

# PTV Vissim & Viswalk 11

## Release Notes

Last modified: 2019-01-22

[http://vision-traffic.ptvgroup.com/en/support\\_vissim](http://vision-traffic.ptvgroup.com/en/support_vissim)  
[http://vision-traffic.ptvgroup.com/en/support\\_viswalk](http://vision-traffic.ptvgroup.com/en/support_viswalk)

11.00-05 [75928]

2019-01-22

### + New Features and Changes

#### Graphics

- + 3D model files in the format SketchUp 2018 can be used now. (13550)

#### Lists

- + Length and width of rectangular objects (sections, areas, obstacles, ramps, elevators) can be edited in lists and dialogs as well now. (7876)

#### Vehicle Simulation

- + 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 🚫)

### ✔ Fixed Bugs

#### Meso Simulation

- ✔ A bug has been fixed which caused a crash during the initialization of a hybrid simulation in a network where a parking lot inside a micro section is not located on the first link of the start edge. (13569)
- ✔ Volumes in the node evaluation are correct now also in nodes with parallel turning movements and in roundabouts (where several of the automatically created travel time measurements share the same meso edge). (13624)

#### Vehicle Simulation

- ✔ Conflict areas between two links are now treated as type merging again if the two links both have outgoing connectors to the same link. Conflict areas between two links are now treated as type branching again if the two links both have incoming connectors from the same link. (This reverts a change in Vissim 11.00-00, except the previous condition of a maximum of 5 meters within the start or end of the links which is removed now.) (13621 🚫)

#### Viswalk

- ✔ 3D transformation attributes (e.g. yaw angle) work correctly now for 3D pedestrian models as well. (13646)
- ✔ After a change of the type of a pedestrian during a simulation run (from a COM script), the 3D model is updated correctly now. (13662)

### 🚫 Breaking Changes

#### Vehicle Simulation

- 🚫 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 +)
- 🚫 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 ✔)

#### 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 ✔)

## + New Features and Changes

### Dialogs

- + The attribute "increased acceleration" can now also be edited in the driving behavior dialog. **(12991)**

### 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)**

### Graphics

- + During a simulation run, detectors are not shown anymore if "Simple Network Display" is active. **(9303)**

### 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)**

### Network Editor

- + Labels of selected objects are now highlighted. **(11800)**

## ✔ Fixed Bugs

### COM Interface

- ✔ The working folder doesn't change anymore from the directory of the current \*.inpx file to the directory of an event-based script file with scope "Single call". **(13421)**

### Evaluations

- ✔ The vehicle record shows the total time in network for a vehicle in its first time step in the network now as the time step length (instead of zero). This is consistent with the network evaluation. **(13490)** 🚫

### Graphics

- ✔ Backgrounds are now visible again in screenshots in 2D mode. **(13547)**

### Lists

- ✔ Editing a vehicle class for vehicle class specific attributes of a conflict area on a link which overlaps with a pedestrian link doesn't cause a crash anymore. **(13478)**

### Scenario Management

- ✔ A modified scenario is not saved automatically anymore if it is unloaded from a COM script. **(13576)**
- ✔ Exported network files are now explicitly excluded from scenario management, so they can be opened from directories without project database. **(13426)**

### Viswalk

- ✔ A high number of conflict areas for pedestrians cannot cause a reproducibility problem due to rounding issues anymore. **(13473)** 🚫
- ✔ Area measurements handle moving ramps (walkways and escalators) correctly now, considering only the moving part for attribute calculation. **(13006)** 🚫
- ✔ Opening a network file with ramps with certain parameter values isn't canceled anymore due to alleged inconsistency. **(13583)**

- ✔ Problems with pedestrians blocking each other at the head of a queue have been resolved. **(13447 ❗)**
- ✔ Simulation results are now reproducible even with pedestrians passing a start/end area of a ramp while following a dynamic potential fields. **(13524 ❗)**

## Workspace

- ✔ Closing the main window during a simulation run cannot cause a crash due to pending error messages anymore. **(13309)**
- ✔ Opening the 3D info sign sidebar from the menu doesn't cause a crash anymore. **(13482)**

## ❗ Breaking Changes

### Evaluations

- ❗ Vehicle Record: The total time in network is higher by the time step length compared with previous versions. **(13490 ✔)**

### Viswalk

- ❗ 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 ✔)**
- ❗ Simulation results of networks with ramps and dynamic potential can differ from previous versions. **(13524 ✔)**

### Viswalk.

#### Area measurements containing moving ramps can have different results from previous versions.

- ❗ Viswalk.  
Area measurements containing moving ramps can have different results from previous versions. **(13006 ✔)**

11.00-03 [74735]

2018-11-08

## + New Features and Changes

### COM Interface

- + 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)**

### 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)**
- + 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)**

### Graphics

- + 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)**
- + New color scheme Green-Amber-Red which is inverse to Red-Amber-Green. **(12956)**

### 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)**

## Presentation

- + Animation file (\*.ani) recording is now much faster. **(13359)**
- + The optional attribute "Net layout" of keyframes is now also editable during a simulation run. **(13250)**

## Fixed Bugs

### Coordinate-Based Routes Import

- ✓ The maximum acceptable distance of a link position in the Vissim network from the coordinates of the location in the \*.rcf file has been increased from 50 meters to 80 meters to allow for bigger intersections. **(13382)**

### License Handling

- ✓ Classroom licenses (USA) can now actually use RBC (level 3). **(13358)**

### Scenario Management

- ✓ If a modification cannot be loaded, there are now options to remove that modification from the scenario and to continue loading the scenario, or to return to the base network, in addition to closing the project. **(13034)**
- ✓ Placing a network under scenario management also works now if the network has been opened from a network path starting with double backslash (i.e. not using a network drive mapping). **(13365)**

### Signal Control

- ✓ Detectors for specific vehicle classes now send the correct impulse memory value to the controller even if a filtered vehicle is still on the detector when a relevant vehicle enters the detector. **(13405)**

### Vehicle Simulation

- ✓ Deadlock situations with parking out in reverse have been fixed. **(13355)**
- ✓ Overtaking in opposing traffic cannot cause a crash anymore in situations without routing information. **(13369)**
- ✓ Passing vehicles on the adjacent lane works correctly now in combination with overtaking on the same lane. (In specific situations, a vehicle could be blocked unnecessarily before.) **(13398)** ⚠
- ✓ The driving behavior option "Observe adjacent lane(s)" uses now the lateral position of the front and rear end of the vehicles on the adjacent lane. This prevents some unrealistic lockup due to inconsistent decision and behavior. **(13184)** ⚠

### Viswalk

- ✓ "Boarding volumes" attributes (specifically the PT line selection) at PT stops affect now alighted passengers as well who wait for another PT vehicle. **(13346)** ⚠
- ✓ Pedestrians don't "stack" anymore in specific situations at the start of an escalator. **(13212)** ⚠
- ✓ Ramps/stairs with a standing location which is not random cannot cause a crash in simulation runs using multiple cores anymore. **(13486)**
- ✓ The area/ramp/section attribute "Size 2D (obstacle-free)" is now correctly calculated for moving ramps (escalators and moving walkways), complex ramps (with landings) and sections around horizontal ramps (same level) as well. **(12982)** ⚠
- ✓ The simulation doesn't crash anymore in networks with partial routes of the type "travel time" or "service point selection" and ("density" or "quantity"), independently of the numbering of these routes. **(13308)**

## Breaking Changes

### Vehicle Simulation

- ⚠ Driving behaviors with "observe adjacent lane(s)" and "overtake on the same lane" can cause simulation results to differ from previous runs. **(13398)** ✓
- ⚠ The driving behavior option "Observe adjacent lane(s)" can cause simulation results to differ from previous versions. **(13184)** ✓

### Viswalk

- ⚠ 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)** ✓

- ❗ The area/ramp/section attribute "Size 2D (obstacle-free)" can have different values from previous versions. (12982 ✅)

## 11.00-02 [73921]

2018-09-25

### + New Features and Changes

#### Data Model

- + Relations with condition: For 1:n relations (one object to several objects) an additional condition can be set for aggregation functions. In these cases, the relation gives only objects for which the condition is fulfilled and the aggregation function is applied to those objects. Example: '[SUM:LANES([COUNT:VEHS]>0)\WIDTH]' can be defined as formula for a link attribute. (12734)

#### Graphics

- + Transparent pixels in CAD backgrounds are not displayed with white color anymore. (12765)

#### Scenario Management

- + 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)

#### Vehicle Simulation

- + 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 ❗)

### ✅ Fixed Bugs

- ✅ Deadlocks caused by reversing out of parking lots have been removed. (13300)
- ✅ Lane change attributes of lanes can now also be modified (e.g. from a COM script) during a simulation run with an active evaluation for links, queue counters, delays and/or travel times. (13345)

### ❗ Breaking Changes

#### Vehicle Simulation

- ❗ Simulation results can differ from previous versions for networks with a driving behavior with "smooth closeup" switched off. (13354 +)

## 11.00-01 [73673]

2018-09-08

### + 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 ❗)
- + New method IVehicleRoutingDecisionStaticCombineRoutes() which works like the context menu item "Combine Routes" in the network editor. (12999)

#### Data Model

- + 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)

#### Graphics

- + 3D Info Signs can show units now for attribute values. (12829)

- + 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)**

## License Handling

- + Thesis Licenses include Bing Maps again. **(13284)**

## Network Import

- + Through the new menu item File / Import / Routes (coordinates), a route coordinates file (\*.rcf) containing an assignment result exported from Visum 18 can be imported into an existing Vissim network. The import can be used for static routing (creating vehicle inputs and static routing decisions, as required, and routes) or for dynamic assignment (creating parking lots, as required, a path file, and a matrix). In contrast to ANM routes import, this import ignores node numbers completely but tries to find the best geographic fit in the Vissim network for the coordinates listed in the \*.rcf file (originating from the node coordinates and link polylines in Visum). Already existing vehicle inputs and routing decisions (or parking lots) are reused if the location fits the data in the \*.rcf file. There is also the option to never create new objects, but only use existing ones. To reuse a vehicle input or a routing decision (or a parking lot) or the destination section of an existing route, the attribute "Zone" (or "Destination Zone") needs to fit the origin/destination zone number from the \*.rcf file. **(12944)**

## Presentation

- + 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)**

## Vehicle Simulation

- + The random number sequences for vehicle type selection at parking lots and for managed lanes routing decisions are independent now. **(13185 🚫)**

## Viswalk

- + Four new 3D models of pedestrians with luggage are installed with Viswalk: woman or man with backpack or trolley. Additionally an example model is provided which makes use of these models. **(12028)**

## 🟢 Fixed Bugs

### ANM Import / Dynamic Assignment

- 🟢 Improved usage of turning movements using small connectors on the inner lane of a multi-lane roundabout. **(12830)**

### Demo Version

- 🟢 The demo version of Vissim includes RBC now. **(12858)**

### DriverModel.DLL Interface

- 🟢 The error message about inconsistent data from the DLL upon a new lane change back to the previous lane before the desired lateral position on the new lane has been reached (only with SIMPLE\_LANE\_CHANGE) doesn't show anymore. When the DLL sets LANE\_CHANGE\_ACTIVE, the lane angle is set now immediately by Vissim (assuming 3 seconds for the lane change), ignoring the angle passed from the DLL in that first time step. Subsequently, during the lane change, the angle passed from the DLL is not ignored anymore and must have the same sign as the lane change. **(13215)**

### Dynamic Assignment

- 🟢 A vehicle which is not yet on a real parking space cannot be considered to have parked anymore when coming to a stop closely upstream (which could cause a subsequent crash in previous versions). **(13012)**
- 🟢 Edge closures which refer non-existing nodes are completely ignored now when reading the \*.inpx file. (Previously, they could be mapped to multiple existing edges, making it impossible to delete the edge closure.) **(13027)**
- 🟢 The attribute "converged" of paths and edges is now shown as irrelevant (hatched list cell, and not counted for the total number of relevant paths/edges for the convergence percentage) if there is no information about a new travel time in any time interval, i.e. also after the path file has just been loaded (before a simulation run). **(13200 🚫)**
- 🟢 The flow bundle visualization doesn't show a 1 pixel wide bar for links with paths but zero volume anymore. **(12641)**

## Evaluations

- ✔ Other direct output evaluations than vehicle/pedestrian record can now also be accessed for reading during a simulation run. (The very latest data might not yet be visible before a full data block is written to the hard disk.) (13258)

## User-Defined Attributes

- ✔ The UDA "UseVehRouteNo" at static routing decisions cannot cause a crash anymore when a vehicle changes onto a new link in the same time step where it passed the decision. (13067)

## Vehicle Simulation

- ✔ Possible deadlocks upon reversing out of a parking space have been fixed. (13109 🚫)
- ✔ Problems in the gap calculation for necessary lane changes have been fixed. This should prevent possible deadlocks and allow some additional lane changes. (13150 🚫)

## Viswalk

- ✔ Non-reproducible behavior in queues has been fixed. (13177 🚫)

## 🚫 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 ➕)

### Dynamic Assignment

- 🚫 The percentage of converged paths and edges in the convergence evaluation can be different from previous versions. (13200 ✔)

### Vehicle Simulation

- 🚫 Behavior during reversing out of a parking space can be different from previous version. (13109 ✔)
- 🚫 Gap acceptance for necessary lane changes can be different from previous versions. (13150 ✔)
- 🚫 The random number sequences for vehicle type selection at parking lots and for managed lanes routing decisions have changed. (13185 ➕)

### Viswalk

- 🚫 Pedestrian behavior in queues can be different from previous versions. (13177 ✔)

11.00-00 [72373]

2018-07-20

## ➕ New Features and Changes

### ANM Import

- ➕ Improved geometry for U-turns. (12960 🚫)

### COM Interface

- ➕ New method IScriptContainer.AddScript() for adding a new event-based script to a network. (12994)
- ➕ New methods IEvaluationPercentileContainer.AddEvaluationPercentile() and .RemoveEvaluationPercentile(). (10726)
- ➕ New optional boolean parameter nonDefaultOnly for the methods IVissim.SaveNet() and .SaveNetAs(). If this is set to true (default false), all optional attributes which have their default value are not written to the \*.inpx file. (12416)

### Dialogs / Lists

- + In most of the single-selection drop down boxes, typing a sequence of characters (without pause) selects now the next list element starting with these characters. **(12011)**

## Dynamic Assignment

- + If the path choice model "Use volume (old)" is active, the distribution of vehicles to multiple origin parking lots of the same zone is not done anymore proportionally to the relative volumes of the parking lots but proportionally to the recorded volumes in the path file. **(12569)**
- + Managed lanes facilities now also work for vehicles on dynamic assignment paths. When passing the managed lanes routing decision, the decision about the usage of the managed lanes route is done locally. The pricing model and decision model work exactly as for vehicles on static routes. For dynamic assignment purposes, i.e. for general path choice and convergence calculation, each edge between two nodes (or inside a node) which has a parallel edge, one with a GP lane and one with a managed lane from the same managed lanes facility, is treated as one combined edge with only one average travel time. Essentially, all travel times on the managed lanes corridor (from vehicles using the general-purpose lane and vehicles using the managed lane) are averaged. Vehicle-class specific assignment is still possible, determining an average travel time from all vehicles from the specific class. **(12977)**
- + The volume for a flow bundle can now be determined as total over multiple time intervals and/or multiple vehicle classes (selected for class-specific dynamic assignment). **(12107)**

## Evaluations

- + New link attribute "Network performance evaluation active" (default: true). If this is set to false, vehicles on the link are not included in the network performance evaluation. **(9487)**

## Graphics

- + 3D information signs are a new network object showing fixed text and/or attribute values of a specific network object in 3D mode. The location relative to the reference object and the rotation angle can be selected. An automatic sign rotation option is available to always display a head-on view of the sign, even as a scene rotates around the sign position. If the sign is used to reference a vehicle or pedestrian (number), the sign is locked to that object and travels with that vehicle/pedestrian. New 3D information signs can be added in their own list window or through the context menu of the network editor. **(12657)**
- + A SketchUp model added as static 3D model can now optionally be placed at the geolocation specified in the \*.skp file. **(11485)**
- + Vehicles can have labels in the 2D view now which can show any attribute, e.g. the current speed. These labels move with the vehicles during a simulation run and can optionally rotate with the orientation of the vehicle. **(14)**

## Installation

- + The CodeMeter Runtime deployed with PTV Vissim has been updated to CodeMeter 6.60a. **(12798)**
- + Vissim/Viswalk 11 is available only as 64-bit edition. It cannot be executed on 32-bit Windows. **(12248)**

## Licensing

- + For academic packages, it is now possible to borrow single licenses from a multi-seat central network license to local computers for temporary offline usage. **(12679)**

## Lists

- + By clicking on the filter icon in the header row of a list window, a filter can be set for that column. Depending on the attribute type, several conditions are available to filter by a value or set of values. Similarly, as in Excel, only the list rows where the attribute values meet the filter condition are shown in the list if the filter is active (checkbox checked, filter icon permanent). Through the crossed-out filter icon in the toolbar, all active filters can be deactivated. The filter configuration is part of the list layout which can be saved as named list layout. **(7983)**

## Network Editor

- + Clicking the ruler icon in the network editor toolbar activates a measuring mode. This feature allows measuring distances along an arbitrary polygon line or along a sequence of links. In both cases, no dragging is required, just a sequence of left clicks. **(9)**
- + If the new option "Show QuickInfo" is activated under User Preferences / Network Editor, additional information is displayed in a box near the mouse pointer. When hovering over a network object, the ID and name are shown, plus additional attributes if the shift key is pressed. When creating a new object or moving an object, additional attributes are shown (length of a link, from and to link of a connector, length and width of a rectangle, link / lane / position of a cross section object, area and level of a pedestrian point object, ...). **(12072)**



- + New geometry type "Circle" for areas, obstacles, and sections. This can be selected for inserting through the drop-down arrow in the network object sidebar. The circle is approximated by a user-defined number of polygon points. When creating the new object, the radius and the number of points can be typed in. **(12164)**

## OpenDRIVE Import

- + Through the new menu item File / Import / OpenDRIVE, an XML file in OpenDRIVE format (\*.xodr) can be imported into Vissim. Currently, only the network geometry is used to create links and connectors. **(12609)**

## Presentation

- + The edit box for "Go to second" in the toolbar accepts now also time formats in hours, minutes and seconds, e.g. "7h 30min 5s" or "07:30:05". **(13009)**

## Simulation

- + New network object type "attribute decision":  
For vehicles (and pedestrians), an attribute decision can be placed on a link (area) to assign a specific attribute of all passing vehicles (pedestrians) either a fixed value or a random value drawn from a specified distribution. For this, there is the new distribution type "Free" which just defines probabilities for values between a give minimum and maximum value. **(12427)**
- + Static and partial vehicle and pedestrian routes and partial PT routes can now use user-defined formulas to determine relative flow values. If the new attribute "RouteChoiceMethod" of the routing decision is set to "Formula" (instead of the default "Static"), each route calculates its relative flow from a custom formula. The route formula can use attributes of passing vehicles (pedestrians), as well as attributes of any specific network object using the TableLookup function. **(11796)**

## Vehicle Simulation

- + For empty autonomous vehicles (without passengers), it is now possible to define an occupancy distribution which contains a percentage (up to 100%) for zero passengers. **(11709)**
- + If the new driving behavior attribute "Increased acceleration" is set to a higher value than 100%, a vehicle using this driving behavior can accelerate with the given percentage of its normal desired acceleration (but not exceeding its maximum acceleration) if the leading vehicle is faster and also accelerating. **(12870)**
- + Manual override for conflict areas: If the new attribute "ConfliTypDetmAuto" (conflict type determined automatically) is unchecked (default is checked), then the attribute "ConfTypMan" (conflict type manual) defines how the conflict is handled. When set to crossing, only one vehicle can be inside the conflict area at any time. When set to merging or branching, multiple vehicles can follow each other inside the conflict area (as if they were on the same link). **(12013)**
- + Multiple additional driving behavior attributes are available. Most are required mainly for modelling of CAV (connected and/or autonomous vehicles) but many can also be used for calibration of human behavior. The attribute "observed vehicles" from Vissim 10 has been split into two attributes: "Number of interaction objects" refers to vehicles and internal objects (reduced speed areas, stop signs, priority rules, red signal heads), and "Number of interaction vehicles" refers only to real vehicles. The number of interaction vehicles defines an upper limit for the observed leading vehicles, therefore, for example, this could be set to 1 for autonomous vehicles with a sensor equipment that cannot see through the leading vehicle. A red signal downstream of the leading vehicle would still be observed, but not the second real vehicle downstream.  
If the attribute "Enforce absolute braking distance" (a.k.a. brick wall distance) is checked, vehicles using this driving behavior will always make sure that they could brake without a collision, if the leading vehicle comes to an immediate stop (turns into a brick wall). This condition applies also to lane changes (for the vehicle itself on the new lane and for the trailing vehicle on the new lane) and to conflict areas (for the following vehicle on the major road).  
If the attribute "Use implicit stochastics" is unchecked (default is checked), a vehicle using this driving behavior does not use any internal stochastic variation that is meant to model the imperfection of human drivers. For all distributions which cannot be explicitly set by the user, a median value is used instead of a random value. This affects the safety distance, the desired acceleration, the desired deceleration and the estimation uncertainty for braking decisions. The three former variables are partially defined by attributes / functions accessible to the user, so this part is still valid, but the additional stochastic spread included in the internal model is reduced to zero. **(12459)**
- + On the new tab page "Car following model", some of the driving parameter values affecting the desired safety distance can now be specified per vehicle class of the leading vehicle now (in addition to the value for all other vehicles). **(11997)**
- + The user-defined routing decision attribute "UseVehRouteNo" and the user-defined vehicle attribute "NextRouteNo" don't have any fixed coded effect anymore during a simulation run. That feature from Vissim 10 has been replaced by formula routes. **(12650 !)**

## Viswalk

- + A relation from pedestrian route point to the pedestrian route it belongs to has been added to the data model. **(12845)**

- + New attribute "Desired Speed Factor" for areas, ramps and pedestrian links. The value of this attribute is applied as factor to the desired speed of all pedestrians within the boundaries of the network element. **(6629)**
- + Optionally, the use of dynamic potential fields can be activated for ramps and stairs. This improves flow stability. **(12021)**
- + Parameters for the potential can also be set individually for certain ramps and stairs. **(12167)**
- + Partial routes (except static and formula-based ones) can now have a base cost. This is entered as a travel time, density or number (of present respectively waiting pedestrians). If the value is not empty, it is added to the measured value from the current simulation run. **(8767)**
- + Pedestrians now use a (dynamic) potential field to navigate 1) to their waiting position on a waiting area, and 2) to the queue for boarding passengers at the doors of a PT vehicle. This prevents boarding passengers from being blocked by obstacles and by other standing pedestrians on the waiting area. Since this requires additional computation time, the old calculation method is still available as an option. **(5901)**
- + Stairs can be composed from multiple simple (straight) flights. Different standard configurations (zero, one or two rectangular turns can be selected). See the manual for details. **(12697)**
- + Vehicles blocking a conflict area can now be considered in the dynamic potential for conflicting pedestrians. If this option has been activated on a pedestrian link, pedestrians will not stop at a blocked conflict area, but will try to walk around it, through the gaps between queued vehicles. For this, the lanes of a pedestrian link need to be sufficiently narrow, so that at least one lane conflict remains open between queued cars. **(12728)**
- + When creating a new rectangular or circle-shaped object, the attributes length/width/angle respectively radius and number of spline points are shown in a pop-up window and can be edited. The Tab key allows to jump from field to field, and the Enter key finishes the data entry if all fields have values. **(12163)**

## Workspace

- + The local HTML help has been replaced by an online-only HTML5 help with improved search functionality and automatic updates with new service packs. **(12782)**
- + The simulation time for a predetermined pause of a continuous simulation run can now be entered directly into the "Pause at" field on the main toolbar. It can be specified either as time of day (hh:mm:ss, taking the simulation parameter attribute "start time" into account) or as simulation second, as single number or with <x>h<y>m<z>s. (The simulation parameter dialog still has a field for this which is now also labeled "Pause at" instead of "Breat at".) **(10298)**

## Breaking Changes

### ANM Import

- ! Improved geometry for U-turns. **(12960 +)**

### Dynamic Assignment

- ! The path choice model "Use volume (old)" can cause different simulation results from previous versions if there are multiple origin parking lots of the same zone. **(12569 +)**

### Simulation

- ! Several random values may be different from previous versions. **(12752)**

### Vehicle Simulation

- ! Routes of routing decisions with active user-defined routing decision attribute "UseVehRouteNo" need to be converted manually into formula routes checking if the vehicle attribute "NextRouteNo" equals the respective route number. **(12650 +)**
- ! The lateral movement of a vehicle reaching a new link/connector during an active lane change can behave differently from previous versions. **(12715)**
- ! Vehicles can behave differently from previous versions when resolving a deadlock caused by priority rules. **(12266)**

### Viswalk

- ! Das Verhalten von Fußgängern kann sich von früheren Versionen leicht unterscheiden. **(12285)**
- ! Pedestrian area measurement results can differ from previous versions. **(12622)**
- ! Pedestrians may use a different routing decision on their input area now compared with previous versions. **(12595)**
- ! The behavior of pedestrians returning to a waiting area because of the departure of the PT vehicle can be different from previous versions. **(12761)**
- ! Usage of dynamic potential can cause different results from previous versions. **(12716)**