PTV Vissim & Viswalk 2020 Release Notes

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http://vision-traffic.ptvgroup.com/en/support_vissim
http://vision-traffic.ptvgroup.com/en/support_viswalk

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New Features and Changes

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)**
- 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 anmyore, 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 beend 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 prioriy 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 prioriy 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 exsiting object with a new key (as by duplicating in a list window). **(12289)**
- New method ICOMPathContainer.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 whic 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 attribut with single click. **(13363)**
- The 3D Info Sign dialog has the additional option "attribut 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 con-nectors, 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, shwon 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 alpha 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 alpha 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 saftey 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 previouis 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)**
- 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)**
- 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 diiffering 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)**