

2020.00-11 [91757]

2020-10-05

+ New Features and Changes

Installation

- + Update of CodeMeter Runtime: The software manufacturer WiBu Systems has informed us about an error in the component 'CodeMeter runtime', which we use for the license protection of our software. The bug affects the TCP/IP communication of the license server. It constitutes a security issue, but only has an impact in case of a targeted attack on the network. With this service pack, an update of the affected component is installed, fixing the problem. For more information, see <https://www.wibu.com/en/support/security-advisories.html> **(15525)**

User-Defined Attributes

- + The data source type for a new attribute is now by default "Formula" if the object doesn't support Data UDAs. **(14484)**

Vehicle Simulation

- + A warning message is now written to the messages window if a vehicle passing a parking routing decision cannot be assigned a parking space because there is no way back to the vehicle's current route (including subsequent ends of surrounding nested routes) from any of the available parking spaces. **(15407)**

✓ Fixed Bugs

Evaluations

- ✓ The fuel consumption calculated by an EmissionModel.DLL assigned to a vehicle type is now shown correctly in the vehicle network performance evaluation. **(15409)**

Lists

- ✓ Column filters can now handle numbers between 2^{31} and $(2^{32})-1$. **(15182)**

Meso Simulation

- ✓ A vehicle leaving a micro section with its front end in the same time step when its rear end was still on a different link and when another vehicle entered that link with overtaking on the same lane enabled could cause a crash. This problem has been fixed. **(15390** 🚫)

Network Editor

- ✓ If left-hand traffic is selected in the network settings, the major flow definition causes left-turn movements to have priority now at their conflict with opposing right-turn movements. Turns which don't cross the major flow have always priority over turns which cross the major flow in at least one direction. **(15396)**

Signal Control

- ✓ A controller *.exe in a very long path doesn't cause a crash anymore at the start of a simulation run. **(15456)**
- ✓ An invalid evaluation graph causes only one warning message now upon opening the external GUI of a signal controller. **(15436)**

🚫 Breaking Changes

Meso Simulation

- ⚠ Networks with micro sections and overtaking on the same lane can have simulation results differing from previous versions. (15390 🟢)

Viswalk

- ⚠ Known problem: Formula routes using aggregated attributes over pedestrians on an area can cause a crash during a simulation run using multiple cores. It is recommended to run such networks only with 1 core. (13455 🟢)

2020.00-10 [90214]

2020-08-12

+ New Features and Changes

Dialogs

- + In the parking lot dialog, a confirmation message box is now shown if result data need to be deleted because of an attribute modification. (15080)

Evaluations

- + The direct output evaluation "green time distribution" lists green times between 120 and 179 seconds individually now, and only green times greater than 180 seconds are all shown in the class "180". (15306)

Graphics

- + The provider for live 3D buildings is now MapTiler. (MapBox buildings shown in previous versions will cease do work by mid of September 2020.) (15305)

OpenDRIVE Import

- + Improved error handling for *.xodr files which don't conform to the OpenDRIVE standard. (14650)

🟢 Fixed Bugs

Data Model

- 🟢 Colinear polygons (which could cause a 3rd party library to crash) are prevented now. (15166)

DriverModel.DLL Interface

- 🟢 A possible crash inside Vissim (not the DLL) during a multi-threaded simulation run has been fixed. [The DLL still needs to be programmed thread-safe in order to be used in a multi-threaded simulation run.] (15190)

Driving Simulator Interface

- 🟢 The simulation doesn't crash anymore when a pedestrian controlled by the "Driving Simulator" side moves onto a ramp/stairway. (This problem was introduced in Vissim 2020.00-06 and happened also in the TextClient example.) (15104)

Evaluations

- 🟢 Upon creation of a flow bundle all associated time intervals are selected automatically. (15247)

Graphics

- 🟢 Bing Maps live backgrounds are not shown as an option anymore if the license doesn't include it (because it doesn't have a maintenance contract). (15126)
- 🟢 The ramp foot of escalators is visualized correctly in 3D mode now, with the length measured from the start of the actual ramp. (14036)

Meso Simulation

- 🟢 The network performance evaluation in hybrid networks shows the total latent demand from micro sections and the meso part of the network now. The latent delay shown in result attributes of meso edges and meso lanes includes only delay from the respective time interval (and not the delay from previous time intervals anymore). (15075 ⚠)

Scenario Management

- ✔ Invalid filenames because of special characters in the scenario name are now prevented. (15170)

Signal Control

- ✔ The total current green time sent from Vissim to a controller DLL of the type "Siemens VA" does now include a previous flashing green time, but not for controller DLLs of the type "LISA+ OMTC". (15186 🚫)

Vehicle Simulation

- ✔ Problems with the handling of changed desired speed for platoon vehicles have been fixed. (14500 🚫)

Viswalk

- ✔ Partial routing decisions could cause small instabilities in travel time results if multiple pedestrians arrived at their destination in the same time step. This problem has been fixed. (14540 🚫)

🚫 Breaking Changes

Meso Simulation

- 🚫 The latent demand in the network performance evaluation in hybrid networks and the latent delay shown in result attributes of meso edges and meso lanes can differ from previous versions. (15075 ✔)

Signal Control

- 🚫 The total current green time of signal groups using flashing green sent from Vissim to controller DLLs of the type "Siemens VA" or "LISA+ OMTC" can be different from those sent by previous versions. (15186 ✔)

Vehicle Simulation

- 🚫 Simulations with platooning and changing desired speeds can have results differing from previous versions. (14500 ✔)

Viswalk

- 🚫 Networks with partial routing decisions can have simulation results differing slightly from previous versions. (14540 ✔)

2020.00-09 [88203]

2020-06-05

✔ Fixed Bugs

Graphics

- ✔ 3D live buildings can now be activated also during a simulation run. (15109)

Scenario Management

- ✔ Discharge record files are now always written correctly for scenarios. (This could fail previously with special characters in the scenario name.) (15153)

Signal Control

- ✔ Controller type railway crossing: Overlapping occupancy of calling detectors for trains is now handled correctly (producing one call per train). (15157 🚫)

Vehicle Simulation

- ✔ The propagation of fixed lane change distances to additional lanes at the left side upstream of connectors was calculated incorrectly in Vissim 2020.00-08. This problem has been fixed. (15148 🚫)

Viswalk

- ✔ The speed of pedestrians in x- and y-direction as well as the speed variance is now calculated correctly if the orientation (viewing direction) differs from the actual walking direction. This affects area measurements, area evaluation, grid cell evaluation and the pedestrian attribute "Experienced velocity variance". (14942 🚫)

🚫 Breaking Changes

Signal Control

- 🚫 Controller type railway crossing: Overlapping occupancy of calling detectors for trains can cause simulation results to differ from previous versions. (15157 ✔)

Vehicle Simulation

- 🚫 Networks with fixed lane change distances extending across upstream connectors with additional lanes on their origin links at their left side can have simulation results differing from previous versions. (15148 ✔)

Viswalk

- 🚫 Values referring to the speed (in x- and y-direction) and speed variance values of pedestrians in area measurements, area evaluation, grid cell evaluation and the pedestrian attribute "Experienced velocity variance" can differ from previous versions. (14942 ✔)

2020.00-08 [87857]

2020-05-20

+ New Features and Changes

Graphics

- + SketchUp file formats 2019 and 2020 are now supported. (15062)

Network Editor

- + Car Park Creator: All parking spaces on one side can be moved together along the drive aisle (click + drag). (14924)

OpenDRIVE Import

- + OpenDRIVE files in a format later than version 1.4 (e.g. 1.5, 1.6) can now sometimes be imported, but possibly only partially (a warning message is shown). (14858)
- + OpenDRIVE links with notable width variations are now converted into connectors with a short link each at the start and the end, so that they can have different lane widths at the start and the end. The lane widths change linearly along the connector, of course. (13956)

✔ Fixed Bugs

Dynamic Assignment

- ✔ Trips from a trip chain file (*.fkt) are now assigned to the correct vehicle type set which is relevant for connectors which are closed only to a subset of the existing vehicles types. (This problem had been introduced in Vissim 11.00-07 / 2020.00-00.) (15017)

External Programs

- ✔ The V3DM installation is complete again. (It had been missing the data files since version 2020.00-03.) (15106)

OpenDRIVE Import

- ✔ OpenDRIVE files with the XML namespace "www.opendrive.org" can now be imported as well as files without that namespace (which don't comply with the OpenDRIVE 1.4 specification). (14898)

Presentation

- ✔ Z-coordinates (height) of vehicles are shown correctly now in animation replay. (14949)

Scenario Management

- ✔ The flag "Record Animations" is not switched off anymore after the first of several simulation runs (for multiple scenarios). (14803)

Signal Control

- ✔ Simple two-stage controllers switch signal states at the full simulation second now. (14993 🚩)
- ✔ The simple actuated controllers (SC type "Two-Stage Controller", "Pedestrian Crossing" and "Railway Crossing") delete all detector calls at the start of the red time of the calling flow, so vehicles / pedestrians detected during green / amber are not causing another green stage anymore. (14992 🚩)

Vehicle Simulation

- ✔ A driving behavior with "observe adjacent lane(s)" doesn't cause a vehicle to keep left anymore in situations where the minimum lateral distance cannot be kept to vehicles on both adjacent lanes at the same time. (14935 🚩)
- ✔ A large emergency stop distance which extends up to an upstream connector where it would cause a vehicle to stop if there was an adjacent lane in the required direction cannot cause the simulation to crash anymore (in a situation where a vehicle has only partially left the upstream connector at the end of a timestep). (15123)
- ✔ A problem with vehicles not actually managing to connect to a platoon from behind has been fixed. (14815 🚩)
- ✔ A vehicle in an emergency braking situation (inside the desired safety distance) can now react correctly on a conflict area also if the leading vehicle is faster than that vehicle. (14497 🚩)
- ✔ Lane change distance distributions affect lanes not directly connected to the connector only on the origin link of the connector, as well as all predecessor lanes along arbitrarily many connectors, but not any additional adjacent lanes on upstream links. The constant lane change distance can also affect such additional lanes. This guarantees that the actual valid lane change position on a link is never closer to the next connector of a route than the lane change distance (constant or from a distribution) of that connector. (15089 🚩)
- ✔ Overtaking on the same lane and "observe adjacent lane(s)" don't cause unnecessary emergency braking anymore. Overtaking vehicles move back to their original lateral position later (watching the estimated safety distance), and trailing vehicles don't brake hard while there is still some lateral distance. (14890 🚩)
- ✔ Vehicles don't ignore lane conflicts with other lanes of their own link anymore. (This problem was especially relevant with two-lane connectors from a roundabout link to the exit link, where vehicles from the inner lane need to cross the outer lane.) (15016 🚩)

Viswalk

- ✔ A simulation run cannot crash anymore because of a crossing conflict between pedestrians and vehicles, with "Enforce absolute braking distance" activated in the driving behavior of the vehicle. (14959)

🚩 Breaking Changes

Driving behaviors with "observe adjacent lane(s)" can cause simulation results to differ from previous versions.

- 🚩 Driving behaviors with "observe adjacent lane(s)" can cause simulation results to differ from previous versions. (14935 ✔)

Signal Control

- 🚩 Networks with a controller of the type "Two-Stage Controller", "Pedestrian Crossing" or "Railway Crossing" can have simulation results differing from previous versions. (14992 ✔)
- 🚩 Networks with simple two-stage controllers can have simulation results differing from previous versions. (14993 ✔)

Vehicle Simulation

- 🚩 Driving behaviors with overtaking on the same lane and/or observing adjacent lane(s) can cause simulation results to differ from previous versions. (14890 ✔)
- 🚩 Networks with conflict areas containing a lane conflict looking back to different lanes of the same link can have simulation results differing from previous versions. (15016 ✔)
- 🚩 Networks with lane change distance distributions can have simulation results differing from previous versions. (15089 ✔)
- 🚩 Networks with multiple closely spaced conflict areas can have simulation results differing from previous versions. (14497 ✔)
- 🚩 Networks with platooning can have simulation results differing from previous versions. (14815 ✔)

+ New Features and Changes

Coordinate-Based Routes Import

- + Three parameters can now be set by the user: The standard deviation of the cost function for node mapping, the maximum snap radius for selection of possible links and the maximum number of link candidates used per node. **(14169)**

Network Editor

- + The green triangle for the minimum headway of the conflict marker of a priority rule is not shown anymore if the minimum headway is zero. **(14606)**

Vehicle Simulation

- + Two new vehicle attributes for platooning: "Platoon leader number" (ID of the leading vehicle of the vehicle's platoon) and "Platoon size" (number of vehicles in the vehicle's platoon). **(14539)**

✓ Fixed Bugs

Meso Simulation

- ✓ The node evaluation doesn't crash anymore if an evaluation node contains both meso and micro link segments. As this is not allowed, the simulation doesn't start now and Vissim shows an error message. **(14677)**

Scenario Management

- ✓ An open chart window showing a formula UDA doesn't prevent result attribute values from being loaded anymore (when a new scenario is loaded). **(14162)**
- ✓ Modifications could make connectors start beyond the end of a link which could cause PT vehicles to miss their stops. This problem has been fixed. **(14699)**

Vehicle Simulation

- ✓ For overtaking in opposing traffic, the gap downstream of the slow vehicle is now extrapolated with its current speed and the current speed of its leading vehicle. This makes it easier to overtake the same slow vehicle for two closely spaced vehicles. **(14849 ⚠)**
- ✓ Overtaking in opposing traffic works better now for overtaking of parked vehicles (and PT vehicles in PT stops). Those don't prevent the overtaking vehicles anymore from changing back to their original lane, causing fewer "collisions". **(14840 ⚠)**

Viswalk

- ✓ In some cases, the BIM import could not assign the start and end levels of stairs correctly. This problem has been fixed. **(14697)**

⚠ Breaking Changes

Vehicle Simulation

- ⚠ Overtaking in opposing traffic can cause simulation results to differ from previous versions. **(14849 ✓)**
- ⚠ Overtaking in opposing traffic of parked vehicles or PT vehicles in PT stops can cause simulation results to differ from previous versions. **(14840 ✓)**

+ New Features and Changes

Dynamic Assignment

- + Convergence Evaluation: The values for weighted shares are shown in separate columns, i.e. separated by semicolons, not in parentheses. **(14591)**

Evaluations

- + The SSAM evaluation can now be limited spacially to the area defined by one or multiple sections, to be selected in the evaluation configuration. **(14122)**
- + The SSAM evaluation can now be limited to a time interval which is to be defined in the evaluation configuration. **(10435)**

Graphics

- + Transparency of background images of type 'Shapefile' (SHP) is now also supported in 3D mode. **(13819)**

Signal Control

- + Controllers of the type TRENDS don't allow to create, copy or delete signal groups anymore directly in the list in Vissim. In the signal controller dialog, the program file is not initialized with TREND429.EXE anymore, the GUI DLL can be selected freely, and there is a button 'Parameters' to open the TRENDS GUI dialog. The first supply file is now called 'VAP file' instead of 'STG file'. WTT file(s) can be selected freely, and there is no tab page for signal groups anymore. TRENDS signal groups can be created only in CROSSIG and then used in Vissim after the TRENDS GUI dialog has been opened once. **(14730)**

Viswalk

- + New pedestrian attribute 'Desired speed factor' which can also be modified during a simulation run, e.g. from a COM script. **(14407)**
- + The attribute 'Desired speed factor' at areas, ramps and pedestrians links can now also be modified during a simulation run, e.g. from a COM script. **(14615)**

Fixed Bugs

Dynamic Assignment

- ✓ Many vehicles in parking lots don't slow down the simulation anymore. **(14371 ⚠)**
- ✓ Path and cost files can now also be read if they are coded in UTF-8 BOM. **(14449)**

Evaluations

- ✓ Node evaluation works also in the command line version VissimCL now. **(14529)**
- ✓ The link segment evaluation excludes vehicles reversing out of parking spaces now. **(14578 ⚠)**

Graphics

- ✓ Holes in the ground for ramps were visualized incorrectly in 3D mode in rare cases. This problem has been fixed. **(14541)**

Viswalk

- ✓ PT vehicles at PT line stops with 'Late boarding possible' activated wait sufficiently long now for boarding passengers who wait outside because of a boarding delay function. **(14416 ⚠)**

Breaking Changes

Dynamic Assignment

- ⚠ Simulations with COM scripts assigning paths to vehicles in parking lots can have different results from previous versions. **(14371 ✓)**

Evaluations

- ⚠ The link segment evaluation can have different results compared with previous versions if there are vehicles reversing out of parking spaces on links with active link evaluation. **(14578 ✓)**

Viswalk

- ⚠ Networks with boarding delay times can have different results from previous versions. **(14416 ✓)**

+ New Features and Changes

Network Editor

- + A pedestrian link (link used as pedestrian area) can now be copied & pasted even if the overlapping link in the opposite direction is not selected. (That other link will also be copied & pasted automatically.) (14521)

OpenDRIVE Import

- + Elevation profiles (z-coordinates) are now imported for links and connectors. In the network settings, link gradient calculation is automatically set to use z-coordinates. (13101)

✓ Fixed Bugs

Dynamic Assignment

- ✓ Parking lots with reversing out and a zone number don't cause a crash anymore. (They are simply not used for dynamic assignment paths.) (14517)

Meso Simulation

- ✓ PT Vehicles on PT lines which don't have a PT stop or who have missed their last PT stop cannot cause the simulation to crash anymore. (14495 🚫)
- ✓ PT lines with PT stops both inside and outside of micro sections don't cause the simulation to crash anymore. (14450)

OpenDrive Import

- ✓ Lateral offset of links imported from a file exported by RoadRunner has been fixed. (14296 🚫)

Vehicle Simulation

- ✓ An opposing lane which is alternating between being completely inside the overtaking lane and intersecting it is now treated as a continuous possible stretch for overtaking in opposing traffic. (14550 🚫)
- ✓ The handling of multiple subsequent conflict areas which may not be blocked has been improved. (14113 🚫)

🚫 Breaking Changes

Meso Simulation

- 🚫 Networks with PT lines may have different simulation results from previous versions. (14495 ✓)

OpenDrive Import

- 🚫 Lateral offsets of links can be different from imports into previous versions. (14296 ✓)

Vehicle Simulation

- 🚫 An opposing lane which is alternating between being completely inside an overtaking lane and intersecting it can cause simulation results to differ from previous versions. (14550 ✓)
- 🚫 Networks with multiple subsequent conflict areas which may not be blocked can have different simulation results from previous versions. (14113 ✓)

+ New Features and Changes

COM Interface

- + New method `Vissim.ImportOpenDrive()` to import an openDRIVE file (*.xodr). (14423)

Meso Simulation

- ⊕ The sections selected for microscopic simulation affect only links and connectors on their level now. Connectors with two different levels (and exactly one of the ends not inside a micro section) are included partially. Upon reading a network file from Vissim 20.00-03 or before, all micro sections are copied to all other levels automatically. **(14309 🚫)**

✓ Fixed Bugs

z coordinates different from zero are handled correctly now by the function AddLink().

- ✓ COM Interface;
z coordinates different from zero are handled correctly now by the function AddLink(). **(13692)**

COM Interface

- ✓ COM Interface;
z coordinates different from zero are handled correctly now by the function AddLink(). **(13692)**

Evaluations

- ✓ Switching off the option "consider adjacent lanes" for queue evaluation doesn't cause upstream queue counters to be ignored anymore if the downstream queue counter is reached across a connector not starting from lane 1. **(14283 🚫)**

Lists

- ✓ The edge list doesn't jump to the top anymore after opening/closing an edge. **(13889)**
- ✓ The matrix editor does now show pasted values immediately. **(14374)**

🚫 Breaking Changes

Evaluations

- 🚫 Simulation results can differ from previous versions if there are connectors not starting from lane 1 in the network. **(14283 ✓)**

Meso Simulation

- 🚫 Hybrid simulations with connectors connecting different levels can have different results from previous versions. **(14309 ⊕)**

2020.00-03 [81907]

2019-11-20

⊕ New Features and Changes

Data Model

- ⊕ New vehicle attribute "Orientation angle" showing the angle between the orientation of the front end of the vehicle and the x axis in degrees (positive x axis is 0°, positive y axis is 90°). **(14230)**

Dialogs

- ⊕ The lane change distance distributions can now also be assigned to a connector in the connector dialog. **(14264)**

Graphics

- ⊕ Color scheme classes can now have a name which can be set in the graphic parameters and which is shown in the legend. **(12129)**
- ⊕ Turn value visualization for nodes shows numbers for narrow bars more often now. **(13617)**
- ⊕ Vehicles show the blinker for the connector (with direction "right" or "left") to a single parking space only from 10 meters upstream now. **(14350)**

Installation

- + The Visual C runtime has been updated to Visual C 2019 (which includes 2015 and 2017). (14351)

Network Editor

- + The dialog for defining the effect of a right click doesn't open anymore automatically at the first start of a new main version. You can still switch from the default (opens context menu) to the classic setting (creates object) in the user preferences dialog. (14364)

V3DM

- + Doesn't need a license anymore, so works also with a borrowed Vissim license. (14280)

Vehicle Simulation

- + Four new vehicle attributes: "Individual desired acceleration function", "Individual desired deceleration function", "Individual maximum acceleration function", "Individual maximum deceleration function". These are empty by default but can be set to reference an existing acceleration/deceleration function (typically from a COM script). If a vehicle has such a function assigned, it uses this function instead of the respective function from its vehicle type. (14317)
- + Handling of conflicts for parking out in reverse is much faster now during a simulation run and also in the initialization. (14256 🚩)
- + The car park creator allows to create a dead end on one side of a bidirectional driving aisle now, through a click on the direction arrow on the driving aisle link or setting the respective attribute in the sidebar. Vehicles parking in the last few parking spaces near the dead end use additional short links for parking out in reverse. (14232)
- + The car park creator has the new option to connect all parking routes to an already existing parking routing decision (and a second one for the opposite direction) selectable in the flyout. (14245)
- + The lane change distance of connectors created by the car park creator has been reduced to 50 m. (14289)

✓ Fixed Bugs

COM Interface

- ✓ If the vehicle type of a vehicle is changed during a simulation run, the occupancy of the vehicle is not changed anymore in any case, even if it exceeds the capacity of the new type. It's up to the user to make the script set the occupancy to a suitable value. (13948)

Dynamic Assignment

- ✓ A reproducibility problem caused by "decide repeatedly" in combination with multi-threading has been removed. (13997 🚩)

OpenDRIVE Import

- ✓ Improved handling of very short links. (14304)
- ✓ Road Id zero is supported now. (14293)

Vehicle Simulation

- ✓ A conflict area now has also an effect on a vehicle which leaves their link along a connector starting within the conflict area. (14373 🚩)
- ✓ Conflict areas are not counted anymore for the number of interaction objects on adjacent lanes. (14392 🚩)
- ✓ Multiple starting connectors inside the minimum headway of a priority rule are now handled correctly. (14348 🚩)
- ✓ Parking routing decisions with the setting "Wait" for the attribute "Full Occupancy Behavior" and parking lots with reverse out work better now. The waiting vehicles are stopped early enough to leave room for the reversing out. (If this setting is used for a bidirectional driving aisle, deadlocks can happen.) (14372 🚩)
- ✓ The last vehicle in a platoon uses a slightly different method to calculate its speed. (14194 🚩)
- ✓ The simulation doesn't hang anymore upon multiple (partial / parking lot) routes ending for a vehicle in the same time step when it reaches a new link. (14307 🚩)

Viswalk

- ✓ Pedestrians reaching a waiting area after they had joined the queue already outside of that area don't immediately leave the queue anymore. (14166 🚩)

🚩 Breaking Changes

Dynamic Assignment

- ❗ The option "decide repeatedly" can cause simulation results to differ from previous versions. (13997 🟢)

Vehicle Simulation

- ❗ Connectors starting within a conflict area can cause simulation results to differ from previous versions. (14373 🟢)
- ❗ Multiple starting connectors inside the minimum headway of a priority rule can cause simulation results to differ from previous versions. (14348 🟢)
- ❗ Networks with conflict areas on multi-lane links can have different results from previous versions. (14392 🟢)
- ❗ Networks with parking out in reverse may have different simulation results from previous versions. (14256 +)
- ❗ Networks with platooning can have different simulation results from previous versions. (14194)
- ❗ Parking routing decisions with the setting "Wait" for the attribute "Full Occupancy Behavior" and parking lots with reverse out can cause simulation results to differ from previous versions. (14372 🟢)
- ❗ Simulation results can differ from previous versions after multiple (partial / parking lot) routes end for a vehicle in the same time step. (14307 🟢)

Viswalk

- ❗ Networks with queues extending outside of their waiting area can have different simulation results from previous versions. (14166 🟢)

2020.00-02 [81010]

2019-10-09

+ New Features and Changes

COM Interface

- + COM scripts using `ILink::get_Points3D` and that are written in a language having explicit types must be adapted: The return type of `get_Points3D` is no longer `IPoint3DContainer` but rather `ILinkPolyPointContainer`. Correspondingly, this container contains `ILinkPolyPoint` instances rather than `IPoint3D` instances. Besides adapting the type, no changes are necessary to the scripts. (13233 ❗)
- + Most container classes have now also a method "Duplicate" which allows to create a copy of an existing object with a new key (as by duplicating in a list window). (12289)
- + New method `ICOMPPathContainer.AddShortestPathForVehicleType()` which adds the shortest path (according to generalized cost) from the specified origin parking lot to the specified destination parking lot for the specified vehicle type in the specified DTA time interval to the path container. (13234)
- + New method `ILink.InvertDirection()` which works exactly as the context menu item "invert direction" in the network editor. (13665)
- + New method `ILink.SplitLink(splitPos, desiredSplitDistance, generateConnector)` which splits the link at the specified link position, with the specified distance between the first and second part and optionally a connector connecting these. (13563)
- + New method `IVehicleRoutingDecisionStaticCombineRoutes()` which works like the context menu item "Combine Routes" in the network editor. (12999)
- + New method for evaluating formulas on many objects. All network object collections (e.g. `ILinks`) provide a new method `'GetMultiByFormula()'` which evaluates a formula expression for all active objects of the collection. The results are returned as an array similar to `'GetMultiAttValues'`. Attribute values remain unchanged. The formula must evaluate to a numeric value, string expressions are not yet supported.
New method `'GetFilteredSet()'` for all collections. This applies the given formula expression as filter and returns a subset collection of all objects in that filter. In contrast to `'FilteredBy()'`, the filter is not applied again whenever attributes are changed, so the collection doesn't change even if new attribute values would cause objects not to be in the filter anymore. (14069)
- + New methods `FreeDistributionContainer.AddFreeDistributionEmpirical` and `.AddFreeDistributionNormal`. (13718)
- + New methods `SCCommunicationContainer.AddSCCommunication`, `.DuplicateSCCommunication` and `.RemoveSCCommunication`. (13717)
- + New methods to add/remove a desired speed distribution for a vehicle class to/from a desired speed decision or a reduced speed area: `IVehClassDesSpeedDistributionContainer.AddVehClassDesSpeedDistribution()` and `.RemoveVehClassDesSpeedDistribution()`. (13711)
- + New methods to add/remove a time distribution for a vehicle class to/from a stop sign: `IVehClassDwellTimeDistributionContainer.AddVehClassDwellTimeDistribution()` and `.RemoveVehClassDwellTimeDistribution()`. (13709)

- + Vissim now also allows to execute scripts designed for Python 3.7. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(13919)**

Data Model

- + Length and width are now shown as empty value for non-rectangular objects. **(13663)**
- + Links have now relations to all edges (dynamic assignment / evaluation) and turns (dynamic assignment / evaluation) they belong to, so these objects can be shown in a child list of the link list. **(9260)**
- + Several attributes for z-Coordinates have the type "short length" now (instead of the unit-free type "Coord"). This means they can show units in the GUI, and their values are understood to be in the currently selected unit for short lengths (m or ft) when read or modified through COM. **(14221)**
- + The net distance (front to rear) between two vehicles is now called "clearance", the gross distance (front to front) is called "spacing". **(14035)**

Dialogs

- + 3D Traffic Signal dialog: Direct Access to the current directory and to the directory Exe\3DModels\Textures\Signs which contains textures for traffic signs included in the setup package. **(12272)**
- + During the runtime of the program, previously closed dialogs are opened at the tab page which was open the previous time. **(13051)**
- + New attribute selection control which allows to directly type (resulting in continuous filtering, showing all attributes containing the typed substring) and select an attribute with single click. **(13363)**
- + The 3D Info Sign dialog has the additional option "attribute value and text". **(13325)**
- + The attribute "increased acceleration" can now also be edited in the driving behavior dialog. **(12991)**
- + The driving behavior dialog has a two new tab pages "Autonomous Driving" and "Driver Errors" for the (mostly recently added) parameters which are specific for these areas. **(13766)**

DriverModel.DLL Interface

- + Data for conflict areas is passed from Vissim to the DLL. **(13580)**
- + Signal data along the route of the vehicle (including necessary lane changes) are passed from Vissim to the DLL: the distance to the next signal and its current signal state as well as the times left until the next expected signal state changes. Since Vissim 11.00-04, also the cycle length of the controller is passed to the DLL. **(13275)**

Driving Simulator Interface

- + The simulator can now hand over the control over vehicles / pedestrians to Vissim (to move the simulator with the internal behavior model) and can later take over the control again. **(10261)**
- + The values of the first 16 numeric user-defined vehicle attributes are passed for each Vissim vehicle from Vissim to the simulator. **(11024)**

EnViVer

- + Database update "EnViVer2018NL" which is automatically available for all EnViVer licensees. This adds EnViVer vehicle classes for the era 2018, including new classes for separating light duty vehicles, and not only measured data for 2018 (classes named "*_y18v18") but also estimated data for 2025 (classes named "*_y25v18"). See the document "EnViVer - Vehicle types 2018.pdf" in the DocENG\ folder of your Vissim installation. **(14229)**

External Programs

- + EnViVer version 5.8 is now available and can be downloaded from <https://cgi.ptvgroup.com/php/vision-setups/> by users with a valid EnViVer license. This new version can handle much larger vehicle record (*.fzp) files. **(13882)**

Graphics

- + 3D Info Signs can show units now for attribute values. **(12829)**
- + 3D model files in the format SketchUp 2018 can be used now. **(13550)**
- + After selecting the file name for a screenshot of the network editor window, a dialog opens where the desired aspect ratio and the pixel size of the created image file can be selected. For JPEG images, the quality (which is reduced by compression) can be selected as well. **(8226)**
- + Display types have the new attribute u',,;Drawing order 3Du"";. The value of this attribute decides the visibility priority for links / connectors / areas at the same height (z value). **(8328)**
- + During a simulation run, detectors are not shown anymore if "Simple Network Display" is active. **(9303)**
- + New color scheme Green-Amber-Red which is inverse to Red-Amber-Green. **(12956)**

- + New graphics parameter "OvtLnDrawingMode" for links: If this is set to "Links and overtaking lanes" (default value), the overtaking lane is shown (hatched in magenta). If this is set to "Links only", overtaking lanes are not shown in the network editor at all (but do still work). **(12258)**
- + Simple 3D building shapes (depending on location) are displayed in 3D view if the option "Show buildings" is selected in the 3D graphics options of the network window. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(13392)**
- + The lighting in 3D mode is now mostly independent of the current camera angle. **(9946)**
- + Transparent pixels in CAD backgrounds are not displayed with white color anymore. **(12765)**
- + Visualization of queue lengths from the node evaluation / queue counters in the network editor can be activated in the graphics parameters for nodes / queue counters. The value of the selected attribute (usually "Queue length" (average) or "Queue length (maximum)", with the subattributes simulation run and time interval (percentile possible!)) is shown by coloring the link(s) upstream of the queue counter in the selected color. A label can be shown optionally as well. **(11747)**

Installation

- + Documentation for "other" languages (e.g. Russian and Polish which both have a previous PDF manual) is now available for selection during the setup. **(13504)**
- + The Windows context menu item "Open with PTV Vissim" includes the service pack number now. **(13748)**
- + The diagnostics program "VDiag" (VDiagGUI.exe) provided with Vissim is now named "Diagnostics for PTV Vissim" (Diagnostics.exe). It has the additional option to start Vissim in diagnostics mode while running Process Monitor which can provide additional information if Vissim fails to start. The tab page "Versions" has been removed but the information about the file versions is still stored in the support package (formerly known as hotline package). A Codemeter CMDust report can also be created automatically and included in that package. **(13787)**
- + Vissim uses the .NET framework version 4.7.2 now (previously .Net 4.6). This version can be installed on Windows 7 SP1, Windows 8.1 and Windows 10 starting from the anniversary update (version 1607). **(13582)**

License Handling

- + Thesis Licenses include Bing Maps again. **(13284)**
- + Thesis and Academic licenses now include the BIM import. **(13628)**

Lists

- + If a child object which is not selectable in the network editor (e.g. a 3D point of a link) is selected in the child list of a synchronized coupled list window, the current parent object is highlighted (black border) in the network window without changing the selection in the parent list. This also works for multiple selected parent objects and multiple selected child objects. **(13336)**
- + Length and width of rectangular objects (sections, areas, obstacles, ramps, elevators) can be edited in lists and dialogs as well now. **(7876)**

Meso Simulation

- + Managed lanes facilities now work also for meso and hybrid simulation, even outside of the sections defined for micro simulation. **(12983)**

Network Editor

- + A click in the snap distance of multiple network objects of the same size selects the object with the smallest distance to the click position now. **(11981)**
- + Car Park Generator: Special network editor mode to easily create multiple links with one parking space each alongside a link (and optionally its opposite direction), together with all connectors, routes and other network elements required for orthogonal or diagonal parking (with parking out in reverse). For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(13884)**
- + For improved visibility in large networks, selected routes and paths are now shown with a fixed minimum width in pixels (even if the links are narrower). **(13048)**
- + Labels of selected objects are now highlighted. **(11800)**
- + New vertical toolbar at the left side for special editor modes, currently Major Flow Definition, Car Park Generator and Pedestrian Route Bundle. **(13957)**
- + Special mode to easily set the status attribute of multiple conflict areas (even across multiple intersections) at once by defining a major flow. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(10136)**
- + Special network editor mode to easily create multiple links with one parking space each alongside a link, together with all connectors, routes and other network elements required for orthogonal or diagonal parking (with parking out in reverse). For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(14018)**

- + The headway marker (green triangle) of the conflict marker of a priority rule can be dragged in the network editor now. **(36)**

OpenDRIVE Import

- + Support for additional LaneTypes: entry, exit, offRamp, onRamp, roadWorks, tram, rail, biking. All types are imported as normal lanes so far, so any special attributes need to be set by the user. **(13265)**

Presentation

- + Additional storyboard resolution 3840 x 2160 (UHD). **(13955)**
- + Animation file (*.ani) recording is now much faster. **(13359)**
- + Each keyframe can reference a named network editor layout which is loaded automatically when that keyframe is shown. Cross-fading between layouts is included. **(8802)**
- + New context menu item "Apply camera position to current network editor" in the keyframes child list of the list of storyboards. **(10334)**
- + The optional attribute "Net layout" of keyframes is now also editable during a simulation run. **(13250)**

Scenario Management

- + A scenario (or the base network) can be exported as an independent network file (*.inpx) now directly from the context menu of the Project Explorer sidebar. The scenario (base network) is automatically loaded before the export. **(13735)**
- + All modifications which will be loaded for a scenario are listed now in the Project Explorer sidebar, so not only the explicitly included modifications but also all modifications that those depend on (directly or indirectly, shown with grey +/x symbols). **(11717)**
- + Later changes of the base network are now handled more flexibly, ignoring "impossible" objects on non-existing links or areas when loading a modification / scenario instead of canceling that with an error message. **(12259)**
- + The database format is now SQLite. SQL CE databases can still be opened but will be written in SQLite format. **(12481)**

Signal Control

- + There are three new signal controller types: Pedestrian Crossing, Railway Crossing and Two-Stage Controller. All these allow traffic-actuated signal control without any user programming (e.g. in VAP). For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(10708)**

Synchro Import

- + The menu says "Import - Synchro" now instead of "Import - Synchro 7" because Vissim has supported Synchro 8, 9 and 10 import as well for quite some time. **(13802)**

User-Defined Attributes

- + When a user-defined attribute is inserted through the dialog or via COM, the default value for the attribute "Can be empty" is now false, the default value of the attribute "Default value" is now zero. **(13962 🚫)**

Vehicle Simulation

- + A link behavior type can now also be assigned to a lane, overriding the link behavior type of the link while a vehicle is on that lane. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(13457)**

- + Additional options for driver mistakes: distraction, overspeed and misestimation.

Distraction:

Three new attributes need to be set in a driving behavior in order to activate distraction for vehicles using that driving behavior: Distraction lane angle distribution, Distraction probability and Distraction duration distribution. A vehicle using a driving behavior with distraction probability > 0 and both distraction lane angle distribution and distraction duration distribution set will draw a random value between 0 and 100 each time step. If this value is smaller than the probability value divided by the simulation resolution (number of time steps per simulation second), the vehicle changes into distraction mode and draws a random value α from the distraction lane angle distribution and a random value t from the duration distribution. For the next t simulation seconds, the vehicle moves laterally with a lane angle α regardless of the vehicles on adjacent lanes or the border of the link. The lateral direction (to the left or to the right) is determined randomly. After this time t , the vehicle moves laterally back to its desired lateral position at free flow (as set in the driving behavior) automatically. During that return, a new distraction phase can not start. The amount of additional lateral deviation caused by distraction in the current time step is shown in the vehicle attribute "Lateral deviation (distraction)". During the distraction, the acceleration of the vehicle stays constant. The vehicle completely ignores other vehicles and network objects (signal heads, priority rules, stop signs, ...). The lateral deviation has no effect on all surrounding vehicles (unless these specifically consider the lateral position for overtaking on the same lane or for observing vehicles on adjacent lane(s)). The vehicle is still considered to be on its original lane even if it has geometrically left that lane completely (and possibly has left even the link).

Overspeed:

The link spline points (child list "Points 3D" in the Links list window) have the new attribute "Radius". This needs to be set to a nonzero value in order to cause a corner (spline point) to have a critical speed which can be exceeded, causing lateral deviation due to understeering. The value of the attribute "Radius" is irrelevant for start and end points of normal links but relevant for all points of connectors.

At least one function each of the new types "Critical Speed" and "Lateral Drift Speed" need to be defined for this feature. The critical speed function defines Critical Speed (Y) over Radius (X), the lateral drift speed function the lateral drift speed [in m/s] over the speed ratio (current speed divided by critical speed).

Each vehicle of a vehicle type with both "Critical Speed Function" and "Lateral Drift Speed Function" set determines in each time step if its current speed exceeds the critical speed of the current network position. At the current link position (between two spline points), the radius a of the previous spline point and the radius b of the next spline point are considered. If there is no radius defined in one of the spline points, there is no understeering possible. If both spline points have a radius, the smaller radius is relevant for the lateral deviation in the current time step. The current speed of the vehicle is considered to be the maximum speed during this time step (so either at the start or end of the time step). If this current speed exceeds the critical speed, the resulting lateral drift speed is determined from the speed ratio. The vehicle moves laterally to the outside of the corner at least with the amount defined by that speed (overruling lane change and distraction). If the lateral movement caused by distraction or a lane change is greater than the value caused by overspeed but in the same direction, the former value is used. The amount of additional lateral deviation caused by overspeed in the current time step is shown in the vehicle attribute "Lateral deviation (overspeed)".

Misestimation:

A free distribution needs to be created to define the probability and amount of misestimation: X is the factor to be multiplied with the actual speed of surrounding vehicles and FX is the cumulated probability.

A driving behavior needs to reference that free distribution in the attribute "Speed misestimate distribution" in order to activate misestimation for vehicles using that driving behavior.

A vehicle using a driving behavior referencing a speed misestimate distribution misestimates the current speed of all other vehicles for the purpose of gap calculation, at priority rules, conflict areas and for overtaking in the opposing lane. The speed of each considered vehicle is multiplied with the same factor drawn from that distribution. The fractile for the random value is constant for each individual vehicle during a simulation run, so some vehicles will always overestimate speeds and others will always underestimate speeds.

At conflict areas, vehicles using a factor other than 1.0 will also ignore the current and future acceleration and deceleration of surrounding vehicles, taking into account only their current speed, multiplied by the factor. **(13716)**

- + Attribute decisions are located on a lane now, not on a full link anymore. Old files with attribute decisions on links can be read in, and those decisions are converted to one decision per lane of the link. **(13568)**
- + Improved automatic handling of conflicts for parking lots with reversing out, including bidirectional drive aisle. **(13893)**
- + New value "ignores interaction vehicle" for the vehicle attribute "Driving state" which is used if a vehicle reversing out of a parking space needs to ignore another vehicle in order to prevent a deadlock. If graphic parameters for vehicles are set to color by driving state, this has the same color as "ignores priority rule". **(13403)**
- + Several new driving behavior attributes for the modelling of platooning (closely spaced secure following of multiple connected vehicles). For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(12000)**
- + The driving behavior option "smooth closeup" is now always active for all vehicles. The attribute is not part of the data model anymore, so not accessible in the GUI or through COM. Old network files with "smooth closeup" off can still be read in, but that setting is ignored. **(13354)**

- + The lane change distance of a connector can now be optionally defined as a distance distribution, with additional optional additional distance distributions for specific vehicle classes. **(11637)**
- + The minimum standstill distance for a standing obstacle is now 0.01 m. **(13661 !)**
- + The random number sequences for vehicle type selection at parking lots and for managed lanes routing decisions are independent now. **(13185 !)**
- + Three new vehicle attributes for net distances:
 "Safety distance (net)" is the desired safety distance (front to rear) - the existing attribute for the desired safety distance (front to front) is now named "Safety distance (gross)".
 "Clearance" is the distance to the leading vehicle (front to rear) - the existing attribute "Headway" is the distance to the leading vehicle (front to front).
 "Following distance (net)" is the distance to the relevant interaction object (front to rear) - the existing attribute for the distance to the relevant interaction object (front to front) is now named "Following distance (gross)". **(14023)**
- + Vehicles reversing out of parking lots now stop earlier for changing to forward driving. **(14000 !)**
- + Vehicles waiting for a mandatory lane change don't break tentatively anymore in order to adapt to the speed on the target lane if the desired speed of the leading vehicle on the target lane is smaller than 0.1 m/s. **(13999 !)**
- + When reversing out of parking lots, connectors with direction 'None' are ignored. **(14279 !)**
- + When reversing out of parking lots, only connectors with direction "All" are used. **(14010 !)**

Viswalk

- + Conflict areas on multi-lane pedestrian links with dynamic potential are simulated much faster now. **(13629)**
- + Delay types can now be associated with vehicle doors in order to model delay caused by crowded trains, luggage, floor height differences or ticket processing of passengers boarding PT vehicles. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(5795)**
- + Elevators have the new attribute "Alighting door choice method" with the default value "RandomDoor" (as in previous versions) and the new value "DoorTowardNextRouteLocation" (which makes the pedestrian select the door closest to the center of the area of their next routing point). **(11240)**
- + Hovering over pedestrian route points shows the number of the route as quickinfo. **(13611)**
- + Increased simulation speed in networks with public transport passengers and huge partitions (connected walkable space on the same level). **(14002 !)**
- + Networks with many levels are drawn much faster now. **(13520)**
- + Pedestrians have additional attributes (FEDAsphyx = asphyxing dose, FIC = irritating concentration, and FEDConvec = dose of convective heat) which give the current state of a pedestrian with respect to the effects of fire events. **(13401)**
- + Special editor mode to show the route bundle consisting of all routes related directly or indirectly to a particular area. For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(12174)**
- + Visualization of result data from the Fire Dynamics Simulator (FDS). For details please see the manual or the document "Vissim 2020 - what's new.pdf". **(13272)**
- + When dragging a pedestrian point object (input, routing decision, route point, travel time measurement, attribute decision), it is now possible to switch between multiple areas/ramps at the current mouse pointer position by pressing the Tab key. **(13937)**

Workspace

- + Text which doesn't fit completely in the available space is now generally shown with ... (in lists, quick view, graphics parameters flyout and the network objects sidebar). **(13642)**

! Breaking Changes

COM Interface

- ! COM scripts using ILink::get_Points3D and that are written in a language having explicit types must be adapted: The return type of get_Points3D is no longer IPoint3DContainer but rather ILinkPolyPointContainer. Correspondingly, this container contains ILinkPolyPoint instances rather than IPoint3D instances. Besides adapting the type, no changes are necessary to the scripts. **(13233 +)**

Data Model

- ! COM scripts using attributes for z-Coordinates can have different results from previous versions. **(14221)**

Dynamic Assignment

- ! Convergence results can be different from previous versions in networks with closed edges. **(13908)**
- ! In rare cases (e.r. with multiple connectors starting/ending at the same link position), the node - edge graph can be different from previous versions. This also applies to the node evaluation graph. **(13606)**

- ❗ Paths for O-D pairs with zero volume can be handled differently from previous versions. **(13703)**
- ❗ The percentage of converged paths and edges in the convergence evaluation can be different from previous versions. **(13200)**

Evaluations

- ❗ Node evaluation delay results can be different from previous versions if there are parking lots without assigned zone in the network. **(13804)**
- ❗ Vehicle Record: The total time in network is higher by the time step length compared with previous versions. **(13490)**

Meso Simulation

- ❗ Evaluation results can differ from previous versions. **(13701)**
- ❗ Node evaluations may differ, when there are short distances between evaluation nodes. **(13671)**
- ❗ Node evaluations will differ for nodes with close dynamic routing decisions. **(13683)**
- ❗ Signal groups with red-amber can cause simulation runs to have different results from previous versions. **(14115)** 🟢

User-Defined Attributes

- ❗ When a user-defined attribute is inserted through the dialog or via COM, the default value for the attribute "Can be empty" is now false, the default value of the attribute "Default value" is now zero. **(13962)** ➕

Vehicle Simulation

- ❗ The driving behavior option "Enforce absolute braking distance" can cause simulation results to differ from previous versions. **(14143)** 🟢
- ❗ Attribute decisions are located on a lane now, not on a full link anymore. In Scenario Management, modifications relating to old attribute decisions (per link) don't work anymore and need to be fixed manually (please contact PTV). **(13568)** ➕
- ❗ Behavior during reversing out of a parking space can be different from previous version. **(13109)**
- ❗ Conflict areas between two links which both have incoming/outgoing connectors from/to the same link behave differently from versions since 11.00-00. **(13621)**
- ❗ Driving behaviors with "observe adjacent lane(s)" and "overtake on the same lane" can cause simulation results to differ from previous runs. **(13398)**
- ❗ Driving behaviors with a minimum lookahead distance can cause simulation results to differ from previous versions. **(14170)** 🟢
- ❗ Lane change decisions can be different from previous versions. **(13525)**
- ❗ Lane change decisions can differ from previous versions if the leading vehicle on the new lane has exactly the same speed (e.g. both zero) as the vehicle wanting to change lanes. **(13756)**
- ❗ Networks with branching and/or merging conflict areas can have different results compared with previous versions. **(13812)**
- ❗ Networks with parking lots with reversing out can have different results from previous versions. **(13893)** ➕
- ❗ Parking lots with forward - reverse and multiple incoming connectors can cause different simulation results from previous versions. **(14135)** 🟢
- ❗ Results may be different in networks with reduced speed areas, when the car following model Wiedemann 99 is used. **(14052)**
- ❗ Reversing out of parking lots can cause different simulation results from previous versions. **(13416)**
- ❗ Simulation results can be different from previous versions if a lane changing vehicle passes the start position of a connector on its original lane which does not also connect from its new lane. **(14015)**
- ❗ Simulation results can differ from previous versions for networks with a driving behavior with "smooth closeup" switched off. **(13354)** ➕
- ❗ Simulation results in networks with PT stops can differ from previous versions. **(13815)**
- ❗ Simulations with vehicle inputs or parking lot on links with overtaking lanes and blocked lanes can have different results from previous versions. **(13939)**
- ❗ Simulations with vehicle-class specific interaction behavior parameters can have different results from previous versions. **(13972)**
- ❗ Stop signs inside conflict areas can cause simulation results to differ from previous versions. **(14258)** 🟢
- ❗ The driving behavior option "Observe adjacent lane(s)" can cause simulation results to differ from previous versions. **(13184)**
- ❗ The lateral behavior of a vehicle with the attribute "Externally controlled" set to "EVC_COM" can differ from previous versions. **(13798)**
- ❗ The lateral behavior of vehicles on links with more than 2 lanes can be different from previous versions if the "Desired lateral position at free flow" is set to "Right" or "Left" in the current driving behavior. **(14254)** 🟢

- ❗ The minimum standstill distance for a standing obstacle is now 0.01 m. **(13661 +)**
- ❗ The random number sequences for vehicle type selection at parking lots and for managed lanes routing decisions have changed. **(13185 +)**
- ❗ Vehicles reversing out of parking lots now stop earlier for changing to forward driving. **(14000 +)**
- ❗ Vehicles with very low (or zero) desired speed on multilane links can cause simulation results to differ from previous versions. **(13999 +)**
- ❗ When reversing out of parking lots, connectors with direction 'None' are ignored. **(14279 +)**
- ❗ When reversing out of parking lots, only connectors with direction "All" are used. **(14010 +)**

Viswalk

- ❗ Area measurements containing moving ramps can have different results from previous versions. **(13006)**
- ❗ Networks with conflict areas for pedestrians can have different simulation results from previous versions. **(13473)**
- ❗ Networks with queueing areas can have different results from previous versions. **(13447)**
- ❗ Networks with routing points on ramps/stairs can have different results from previous versions. **(13588)**
- ❗ Pedestrian behavior in queues can be different from previous versions. **(13177)**
- ❗ Pedestrians pushed off their current waiting area can cause different simulation results from previous versions. **(14106 ✓)**
- ❗ Simulation results can differ from previous versions if the parameter values for cell size and/or default obstacle distance have more than 4 decimals in metric units (or non-default values in Imperial units). **(14002 +)**
- ❗ Simulation results can differ from previous versions if there is a waiting areas with waiting position approach method "Potential" and the route to the waiting area using dynamic potential. **(13876)**
- ❗ Simulation results may be different in networks where pedestrians alight from public transport vehicles. **(13996)**
- ❗ Simulation results of networks with ramps and dynamic potential can differ from previous versions. **(13524)**
- ❗ Simulations results with escalators can differ from previous versions. **(13212)**
- ❗ Simulations with alighting passengers who then board again can have results differing from previous versions. **(13346)**
- ❗ Simulations with destination areas with closely spaced polygon points can have different results from previous versions. **(13598)**
- ❗ The area/ramp/section attribute "Size 2D (obstacle-free)" can have different values from previous versions. **(12982)**