VI-BikeRealTime
18.0 Release Notes

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VI-BikeRealTime 18.0 Release Notes

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1 Release Notes

Welcome to the release notes of VI-BikeRealTime 18.0. The chapter contains information regarding new features and revision history.

Please send your comments or support requests to support@vi-grade.com.

1.1 What's New

What's new in version 18.0:

- What's new in VI-BikeRealTime
- What's new in VI-Animator
- What's new in VI-Road

1.1.1 What's New in VI-BikeRealTime

This VI-BikeRealTime release has the following new features:

- **Fork angle for front suspension**

  The fork axis can be not aligned with the steering axis. This is possible using the fork angle (new parameter) different from the head angle (available for bikes that are not conceptual).

- **Addtional suspension force elements**

  A secondary spring and a top-out element are mounted both on the front and the rear suspension. The front suspension is also provided with asymmetric/symmetric elements on the left and right side.
  Each element can be activated or deactivated and the related output will appear or disappear in the result file.

- **Tire limits**

  Tire limits computations can be performed at each time step of the analysis, in runtime mode or post-processing mode. The activation flag and the tire limits parameters set are available at the bottom of each simulation tab (Testrig simulation excluded).

- **External road**

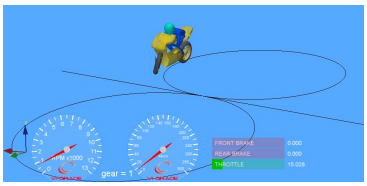
  Simulations in Matlab/Simulink have a new feature: the tires can be linked to an external road.

- **Tire reference marker**

  Tire reference location and orientation are included in the simulation settings. The simulation so can be adapted to use roads with any initial position and rotation.

- **New Figure 8 reference event**

  A new set of event files is included in the shared database to run a figure 8 event with 2.5 meter radius



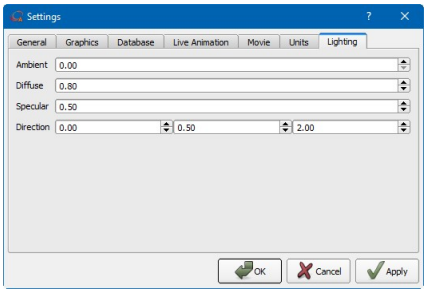
- **Entries on the tree menu for the simulation event**

  The *Re-run* entry allows to repeat an event which was already simulated. This is useful to repeat the simulation taking into account changes in the bike model.
  The *Remove* entry just deletes the event tree item.

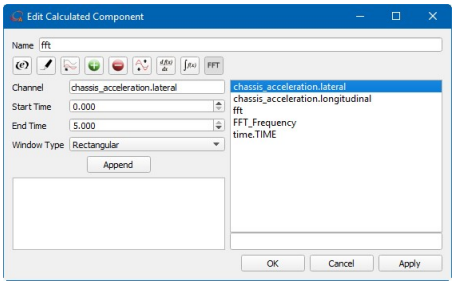
Please refer to the revision history table for a summary of the addressed issues.

1.1.2 What's New in VI-Animator

- **Lighting settings.**
  Some options to customize lighting have been added to settings. Ambient, diffuse and specular components and light direction can be modified. Lighting settings are persistently stored just like other options.



- **Toolbar to simplify building calculated component expression.**
  On the dialog to create a calculated component now the user can find a toolbar to simplify the writing of some popular expressions: constant channel, move a channel to origin, adding and subtracting channels, scaling, differentiate and integrate a channel and FFT calculation.

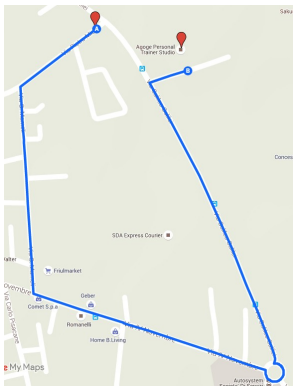


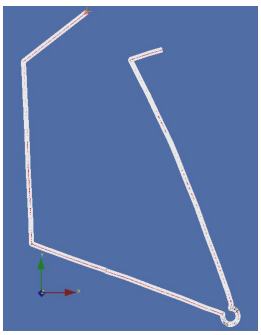
1.1.3 What's New in VI-Road

Here is the list of the main new features available in this release of VI-Road:

- **Support for Google KML file format:**

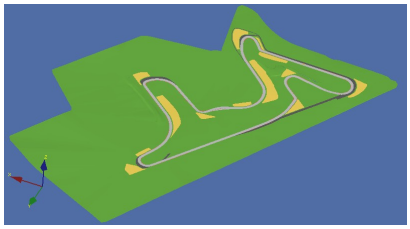
Google maps allows to export custom road definition in KML/KMZ format. This file format can be now imported in VI-Road and will be handled then as a measured road or a path.





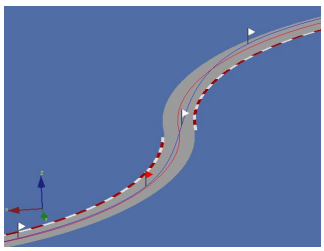
- **Road Mesh materials visualized, modified and exported:**

Materials defined in rdf files for Mesh roads are visualized with different colors. Road materials can be modified and then exported in Wavefront file format as well.



- **Create driver line by hand picking way points:**

Driver lines can be created for every type of road just picking the points where the path should go.



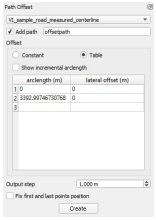
- **OpenCRG support improvements:**

Starting with this version of VI-Road the user can choose to apply modifiers on load, apply then a rotation

and/or translation just like other types of road, and then save the resulting file in OpenCRG format as well.

- **Driver line offset tool:**

A dedicated panel has been added to apply an offset to an existing driver line. The offset value can be a constant or specified by a table.



1.2 Licenses

VI-BikeRealTime 18.0 requires following set of license keys:

- VI_Bike_Core
- VI_Bike_IFace
- VI_Driver_EventBuilder
- VI_Rider_Basic_Core
- VI_Tire_Core
- VI_Tire_Toolkit
- VI_Tire_TireLimits
- VI_Road_Core
- VI_Road_Toolkit

The Maximum Performance Moto module requires the additional license key:

- VI_Rider_Advanced_Core
- VI_Rider_External (only for the Matlab version)

The Press Maneuver Event required the additional license key:

- VI_Bike_PressManeuver

Please make sure that you are running VI-grade Licensing version 18.0 or newer (based on LMX server version 4.6.5 or newer).
Please look at VI-Licensing.pdf document for a detailed description of VI-grade's licensing system and how to setup a license server.

VI-BikeRealTime is based in part on the work of the Qwt project licensed under the LGPLv2. The Qwt library version used is 6.1.0 and can be downloaded here.

1.3 3rd Party Compatibility

This table shows the compatibility of the VI-grade suite products with the main 3rd party software.

	VI-CarRealTime	VI-BikeRealTime	VI-DriveSim	VI-Driver for Matlab	VI-Driver for FMI
Matlab®	from 2013b to 2016b	from 2013b to 2016b	from 2013b to 2016b	from 2013b to 2016b	
Veristand™ (***)	2015sp1	2015sp1			
dSPACE® RCP & HIL	2014b,2015b	2014b,2015b		2014b,2015b	
SimWorkBench®	2017.1	2017.1	2017.1		
xPC®	2012b				
Dymola®	2015				2015
MapleSim™	2015				
CarSim™	8.1.1, 9.0				
Virtual Test Drive®	1.4				
Prescan®	7.3				
SCANeR®	1.6.74				
ETAS LABCAR-OPERATOR IP®	5.4.0				
SolidThinking Activate	2017.1				

3rd Party Software included in VI-grade products:

	VI-CarRealTime	VI-BikeRealTime	VI-DriveSim	VI-Driver for Matlab	VI-Driver for FMI
FTire	2017-2		2017-2		
MF-Tyre/MF-Swift	6.2.0.3 7.1	6.2.0.3 7.1	6.2.0.3 7.1		

The following table shows the 3rd party compatibility for Adams-based VI-grade product:

	VI-Motorcycle	VI-Automotive	VI-Rail	VI-Aircraft	VI-CarRealTim Plug-In	VI-Driver
MSC Adams™	2017	2017	2017	2017	2015.1, 2016, 2017, 2017.1	2015.1, 2016, 2017, 2017.1
Matlab®	*	*	*	*		

(*): please refer to Adams documentation for compatibility version.
(***) The NI-PXI integration requires Visual C++ 2010 / SDK 7.1 to complete the building procedure successfully. Please refer to the NI-VeriStand documentation for more detail.

The VI-Licensing LMX supported version is **4.6.5** both for Server and for Client.

1.4 Platform Support

VI-BikeRealTime 18.0 is available for the following platforms:

Platform	Installer Name
windows x64	VI_BikeRealTime_18_0_x64_Setup.exe

This installer is compatible with:
- windows 7 x64
- Windows 10 x64

Please note that this version of VI-BikeRealTime is released exclusively for 64 bit OS. Solver modules are available through the 32 bit overlay in case you need to operate VI-BikeRealTime in combination with 32 bit 3rd party tools like Matlab/simulink.

Specific overlays are available for supporting the following hardware in the loop platforms:

• dSPACE ds1006 r2014b/r2015b	VI_BikeRealTime_ds1006_18_0_r14b_Setup.exe
• National Instrument Veristand and LabView	VI_BikeRealTime_ni_pxi_18_0_x86_Setup.exe

The Concurrent SimWorkbench environment is also supported. Please contact VI-grade support to request a customized version of VI-BikeRealTime for this environment.

1.5 Known Issues

No issues are known at release time.

1.6 Updating Models

Updating to version 17.0

Updating to version 16.0

Updating to version 15.0

Updating to version 14.0

1.6.1 Updating to version 18.0

The following key in the VDF file is now affecting also open loop throttle signal while in past version only machine mode was affected.

```
THROTTLE_CONTROL_ACTIVATION = 'TRUE'
```

the consequence is that during a gearshift, the throttle will be released also when configured in open loop mode.

1.6.2 Updating to version 17.0

No changes are required to v16 models

1.6.3 Updating to version 16.0

No changes are required to v15 models

1.6.4 Updating to version 15.0

The upgrade of models from the v14.0 (or older) to the current version is automatically performed except for some updates in Simulink models which has to be done manually.

The current version of VI-BikeRealTime adds a redesigned Matlab/Simulink interface respect to the previous release. The Simulink models created with the previous version have to be updated replacing the old interface with the newer one (retrievable under the VI-BikeRealTime Simulink library).

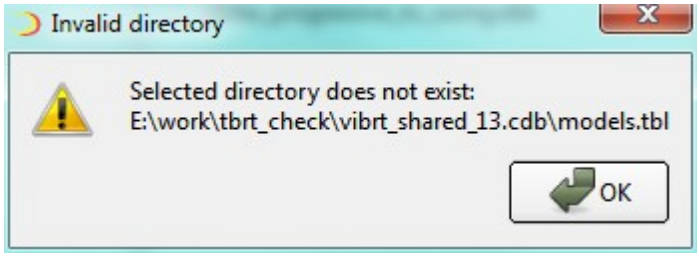
Please refer to the Matlab interface model migration topic for more details on models migration.

1.6.5 Updating to version 14.0

The migration of models from the v13.0 to the current version is done automatically except for a few modifications that need to be performed manually.

VI-BikeRealTime Graphical Interface

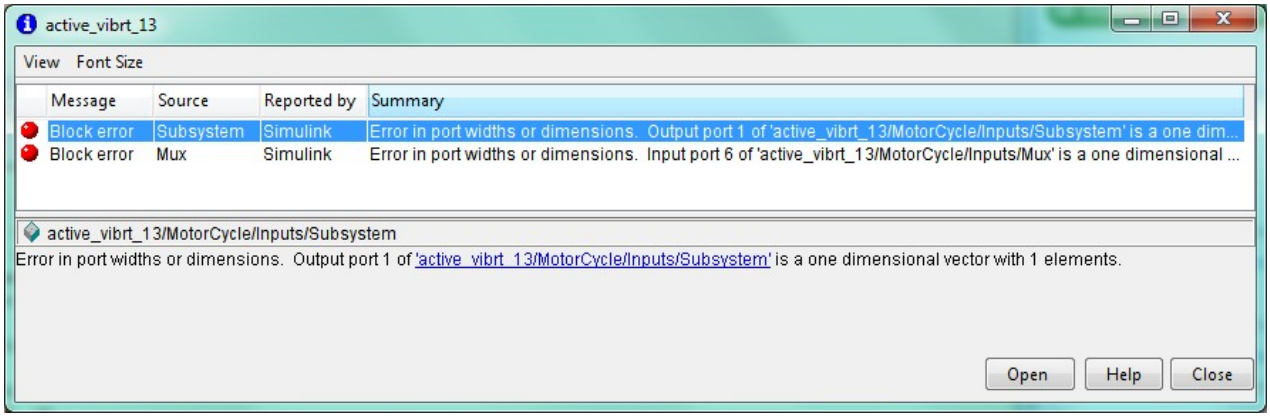
After you have registered your v13.0 database into a v14.0 session and you attempt to open bike model in the GUI, you will get the following error message:



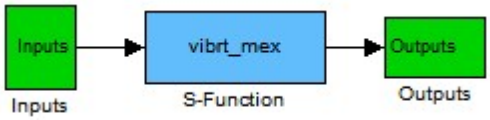
this is the consequence of the new name convention assigned to the models table in the database (changed from vibrt_models.tbl to model.tbl). In order to open the xbk file you simply need to browse for the vibrt_models.tbl folder of the database using the standard folder navigation buttons of the open file dialog box. If you don't need to preserve v13.0 compatibility, you can also rename the vibrt_models.tbl folder to models.tbl.

Matlab/Simulink Interface

The current version of VI-BikeRealTime adds several more simulink input and output respect to the previous release, so when you try to run Simulink models created with v13.0 in combination with the VI-BikeRealTime latest mex function, you will get errors similar to the following ones:



In order to fix this issue you need to upgrade your mdl files in order to include an S-Function block compatible with v14.0. You can get the correct Input, output and S-Function blocks from the vibrt.mdl included in the VI-BikeRealTime installation folder.



Please make sure that all blocks contained in the Inputs and Outputs blocks are aligned to the v14 ones before running the VI-BikeRealTime Matlab interface.

1.7 Revision History

Version	Change ID	Change
v18.0	5516	Fixed contextual menu on the property file field
	5437	Output remove of deactivated suspension elements
	5332	Support for external road model
	5326	Fixed crash executing tree menu with multiple selection
	5324	Removed useless yaw PID activity flag
	5321	Fixed yaw crc controller that was not reset
	5256	Run action on simulation event tree menu
	5254	Fixed widget signals in VI-Animator
	5244	Xgr as road graphics file
	5241	Handlebar maximum rotation angle
	5173	Tire limits runtime
	5154	Fork angle separate from steer angle
	4996	Fixed crash in MaxPerfMoto simulation with high initial speed
	4974	Asymmetric elements for front suspension
	4939	Results file from static SpeedGenMoto simulation
	4923	Simulation specific log file
	4709	Tire reference parameters
	4653	Top-out element for front and rear suspension
	4652	Additional (secondary) spring
	3770	Option for writing the results file of the static analysis
	3330	Simulation event remove
	1574	Create database functionality

v17.1	5120	Standalone executable fails to report driver computaton errors during dynamics
	5116	Low Speed Control deactivation does not turn off eternal balance torque
	5115	Add support for figure eight event
	5114	Steering states mismatch during solver derivation call
	4710	Improve rider computation efficiency on press maneuver
	3948	New HIL overlay for Concurrent
v17.0	4919	MaxPerfMoto: implement a recovery strategy in case of VI-Rider computation failure
	4911	Hardcoded integration step for SpeedGenMoto static analysis
	4884	Uninstallers fails on Windows 10 (message: "files are locked")
	4858	Conceptual bike save & restore failure when steer torque flag is active
	4842	User sensor computation frequency should match solver one
	4818	Steering instability at low speed
	4806	Vibrt locks matlab in case of wrong property file path
	4690	Toolbar icon not selected at startup
	4689	"Close All" item never enabled in File Menu
	4680	MaxPerformanceMoto crash after equations of motion failure
	4639	Plot configuration file missing running a simulation review
	4638	Advanced option to choose spline interpolation type
	4637	Add support for dSPACE release 2015
	4622	Expose testrig steer min/max parameters
	4621	VI-SpeedGenMoto with dynamic event enabled doesn't write res file
	4585	Export bsf file for testrig simulation
	4582	PSD irregularities computations enhancements
	4578	MaxPerformanceMoto and PressManeuvers don't write results
	4538	Bike Schema dialog can not be closed
	4347	Differences between simulink and standalone version
	4336	KeepFiles option doesn't work in MaxPerformanceMoto for Matlab
	4296	Vehicle.CM_global_vel/acc requests are ill-defined
	4269	Enable crg load from road widget
	4243	Support for luggage parts
	4165	Gravity option for acceleration sensors
	4160	Improve user sensors documentation
	4157	VI-Tirelimits is not accessible from VI-BikeRealTime
	4151	Implement "reversed" skidpad shape
	4138	New general simulation tab, new simulation settings, added steering torque front suspension, improved clutch definition.
	4133	Eds crash if roll is over the threshold in the last segment
	4131	Wrong termination after mxp failure
	4130	Expose "max iteration" parameter for maximum performance simulation
	4093	Vdf template shipped is wrong
	4073	Ride height ref plane angle not saved
	4069	Press maneuver event
	4024	linear spring not load correctly from xbk
	3966	Add external inputs to manage vidriver openloop signals
	3947	Add the possibility to change gear number
	3946	Add an external input for pinion torque

	3937	Save as of property file editor does not show db list
	3830	Intgrate resreader utility
	3789	Conceptual model does not support stability events
	3788	Support steering torque feedback
	3774	Incorrect FileDialog on "save as" from property file editor
	3739	Add Disk/Caliper number parameter for braking system
	3738	Improve brake system documentation
	3715	Add steering damper to front suspension
	3673	Memory exception usign a wrong license file on dSPACE target
	3665	"widgets.xgr" file in vibrt_shared database does not contain throttle and brake bars
	3661	Couldn't edit calculated components after a live animation
	3659	Integrate MF tyre libraries
	3646	Write program version in exported bsf file
	3331	Different simulation events with the same name
	3230	Brt accessories are installed in default directory
	3005	Wrong size speedgen map is not managed
	2705	Bike name bar loose color without focus on BRT window.
	2570	Live animation should be started when requested even if animator is not found
	2363	Fix final ratio when chain is disabled
	2332	Circ/diam label in powertrain tab is not clear
	2285	Contextual menu on tree view bike object
	2263	Optional env variable to specify additional applications install dir
	1912	MaxPerformanceMoto initializes VI-SpeedGenMoto on every iteration
	1424	Run solver in separate thread
	1288	Save database configuration in a cfg file
	1094	Chenge location of the clearance field for a bumper
	1077	Using Steering torque as external input
v16.1	3779	Add tire termination after statics failure
	3778	Show max RPM in powertrain plot
	3756	Add maneuver switch at runtime
	3740	Fix DS1006 multi core application build
	3724	Remove memory leak during solver execution
	3722	Restore units conversion after parameter change
	3719	Restore speedometer longitudinal velocity in live animation
v16.0	3587	Prevent cloning simulation events with the bike
	3536	Steering torque computation flag needs to be set from GUI
	3441	Need to set sprung and unsprung mass for conceptual suspensions
	3403	Hold Simulink output when the simulation is stopped
	3351	Add the possibility to run VI-EventBuilder from the Tools menu
	3350	Add the possibility to run VI-Road from the Tools menu
	3349	Add the possibility to run VI-EventBuilder from the vdf file field
	3534	Add activity flags for spring, bumpstop and reboundstop in Simulink
	3231	Show a message if VI-Animator is not found
	3030	Rider body should be moveable
	3029	Need to run MaxPerformanceMoto Events in Simulink
	2698	Could not postprocess two events of same type

v15.0	2818	Support for Matlab 64 bit
	2747	Road graphic is shown in VI-Animator even if not requested
	2727	Support editing of VDF template for MaxPerformanceMoto event
	2686	Model is not updated after saving a property file with a new name
	2677	Could not change tire USE_MODE after first interactive simulation
	2684	Could not save a property file after canceling a save as operation
	2568	Support execution of VI-Animator from BikeRealTime GUI
	2603	Simulation run button is not accessible on lower screen resolution
	2581	Gear teeth number is not stored in the bike file
	2565	BSF file miss live animation information
	2548	Missing documentation about gyro reference system
	2546	Solver may crash on termination after failed simulation
	2499	Support for dSPACE platforms
	2427	Support for NI-Veristand environment
	2426	New Matlab/Simulink interface
	2370	Flying lap option for VI-SpeedGenMoto event
	2343	Support user defined sensors
	2628	MaxPerformanceMoto event may fail on 3D measured road
	2468	Too strong reaction from longitudinal controller to pitch movements
	2447	Gear shifting parameters defined as function of path_s
	1496	Export geometry from VI-MotorCycle model
	1044	Brake demand increases when a downshift occurs
v14.0	2346	Some bike parameters are not clearly documented
	2336	Create additional output file format like CSV, Matlab and PI
	2289	Interactive mode does not produce simulation statistics
	2267	VI-BikeRealTime GUI does not produce any log file
	2257	Support graphical animation of the bike model
	2251	Use VI-Animator as plotting environment
	2154	Support Interactive/files_only mode based on BSF file for all events
	1992	Allow side by side installation of different VI-BikeRealTime version
	1911	Results mismatches repeating the same simulation
	1815	Missing data in 3D spline editing panels
	1766	Standardize model directory to models.tbl instead of vibrt_models.tbl
	1759	Support dynamic update of output bus for simulink models
	1758	Support parallel execution of internal and external engine model
	1638	Support clutch back torque saturation effect
	1576	Support user defined output step for interactive analysis
	1570	Example simulink model active_vibrt fails when external dampers are on
	1547	Friction scaling input in matlab is not affecting tires
	1527	Support a quick connection fo VI-Road for editing RDF files
	1519	Memory leaks running on Meshed road
	1515	Problems with static analysis on 3D road
	1510	Missing target path coordinates in simulation output
	1506	In some cases VI-Rider EDS neglects the MIN_ACTIVE_TIME parameter
	1505	Support six component force input to the chassis
	1500	Support remote connection to VI-Animator (Live animation mode)

	1498	New event for speed profile computation (VI-SpeedGenMoto)
	1425	Matlab crash when initial gear is not compatible with engine speed limit
	1423	VI-Rider license not released at the end of interactive simulation
	1416	simulations are not stopped when event files is wrong
	1375	pinion output speed is not included in the output set
	1374	gear teeth maximum value is too strict
	1316	failure running a database from a directory including brackets
	1314	No warning trying to set working dir to a non existing folder
	1153	GUI labels for inertia tensor are not clear
	1108	Prevent loading of multiple models with the same name
	1097	Missing documentation for reference swingarm legnth parameter and right height reference frame for conceptual suspension
	883	Improve solver error messaging
v13.1		Added the Conceptual Bike model
v13.0		Base Package

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