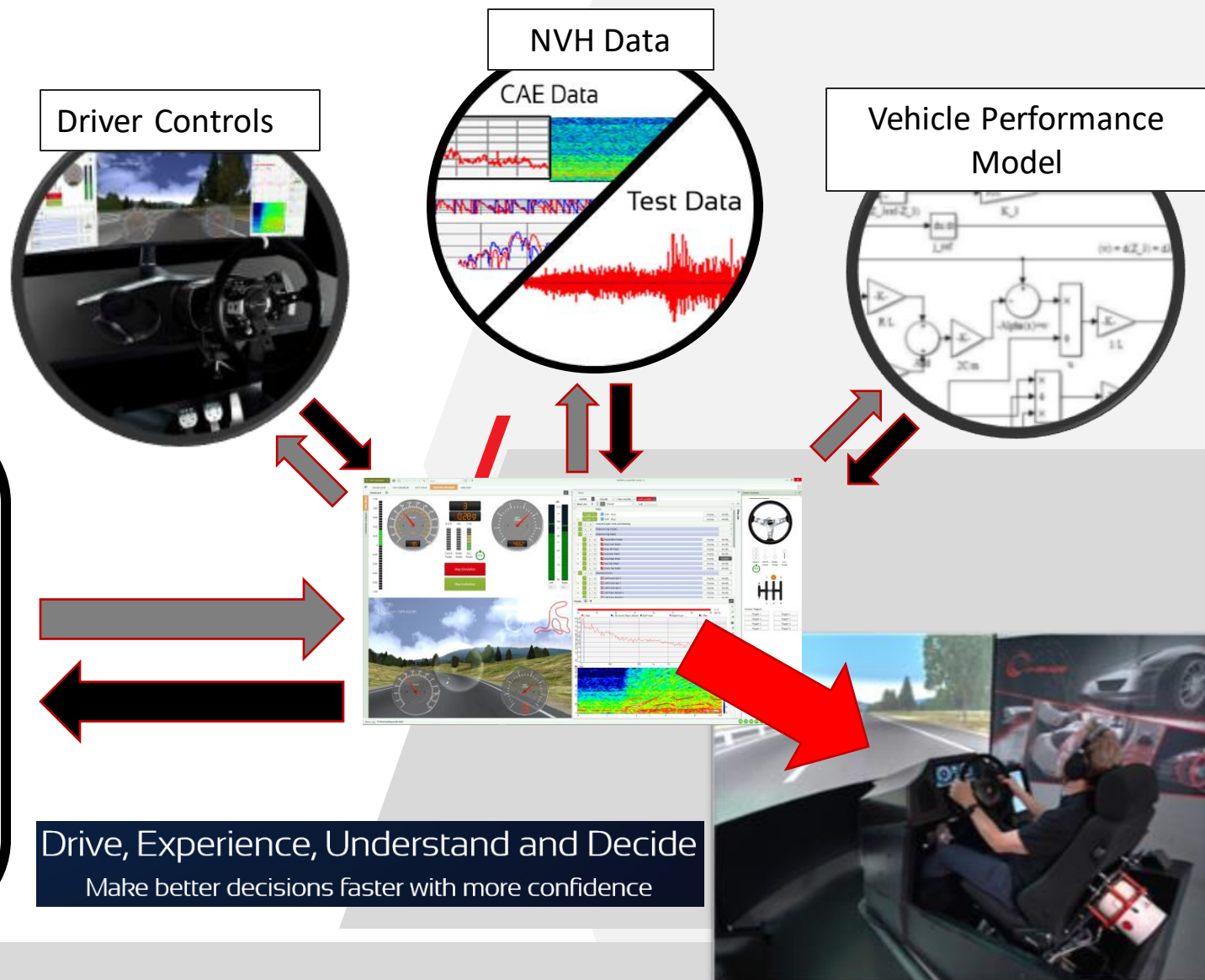


VI-NVHSIM 2024.1



FULL SPECTRUM SIMULATOR INTEGRATION

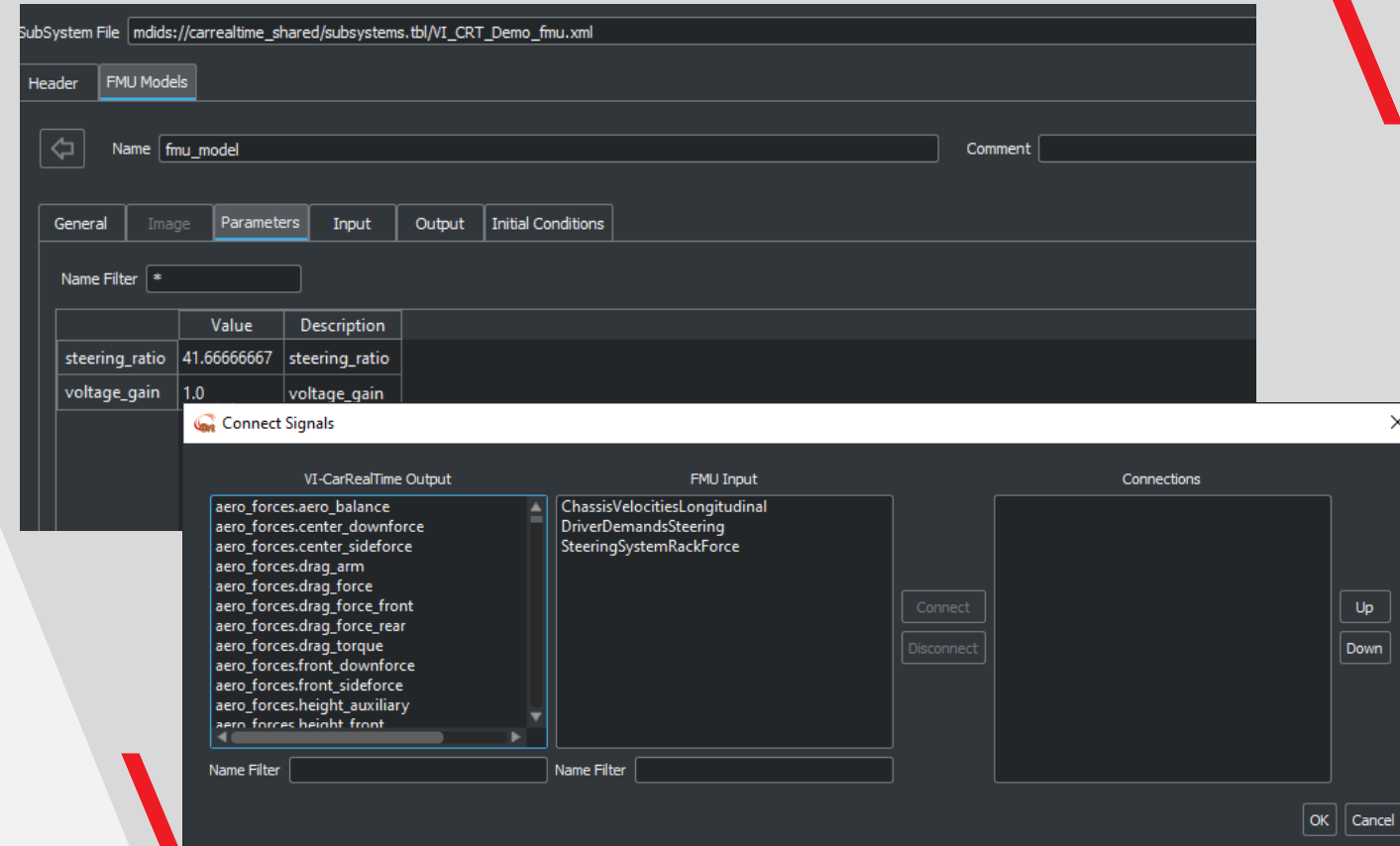
- Multi-attribute simulation brings together data from various sources for complete subjective and objective evaluation of Virtual Prototypes
- VI-NVHSim is integrated with VI-grade's Realtime solutions allows for experience and evaluation of Realtime NVH Data



VI-CARREALTIME – 2024.1

FMU SUBSYSTEM

- FMU parameters exposed and editable in user interface
- User friendly interface for Input/Output connections
- Support for initial conditions
- FMU parameters available as Investigation Candidates
- Unit conversion supported

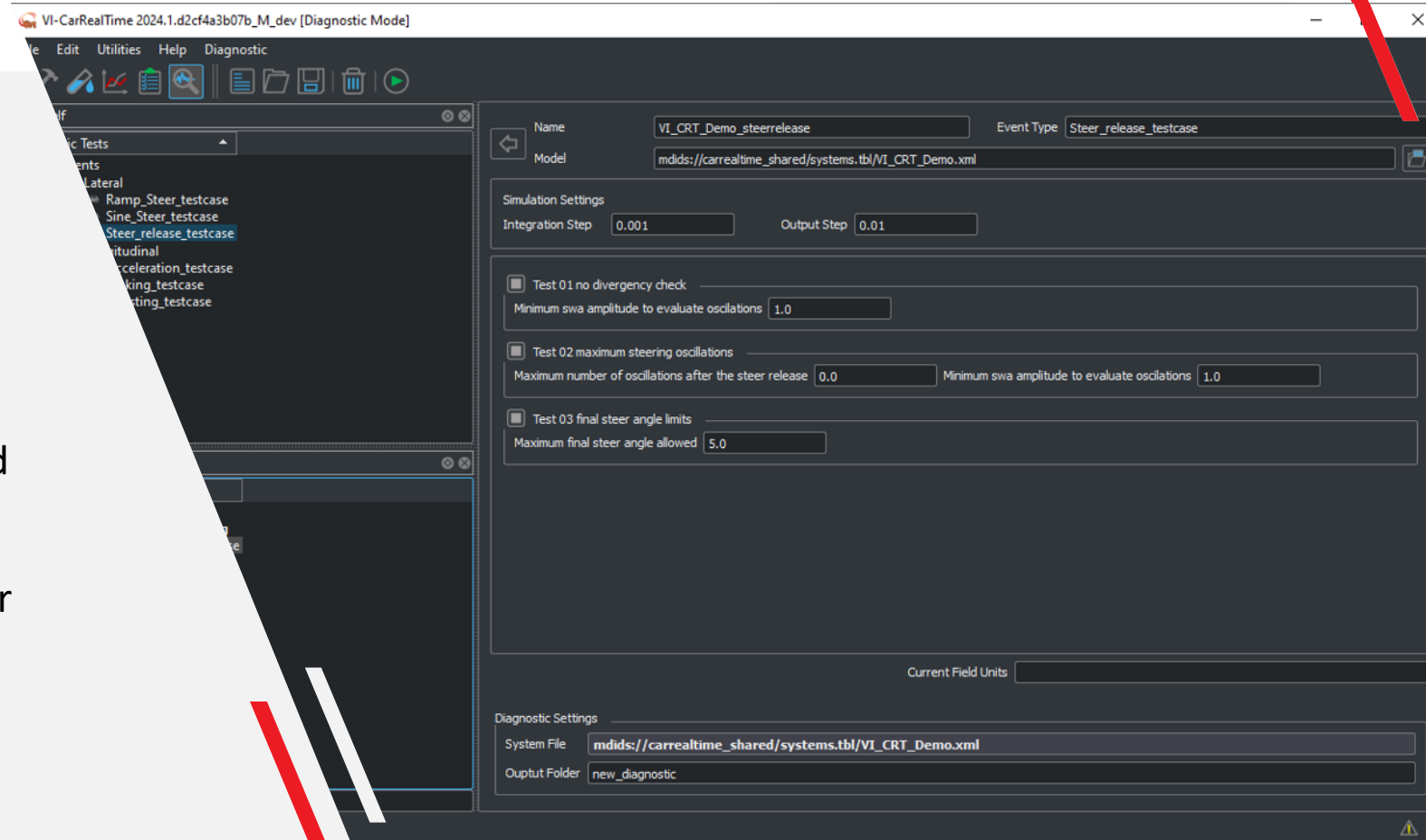


VI-CARREALTIME – 2024.1



MODEL DIAGNOSTIC TOOL

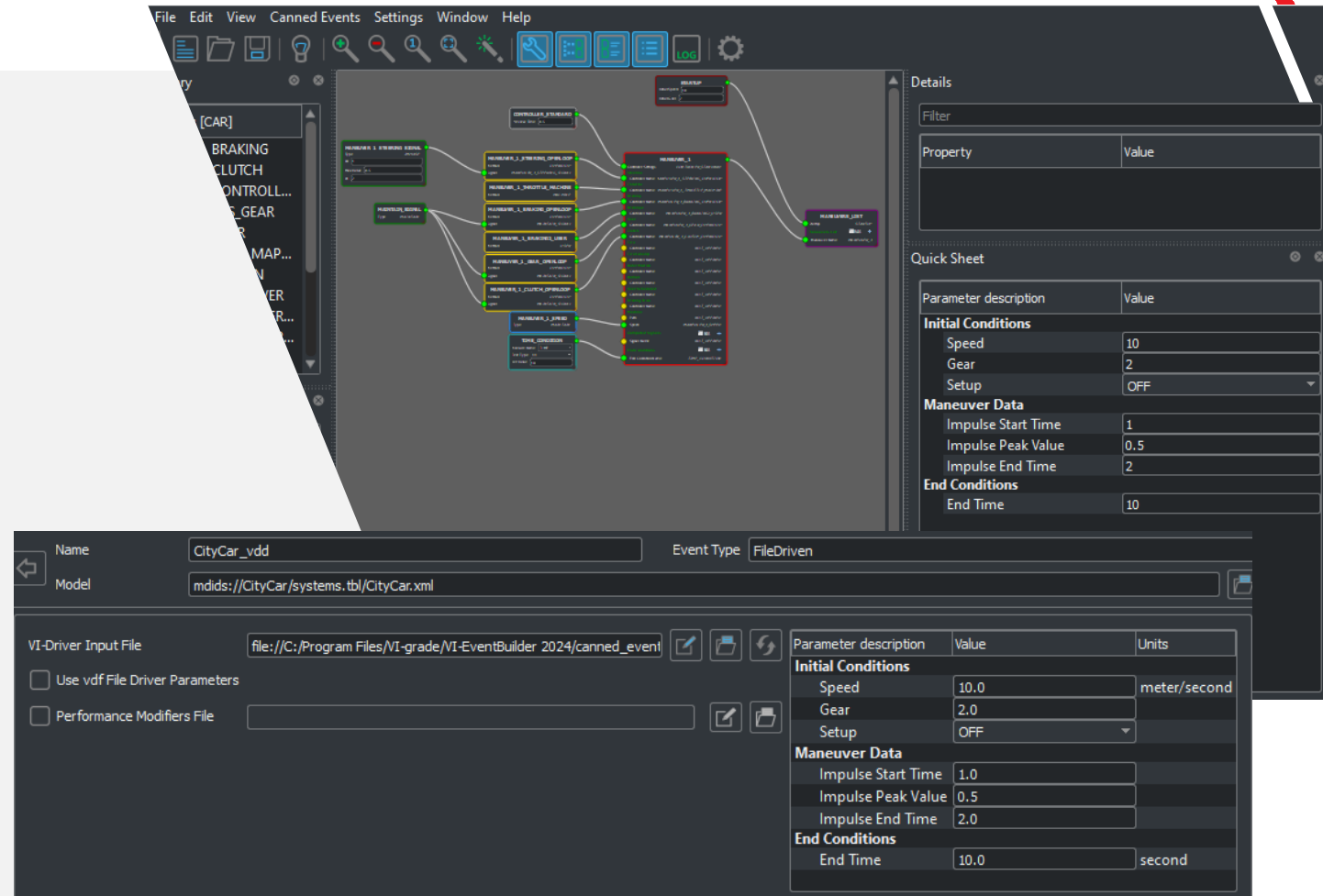
- An automated test suite for model diagnostic:
 - Checks the model by comparing metrics against user customizable thresholds
 - Provides report highlighting all failed and successful tests.
 - Allows a partially automated manner to create new tests, with user-defined metrics and parameters



VI-CARREALTIME – 2024.1

FILE DRIVEN EVENT PARAMETERS

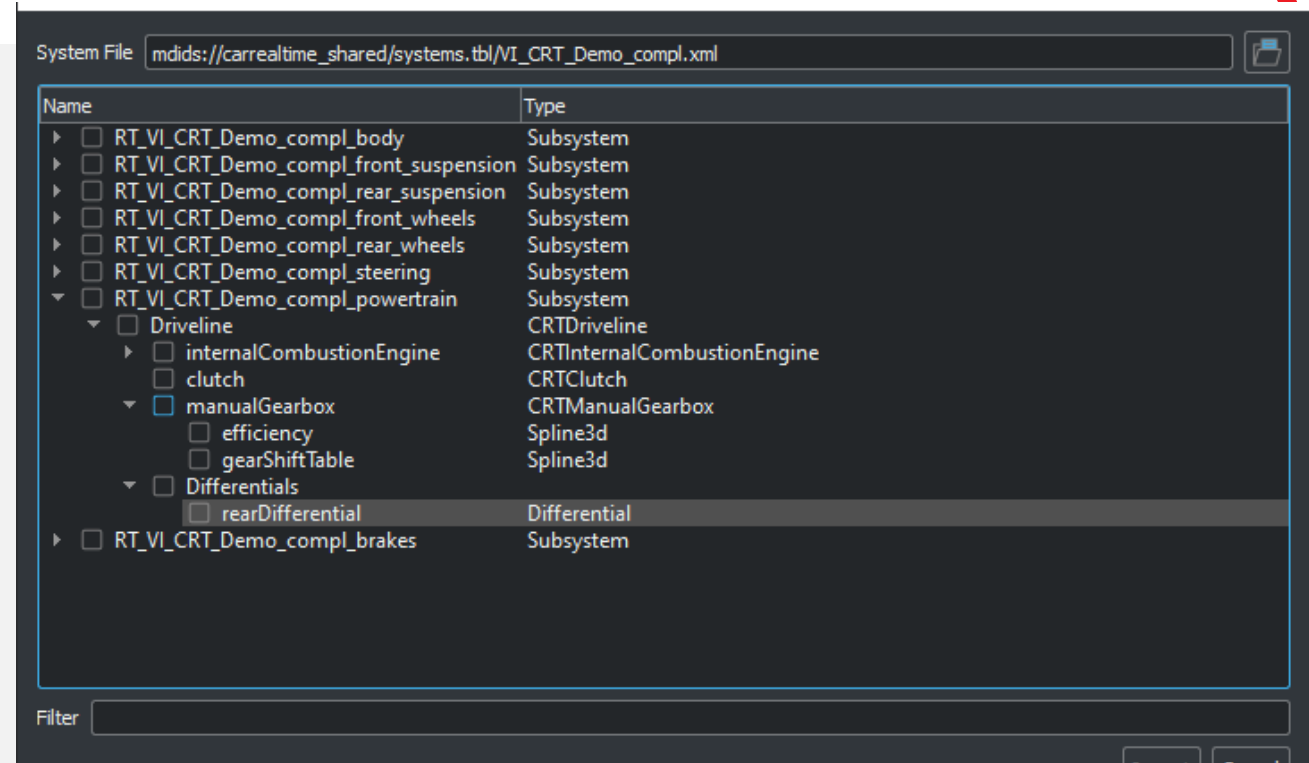
- User defined set of VDF parameters can be defined in Event Builder Quick Sheet
- The same parameters are now accessible on event submission dialog
- Easier management of parametric event templates



VI-CARREALTIME – 2024.1

PARTIAL SUBSYSTEM IMPORT

- Added possibility to import features from another model
- Allows selection of single feature or of the entire subsystem content.
- Easier reuse of data from other models.



VI-CARREALTIME – 2024.1

INVESTIGATION MODE ENHANCEMENTS



- DOE Input files generation is **10x faster** than in 2023.1
- Matlab model parameters **accessible** as investigation candidates
 - DOEs with mix of vehicle/controller parameters
- ASAM MDF as default output format for **improved performance**
 - Extended MDF supported to
 - VI-Animator
 - VI-DriveSim
 - Matlab resreader utility