PTV | GROUP

WHAT IS NEW

in PTV Vissim/Viswalk 2023

Content

Preamble

This document provides an overview of PTV Vissim/Viswalk's important changes from version 2022 to version 2023 regarding handling and program behavior. Features which have already been added in service packs of version 2022 are only partially covered in this document. Please see the version 2022 service pack release notes for more of these features. The release notes for versions 2023 SP xy include additional new features which are also not included in this highlights document.

Detailed descriptions of how to use the new functionality can be found in the Vissim 2023 online help and in the document "Vissim 2023 - Manual.pdf".

1   Vehicle simulation

1.1   Automatic Speed Limitation "in Curves"

This function is not fully functional in 2023 Beta. Simulation and results are not realistic. The function will only be fully available with a service pack.

In reality, vehicles usually drive slower in curves than on straight tracks, depending on the radius of the curve. In Vissim, this could previously only be modelled by reduced speed areas. This modeling approach is time-consuming and error-prone, especially if, for example, changes to the route geometry require a subsequent adaptation of the reduced speed areas. To reduce this effort and modeling errors, Vissim 2023 offers an automatic speed limitation depending on the curviness of the track.

With the new network settings attribute "Speed limitation in curves" the automatic speed limitation can be activated for a network.

In addition, the new attributes "Radius source" and "Radius effect" can be used in the network editor at link points to determine whether the radius is calculated from the link geometry or entered by the user and whether or how the radius works there. For new networks and newly created links, the default setting is such that the automatic speed limitation is active ("Radius source" is "Calculated" and the "Radius effect" is "Brake"). When reading existing networks, manually entered radii are not changed. The automatic speed limitation cannot be combined with the lateral drift speed – a specific link point can only be affected by the (one) behavior that is defined by the "Radius effect" attribute ("Brake", "Drift" or "No Effect").

The "Curve speed function" allows the definition of a minimum, average and maximum desired curve speed per vehicle type depending on the radius. Individual vehicles determine their desired curve speed normally distributed within these values, with the same random number that also determines their individual desired speed – i.e. drivers who have a high desired speed are also willing to drive through curves at higher speeds.

Time losses due to the automatic speed limitation are not included in the delay measurements.

1.2   Parking in Reverse [2022 SP 05]

Parking lots can have the new values "Reverse > forward" and "Any > opposite" for the attribute "Parking direction". Both require a connector coming from a "downstream" position on the main road, i.e. where vehicles have already passed the parking lot link, to the parking lot link. That connector must have the new attribute "Reverse parking" set to true. A parking lot route must lead from a parking lot decision across that connector to the parking lot link. This parking lot route has the calculated attribute "Parking direction" set to "Reverse". Parking lot routes have the new attribute "Relative flow" which defines the probability of each of the parking lot routes leading to the same parking lot to be used by a vehicle which has selected that parking lot at the parking lot decision.

In the car park creator, there is the new option to select the percentage of vehicles parking in reverse. If this is 0%, only parking lots for forward parking are created (along with

the required links, connectors, routes and decisions). If this is 100%, only parking lots for reverse parking are created (along with the required network objects). For all other values, the parking lots are created for both forward and reverse parking, with the connectors and routes for both options.

Collision prevention is handled automatically as for parking out in reverse. No conflict areas or priority rules are required, and it is recommended to avoid those in the proximity of parking lots for reverse parking and or parking out in order to prevent deadlocks. On connectors with the attribute "Reverse parking", no network objects are allowed at all.

1.3   Meso Simulation

1.3.1   Automatic Creation of Meso Network Nodes

The new "Create Meso Network Nodes" function automatically creates the meso network nodes required for a mesoscopic simulation. The prerequisite is that the network is suitable for a dynamic assignment and that the nodes for the dynamic assignments are of type "polygon".

Similar to networks created via ANM import, the new function saves the time-consuming and complicated manual creation of meso network nodes and complies with the rules for modeling meso network nodes, so that a mesoscopic simulation can be carried out with little time.

The function can be accessed via a menu entry under "Traffic->Dynamic Assignment", the context menu in the node list or (if nodes are selected) in the network editor.

The new node attribute "Allow recreation" makes it possible to preserve existing meso network nodes and exclude them from the automatic creation. To do this, it must be set to "off" for the respective meso network node.

2   Pedestrian Simulation

2.1   Pedestrians in an Elevator no Longer Generate Delay

Pedestrians in an elevator no longer generate any delay. In contrast to the time spent waiting for the elevator, the time in the elevator is part of the trip and in Vissim 2023 no longer generates any delay.

2.2   Improved Alighting of Elevators [2022 SP 06]

With the new elevator door attribute "Relative distance for dwelling", the preferred position of pedestrians in the elevator cabin can be adjusted. From 0.0 "at the door" to 1.0 "at the wall opposite to the door", the entry behavior can be modeled. Values larger than 1.0 are also possible and result in more pushy alighting.

3   Signal Control

3.1   Ring Barrier Controller – New Functions

The range of functions of the "new" Ring Barrier Controller introduced with PTV Vissim 2022 has been extended. It now also supports configurations for "free running TSP" and "coordinated TSP". The functionality for "preempt" is still under development. This will only be delivered with a future service pack.

3.2   Fixed Time (simple) [2022 SP 06]

The new SC type "Fixed Time (simple)" enables the modeling of (simple) signal group-based signal controllers. Double activations and a time-of-day signal plan selection are not possible with this SC type.

The attributes "End of red", "End of green", "Amber", "Green flashing time" and "Red-amber time" of signal groups of a signal controller of this type can be edited directly in the list of signal groups. This allows fast modeling of simple fixed-time signal controllers.

In addition, these signal group attributes can be changed during the simulation, e.g. by attribute modifications or COM scripts, which allows the modeling of vehicle actuated signal controllers with a little creativity.

"Fixed time (simple)" is the first SC type available in Vissim on Linux and for which changes of signal group attributes of the same SC can be combined from different modifications in scenario management.

4   Visualization

4.1   Lane Marking Types

The new "Lane Marking Types" allow the use of local lane markings. Previously, lane markings, i.e. the dashed lines between the lanes, could only be switched and adjusted globally for the entire network. The new "Lane Marking Types" allow different dashes and can be assigned individually for each lane. This makes it possible, for example, to model your own markings to clearly separate parallel parking spaces, bus lanes, having (no) lines for extra-wide lanes or hard shoulder lanes on motorways.

For a "Lane Marking Type", "Color", "Line width", "Line length" and "Gap length" can be set. By assigning it to a lane of a link, the lane marking on the left side of that lane is determined.

4.2   FBX(Filmbox)-Format Support

Vissim 2023 supports the FBX (Filmbox) format. This format is a widely used standard of 3D software such as Autodesk or Blender. The format allows animation states that can be explicitly used and controlled. Until now, the use of animations and explicit animation states to visualize, for example, a closing or opening of an automatic parking barrier was cumbersome and had restrictions.

Vissim 2023 is delivered with new standard 3D models in FBX format, which are also used by the delivery examples.

The previously delivered standard 3D models in V3D format can be found in the directory "Exe\3DModels_Legacy (files will not be distributed with future versions)\" after a new installation, and inpx files with references to the old standard models automatically

find them in this directory when they are opened. In future versions, these files will no longer be delivered. If required, the most recently delivered files can be backed up and used manually.

4.3   Compatibility break for ANI files

The animation files in ANI format have changed and are no longer compatible with previous versions.

ANI files saved in Vissim 2023 or later cannot be opened with Vissim 2022 or earlier.

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5 Handling

5.1 Network and Scenario Comparison

Vissim 2023 offers the possibility to compare networks and scenarios with each other and to display the differences in the form of an interactive tree and in the network editor.

The new function "Compare Current Network with Network File..." in the menu "File->Compare and Transfer Networks" allows you to compare the currently loaded network with another network.

In networks that are managed with scenario management, the context menu "Compare with loaded scenario..." compares a scenario with the loaded scenario. Also available in the context menu the entry "Show content for selected scenario/modification..." loads a scenario or a modification and compares it with the base network or its initial state (base network plus all dependent modifications).

The comparison shows all changes at the attribute level, as well as added or deleted objects. The differences are displayed in a new view as a tree structure. Changed (blue), added (green) or deleted (red) objects or attributes are marked differently. In the network editor, affected polygon or polyline objects (links, nodes, sections, areas, obstacles, ramps and elevators) are marked with the same color. The network editor can be synchronized with the new view in the usual way.
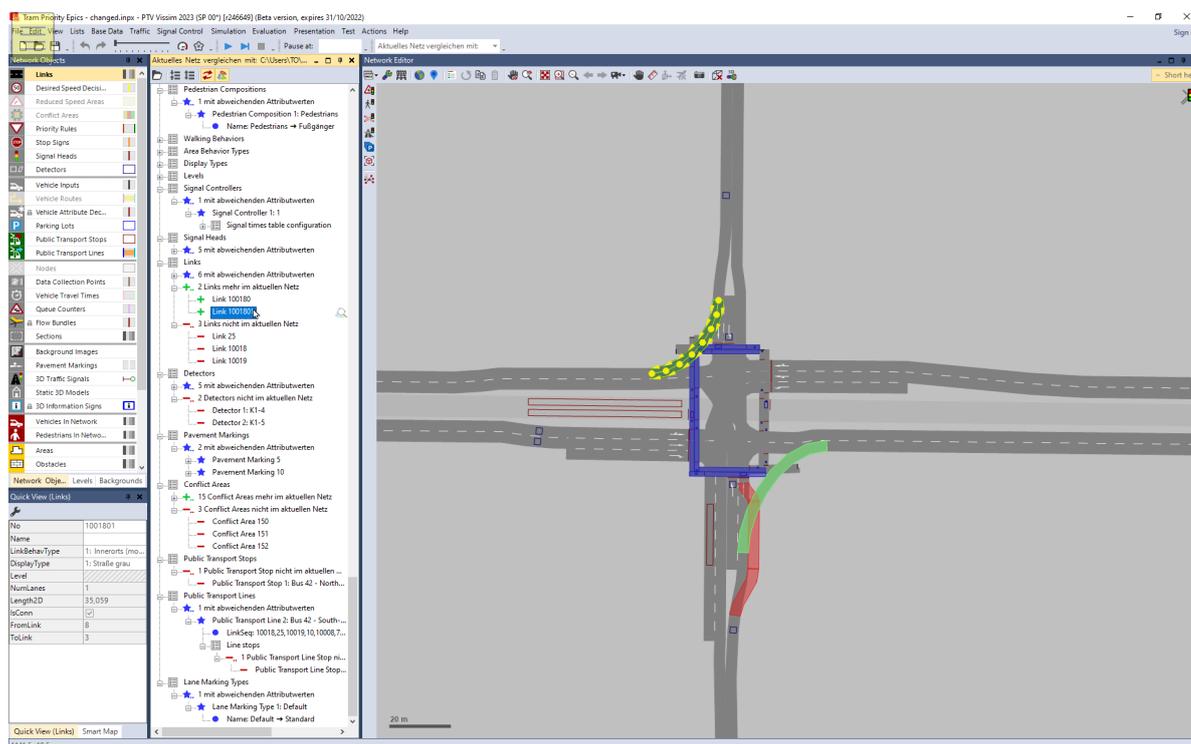
5.2 Improved Duplicating

Copy and paste of multiple selections within a network has been improved. This applies in particular to the behavior of selections of multiple objects that are not self-contained, i.e. if there are references to objects outside of the multi selection. For example, if areas

containing waiting areas for PT stops without the PT stop itself are copied or if areas which are the destination of a pedestrian route without the pedestrian route itself are copied. Previously, objects with references to objects outside of multi selection were not pasted. With Vissim 2023, such objects are pasted, whereby references to objects outside the multi selection are set to the reference of the original object.

The new behavior provides a fast, intuitive and comfortable copy and paste behavior (also for "drag and move" with left mouse button with pressed CTRL key). It also allows, for example, to copy and paste connector links easily.

5.3   Rotation of (single) links with left mouse button and ALT key

The gesture "Drag with left mouse button with pressed ALT key" now also works for single links and allows the rotation of the selected link. Previously, this was only possible with a multi selection of several links at the same time.

5.4   WMS Web Map Service Configuration Assistant [2022 SP 04]

In the "User Preferences", there is now a new dialog under "GUI" and "Background map" that allows a convenient adding and configuring of user-defined web map services (WMS). The detailed manual specification of a URL is no longer necessary.

5.5   Show in list [2022 SP 04]

From lists, the lists of other network objects can now be opened via the context menu of the column header. This functionality is available for all attributes that reference other network objects with their own list. For example, you can directly open the list of "Vehicle Types" from the list of all "Vehicles In Network" by right-clicking on the column header "Vehicle type" and selecting "Show Vehicle Types".

5.6   Ctrl+L Swaps Main and Fallback Language [2022 SP 03]

The new global keyboard shortcut Ctrl+L swaps the main language and the fallback language in the user preferences.

5.7   Vehicle Attribute Decisions and Attribute Modifications

There are additional new features for vehicle attribute decisions and attribute modifications.

5.7.1   Function „Extract substring"

The new function „Extract substring („x"; „s"; n)" (WORDN) allows to extract the "n"-th occurrence of a substring from a string "x" using the delimiter string "s". For example, the number of the second link of the link sequence of a vehicle route can be extracted.

WORDN(„10120,33,10121";",";2) = 33

5.7.2   Using Values From Free Distribution as Key [2022 SP 03]

Free distributions can now be used in vehicle attribute decisions and attribute modifications to set references to other objects. The random value drawn from the free distribution is rounded and interpreted as a key of the object to set at the target attribute.

6 Technical Changes

6.1 CodeMeter Runtime

The CodeMeter runtime version deployed with PTV Vissim has been updated to Code-Meter 7.40b.

6.2 Python

PTV Vissim 2023 installs Python 3.9 as an embedded package below the Vissim-Exe directory. This ensures that a compatible Python version is used by Vissim scripts and reduces interference with system wide Python installations. It is not required to manually install Python anymore.