VI-Road 19.0 Release Notes

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1 Release Notes

Welcome to the release notes of VI-Road 19.0. The chapter contains information regarding new features, known issues and revision history.

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

1.1 What's new

Please refer to the revision history table for the list of changes introduced in this VI-Road release.

1.2 Licenses

VI-Road 19.0 requires following set of license keys:

- VI_Road_Toolkit
- VI_Road_Core
- VI_Tire_Toolkit

Please make sure that you are running VI-grade Licensing version 19.0 or newer (based on LMX server version 4.8.7 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.

This product is in part based on incorporated software libraries. Please refer to the acknowledgments.pdf document, included in the product documentation for a listing of the adopted components and the respective licenses.

1.3 Known Issues

The following limitations have been identified at the release time:

- On Windows platforms, meshed road rdf files must have native Windows EOL (end of line) format in order to be correctly processed by VI-Road.

- On some graphic drivers the Vsync option is disabled by default and so most of the CPU is used for the 3D rendering. We suggest in that case to look at the driver settings to enable it. Old drivers does not support Vsync at all. We suggest then to update the graphic driver.
  We experienced application crash with NVIDIA Quattro K1000M and K2000M graphic cards with

Microsoft Window Hardware Compatibility driver version 8.17.12.9703.

- Composite roads are not supported yet by VI-Road interface.

1.4 Changed Behaviour

The suppport for parallel road computation required some changes to the STI road interface that may lead to slightly different contact patch evaluation. The current default VI-Road configuration grants consistent results for both sequential and parallel evaluation. Consistency with v17 version of VI-Road for sequential computation mode can be achieved with the key `LEGACY_MODE = 1` to the `MODEL` block.

1.5 Platform Support

VI-Road 19.0 is available for the following platforms:

Platform	Installer Name
windows x64	VI_Road_19_0_x64_Setup.exe

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

1.6 Revision History

1.6.1 Revision 19.0

Added Capabilities:

Change ID	Module	Description
5167	Road	Allow general road interface to work with variable I/O points
4782	Road	Enable surf mode on new path selection
4781	Road	Enable smoothing function for oval and analytic roads
4778	Road	Improve continuity of smoothing function for closed tracks
4398	Road	Enable road width field loading a drd as road

Bugs Corrected:

Change ID	Module	Description
7593	Road	Wrong road mesh colour
7592	Road	Modified material on a mesh road is not visible on 3D after reloading the rdf file
5607	Road	Impossible to load a crg file with reference after a first error occurred
4848	Road	Corner cutting fails with absolute centerline in mesh rdf
4792	Road	Default database ignored by the db file dialog
4791	Road	A "KdTree empty" warning message appears with mesh roads without material map
4790	Road	Exported crg file gives errors in Matlab
4788	Road	Impossible to add two plots of paths with the same name
4785	Road	No way to create speedgen compatible files for VI-Road from CRT

4171	Road	Crash opening openCRG file
2881	Road	Plot window is no more dockable
2771	Road	Wrong hash function calc outside road bounding box
1055	Road	File dialog neglects default database
750	Road	Line element of mesh road is interpreted as triangle with null material
733	Road	A "KdTree empty" warning message appears with mesh roads without material map

1.6.2 Revision 18.1

Version	Feedback ID	Description
v18.1	5803	Linear interpolation option loading a KML file does not work
	5800	Performance of corner cutting algorithm is not optimal
	5790	Right kerb slope modification does not work
	5757	Handle missing material id in rdf MATERIALS
	5750	Millimeters for missing fields with lengths
	5748	Crash loading rdf mesh with more materials than current palette
	5707	Support gx:Track tag for kml files
	5697	Crash moving to Materials frame with extrusion road
	5684	Crash picking a material on a measured road
	5683	Oval centerline partially hidden by road surface on create oval twice
	5681	Corner cutting not working on path created with path builder
	5680	Allow smoothing of path of mesh road
	5661	Improve performance loading for measured RDF
	5659	Wireframe and road arrow lost modifying road visualization step
	5566	Log maximum and average num of elements in mesh hashing
	5562	Disable solver hashing computation for GUI usage
	5141	Update the MODEL key's list in the IRREGULARITIES block
	4027	Visualization step field shows wrong value for analytic roads
	3619	Prevent mismatches in irregularities ending S and actual road length

1.6.3 Revision 18.0

Version	Feedback ID	Description
v18.0	5577	crash loading mesh road with more than 10 milion elements
	5576	improve mesh road efficiency for high resolution roads
	5365	Path are not clearly visible as in viroad
	5362	Allowing insertion of millimeters for each field with lengths
	5344	Create and modify path for every road type within path builder
	5363	Modify materials in 3D scene for mesh roads
	5330	Export mesh road obj file with materials
	5229	Failure opening CRG files larger than 2 gb
	5187	Can't open road file with uppercase extension
	5134	Wrong import of legacy SURFMESH roads
	5127	Enable export flat road in obj format
	5111	Allow to load OpenCRG file without transformation applied
	5101	Align and To Origin don't work properly for mesh roads

	5052	One flag removed after inserting a row from corner cutting control point table
	5049	Road mesh lines hard to see under certain view angle
	5040	Problem reading OpenCRG files containing modifiers
	5038	Calculation step not used as graphic step on analytic road creation
	5035	Paste huge data into tables is pretty slow
	5011	Visualize materials in 3D scene for mesh roads
	4844	Google KML file support
	4576	Generation of trajectory using waypoints
	4572	Enable smoothing for drd of a mesh road
	4419	Wrong transformation for track path with ABSOLUTE reference
	4346	Enable res file exporter for vispeedgen results
	4159	Add a graphic marker to tape measure function
	4158	Driver path is partially hidden by road surface
	4041	Driver line offset tool
	3952	Allow geometric transformations for OpenCRG roads
	3950	Export OpenCRG roads
	3932	Database not set from settings
	3648	Add log messages clear option
	3184	Smoothing on a subset of the track produce curvature spikes
	1882	Smooth on csv based road loose road width definition
	1853	Remove road friction item from plots
	1614	Move up extrusion create and clear section buttons
	818	Message to confirm existing road overwrite on open road

1.6.4 Revision 17.1

Version	Feedback ID	Description
v17.1	4881	Problems writing MESH road nodes ID high values
	4862	Oval new name discarded on create
	4830	Application crash when irregularities are active in RDF but no block is defined
	4828	Support banking and width in MESH path table
	4802	Irregularities can be set for the extrusion road
	4787	Empty centerline object is created loading a mesh rdf without centerline
	4713	Crash executing speedgen simulation
	4700	Kerb right not exported in obj
	4683	Header lost exporting extrusion road twice to MSC-RDF format
	4682	Node values corrupted exporting an extrusion road to MSC-RDF format
	4669	Discretization step lost loadding an rdf file
	4667	No transformation in path rebuilt through corner cutting
	4655	Misleading message loading extrusion rdf
	4591	Disabled frame due to obfuscated road is never restored
	4575	Curvature not calculated for a particular csv as path
	4574	Curvature vs arclength plot noisy for centerline of a gps road
	4535	Remove 180 deg offset in yaw measurement

1.6.5 Revision 17.0

Version	Feedback ID	Description
v17.0	4492	Crash creating irregularities for mesh road
	4325	Fixed cases of manual smooth failure
	4265	Set default end PSD arclength value equal to the road length
	4125	Interactive visualization of position and orientation
	3993	Support for obfuscated road files
	3693	Move 3D code from Coin to OSG
	3685	Save application settings from settings dialog only
	3858	change road initial point may fail with old analytic rdf
	2755	Fixed crash on large roads
	1273	OpenCRG support
	1023	Add control points for corner cutting

1.6.6 Revision 16.1

Version	Feedback ID	Description
v16.1	3849	Corner cutting support for road mesh with track path
	3807	MESH road enhancements: model analyze, enable irregularities, track path definition, units support.
	1931	Improved MESH road model performance and memory allocation

1.6.7 Revision 16.0

Version	Feedback ID	Description
v16.0	3401	Friction table neglected with oval road type
	3343	Visualize the new flat road type
	3340	Remove DCO export type
	3040	Corner Cutting requires long calculation time
	2953	Conact patch location depends on hub pitch angle
	2407	Starting VI-Road two plot area are shown
	2115	Road is not reinitialized properly on multiple runs
	1410	Allow bank angle greater than zero even at the beginning of the road
	1275	Discretization step not preserved building an extrusion road
	1129	Disable feature unavailable depending on road type
	1128	Add arclenght check in road definition table
	1057	Kerb geometry does not match visualization step

1.6.8 Revision 15.0

Version	Feedback ID	Description
v15.0	2807	changed labels of mirror transformations
	2753	removed error while inserting first row in interactive mode analytic creation
	2652	fixed speedgen on road having a rotation
	2650	removed wrong message when creating a different named second road

	2631	changed selection mode for smoothing road components
	2612	enhancement of road build from telemetry data
	2470	updated speedgen version
	2437	added support of binary format for road file
	2409	fixed "add path" smoothing option
	2359	fixed wrong cases of gps roads
	2325	fixed obj creation from road with kerbs
	2279	fixed curvature spikes introduced by local smoothing
	2254	fixed generation of an empty obj
	2238	fixed create button not enabled after extrusion road loading
	1647	improved speedgen plot legend
	1041	improved speedgen error messages
	760	enabled corner cutting for extrusion roads
	444	added log messages panel

1.6.9 Revision 14.0

Version	Feedback ID	Description
v14.0	2190	road friction not computed properly for extruded road with cubic interpolation
	2082	add an option to remove user settings from the windows registry
	2041	disable corner cutting functionality for meshed road
	2040	prevented crash while creating an extruded road without defining a section
	2031	prevented crash creating an extruded road after cleaning up the section table
	2022	create asphalt texture on road surface
	1920	support installation of multiple version of VI-Road
	1827	GPS coordinates are not reconstructed properly when outside of -180;180 deg
	1770	discontinue former ARM module
	1754	improved efficiency of meshed road model reducing memory footprint and preprocessing time
	1753	smoothing function on specific path component (XY, Z, bank, speed)
	1735	corner cutting algorithm may produce weird results with closed roads
	1710	corner cutting parameters should be dependent on track position
	1671	friction table for measured roads is not working properly
	1615	wrong rotation of driver line imported as a path in an existing extruded road
	1534	speedgen calculation produces different results running multiple times the same event
	1504	support smoothing on path fragment and using the maximum trajectory deformation as smoothing factor
	1337	meshed roads cannot be moved/rotated in the transformation panel
	1286	support clothoid to clothoid connection for analytical model
	1271	curvature signal shows a spike after changing initial arclength
	1130	cannot distinguish entities with the same name in smoothing operation
	1080	friction table is lost exporting road file
	1020	duplicated width definition in road data file
	878	import ARM measured irregularities
	868	support for measured irregularities
	705	negative road width is accepted in width table
	591	PSD snapshot shown in VI-Road interface is misleading
	573	corner cutting tension slider is not connected to the value shown

	428	corner cutting algorithm may produce weird results with closed roads

1.6.10 Revision 13.0

Version	Feedback ID	Description
v13.0	1290	Import speed data if present as 4th column of a gps data file
	1277	Export shl not available anymore
	1268	Fixed crash on modifying a starting point
	1255	Fixed road width lost after smoothing
	1226	Added new speedgen maps: max throttle and max brake maps
	1187	Added MSC Adams database support for open/save files
	1079	When generating a PSD disturbance, now it's set to active by default
	1061	Modified Visualization Options now available only for correct road types
	1060	Road visualization based on quad shell is inaccurate: used triangles instead (also for exported graphic files).
	1046	Added the possibility to compare different path characteristic curves in the same plot
	1022	Disabled panels not useful for SURFMESH roads
	969	Fixed visualization error when managing roads with different left and right width
	953	Added Insert Kerb feature to add pre-defined kerbs with default values (editable) for arclength, width and friction
	902	Plot path data as is not resampled at fixed step
	814	On the Open panel the telemetry options are visualized only when loading telemetry files
	777	Fixed crash when inserting empty row in the extrusion road section definition table
	763	Graphic step removed from the export panel (visualization step will be used)
	568	When exporting more than one file at the time a messages box allow the user to decide to overwrite the individual files or the complete collection
	477	Working directory can be set. On every file dialog access the current directory will be updated accordingly
	457	Disabled the centerline removal from the tree view
	240	Fixed crash when loading drd files containing duplicated points
	91	When loading a drd as a road, the centerline is created using the original drd points
	63	Kerb outer edge is not correctly visualized when road bank is not null

1.6.11 Revision 12.5

Version	Feedback ID	Description
v12.5	-	improved zoom speed plotting a great amount of data
	-	fixed the GUI freeze problem when zooming a lot of times in a plot

1.6.12 Revision 12.0

Version	Feedback ID	Description
v12.0	-	implemented clothoids for curve calculation
	-	import road from telemetry data
	-	import road from GPS data
	-	extrusion roads

	-	surfmesh roads

1.6.13 Revision 11.2

Version	Feedback ID	Description
v11.2	-	X,Y,Z keys to set the view along related axis works also in view mode
	-	data panel resize fixed
	-	added mirror transformation
	-	feature to redefine a road initial point
	-	show/hide wireframe on 3D view
	-	show arclength on 3D view
	-	tree view panel to show VI-Road objects in session feature to remove objects in session from there
	-	speed-up open rdf without kerbs
	-	speed-up export road without geometric transformation
	-	incremental arclength data option for analytic road data
	-	radius/curve option on analytic road plant definition
	-	added panel to define road friction
	387	friction as function of S
	353	duplicated path names in smooth tab
	291	crash on kerb map
	289	add units to kerb table headers
	172-132	remove random colors
	67	remove a path
	14	use dock widgets

1.6.14 Revision 11.1

Version	Feedback ID	Description
v11.1	-	Default values changed
	359	Fixed transformed roads and driverlines exporting
	261	Fixed exporting to a write protected folder
	224	Fixed analytic field typing
	217	Fixed exporting rdf delta s problem

1.6.15 Revision 11.0

Version	Feedback ID	Description
v11.0	-	This release integrates VI-SpeedGen tool. This feature allows the creation of a limit speed profile over a race line
	-	added output step option on file export
	-	added SHL output format.
	-	added surfe curve option on plots to speed-up user interaction
	-	added HTML documentation
	-	improved feedback on errors
	171	Improved and fixed road analytic data validation

	151	Fixed geometric transformations
	115	Fixed Wavefront export
	90	Fixed calculation of last point on smoothing
	36	Fixed road variable width handling

1.6.16 Revision 10.0

Version	Feedback ID	Description
v10.0		Base Package