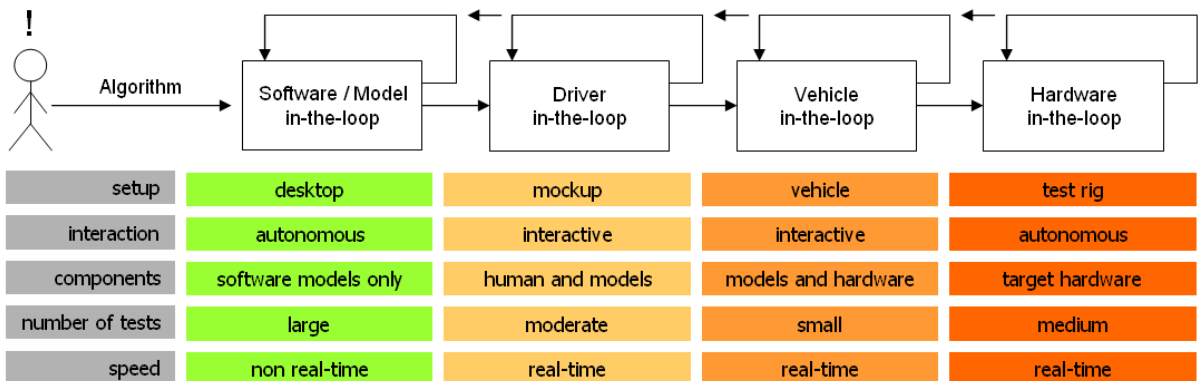
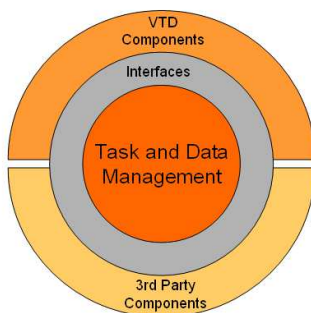


VIRES Virtual Test Drive (**VTD**®) is a complete tool-chain for driving simulation applications: Starting from the definition of road networks with our road designer "ROD", we provide a consistent data flow via industry standard file formats into our modules for scenario definition, traffic simulation, image generation, sound simulation, data processing etc. **VTD** provides open interfaces for 3<sup>rd</sup> party components and a plug-in concept with API for 3<sup>rd</sup> party modules. **VTD** is in service in numerous applications in the automotive industry.

## Supporting Your Engineering Process



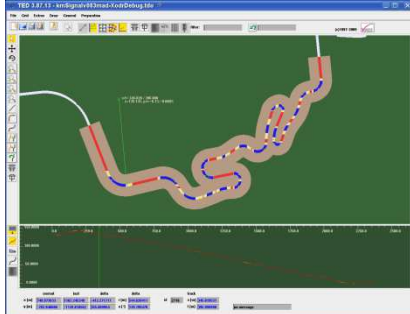
**VTD** provides a unified architecture for the operation in heterogeneous environments of varying complexity. It may run in desktop installations for software-in-the-loop tests as well as in combination with complex hardware-in-the-loop test benches. It fulfills real-time requirements for interactive simulations with human beings as well as with original vehicle equipment. It may run faster than real-time in frame-synchronous simulations for the handling of large numbers of tests within a short period of time.



**VTD** provides the core functionality of a robust task and data management for all components of the "virtual environment". Users may apply VTD's components for the simulation of traffic, scenario, vehicle dynamics etc. but they may also provide their own components for these tasks. VTD scales back to the user's needs, not vice versa.

**VTD-DEV** provides a development environment which enables the user to interact with high-frequency data at run-time (via the Runtime Data Bus – RDB) and to control the entire simulation (via the event based Simulation Control Protocol – SCP). New commands for the control of 3<sup>rd</sup> party components may be introduced by the user into VTD.

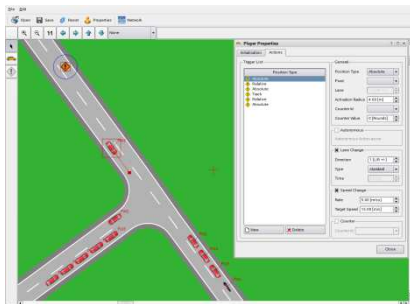
## The Components in Detail



**ROD<sup>®</sup>** is our interactive state-of-the-art road network editor based on many years and hundreds of kilometers of experience in the design of road networks for real-time simulations. It supports *OpenDRIVE*, the de-facto standard for road network descriptions. Various import / export formats make it a valuable tool for the construction of road networks based on actual road data.

Key features:

- compliant with road construction rules
- extensive libraries of 3d objects, textures etc.
- creation of tiled databases



**v-SCENARIO** and **v-TRAFFIC** provide an interactive graphical editor for the definition and monitoring of traffic scenarios as well as the run-time module for sophisticated traffic simulation.

Key features:

- autonomous traffic
- deterministic traffic
- custom trigger options / simulation control
- pedestrian simulation



**v-IG** is our real-time image generator which is capable of the latest technologies in real-time 3d graphics. It provides synchronization for multi-channel applications and supports a large number of special effects.

Key features:

- real-time shadows / sun-glare
- reflections on wet street surfaces
- high quality car rendering
- rain / snowfall / fog
- pedestrian module
- infrared module
- high quality headlights
- on-the-fly video generation
- high-dynamic-range mode
- real-time ray-tracing

**v-IOS** provides the main graphical user interface for the management of the simulation.

**v-TaskControl** is the central control task of the simulation and acts as the backbone of all data flows. It hosts the interfaces for 3<sup>rd</sup> party modules, manages the coupling of multiple simulators and handles the states of all simulation entities.

Our **SOUND** module provides the vehicle-specific acoustic fidelity required for a high degree of user's immersion into the simulation. Vehicle and traffic sounds are simulated in a 3d environment.

**VTD** runs on Linux operating systems and uses nVIDIA<sup>®</sup> graphics technologies. It supports the standards *OpenDRIVE* and *OpenCRG*.

For further information about the single tools and applications, please contact us or one of our representatives directly. VIRES maintains the following driving simulation websites:  
[www.vires.com](http://www.vires.com) – [www.opendrive.org](http://www.opendrive.org) – [www.opencrg.org](http://www.opencrg.org)