What's new in PTV Vissim/Viswalk 2025

PTV GROUP
part of Umovity

Imprint

PTV Planung Transport Verkehr GmbH
Address:
Haid-und-Neu-Str. 15
76131 Karlsruhe, Germany
Management Board:
Christian U. Haas (CEO)
Andrew W. Myers
Contact:
Phone: +49 (0)721 9651-0
Fax: +49 (0)721-9651-699
E-Mail: info@ptvgroup.com
www.ptvgroup.com
Entry in the Commercial Register:
Local Court Mannheim HRB 743055
Sales Tax ID:
Sales tax identification number according to §27 a Umsatzsteuergesetz: DE 812 666 053

Content

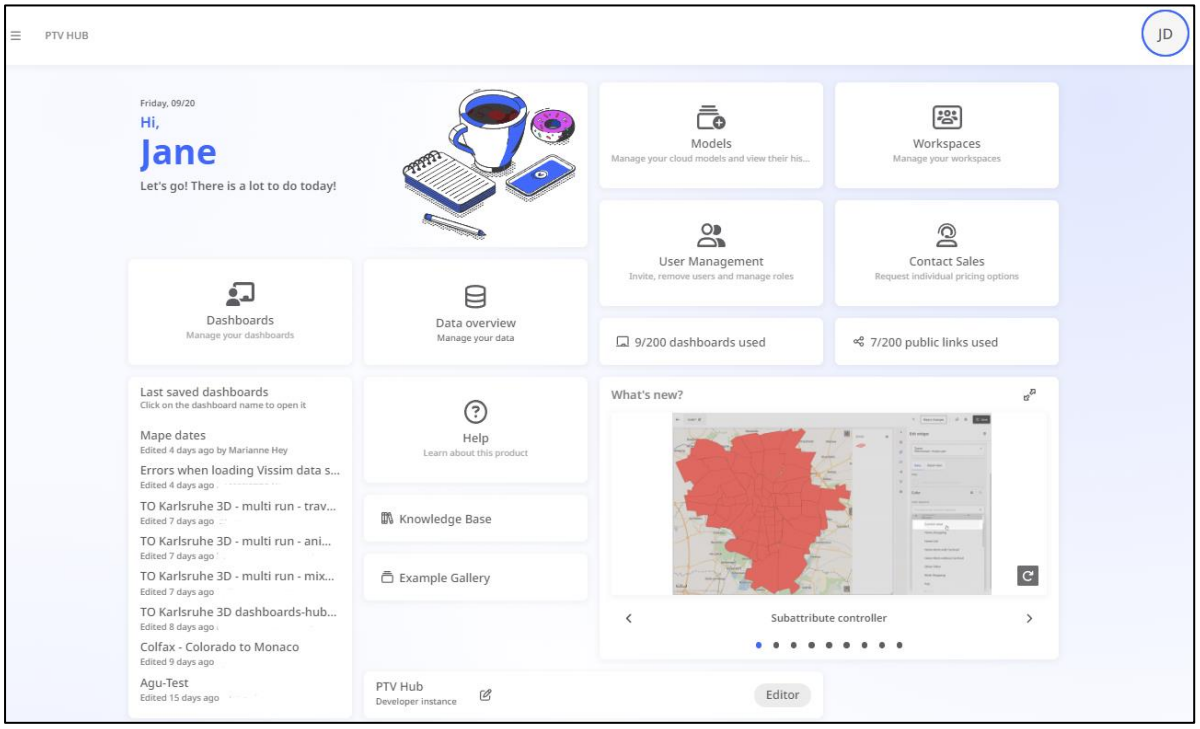
Preamble

This document provides an overview of PTV Vissim/Viswalk’s important changes from version 2024 to version 2025 regarding handling and program behavior. Features, which have already been added in service packs of version 2024, are only partially covered in this document. Please see the version 2024 service pack release notes for more of these features. The release notes for versions 2025 SP xy include additional new features that are also not included in this highlights document.

Detailed descriptions on how to use the new functionality can be found in the Vissim 2025 online help and in the document VISSIM 2025 - MANUAL.PDF.

1 Seamless integration with PTV Hub

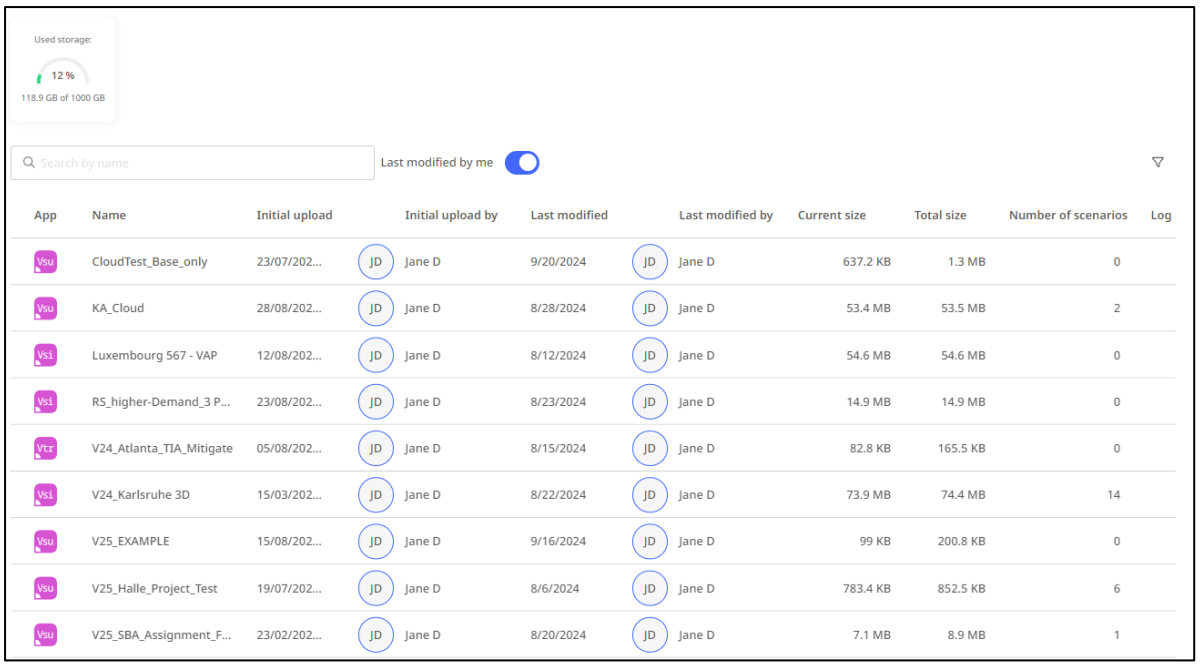
Vissim 2025 is part of PTV Hub, which will be released in a few weeks, the industry's first true cloud-based platform that provides an all-encompassing solution through the interplay of multiple apps. PTV Hub is available as a subscription and allows you to plan and execute projects in a new way. PTV Hub promotes cooperation between project partners, the efficient use of resources and, finally, facilitates getting started by providing cloud licenses.

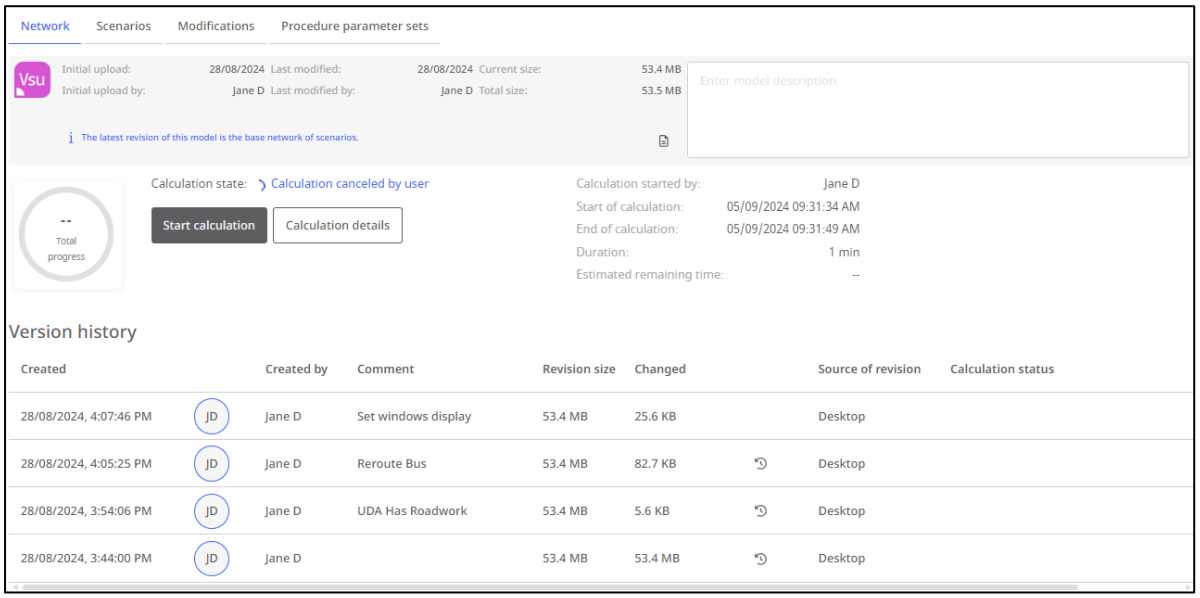


Specifically, through PTV Hub, you can:

- Use the Licenses app to manage and assign your company's licenses.
- Upload existing models and scenario management projects in Vissim to the cloud and edit them further.
- Track changes to the model in the version history or restore a previous state in the Models app.
- Edit models together in the Models app by simply creating modifications and scenarios.
- Perform cloud calculations of your models and scenarios on high-performance machines in the Models app and thus use your desktop licenses more effectively elsewhere.
- Create map-based representations and animations in the Dashboards app, supplementing the expressiveness even further using tables and diagrams,
- Share dashboards created in the Dashboards app with your project partners, clients and the general public.
- Have partners and stakeholders comment on model results presented in the Dashboards app.

Your existing Vissim licenses (as a single user or network license) will remain in their current form, but cannot be used as an integrated part of PTV Hub.





2 Vehicle Simulation

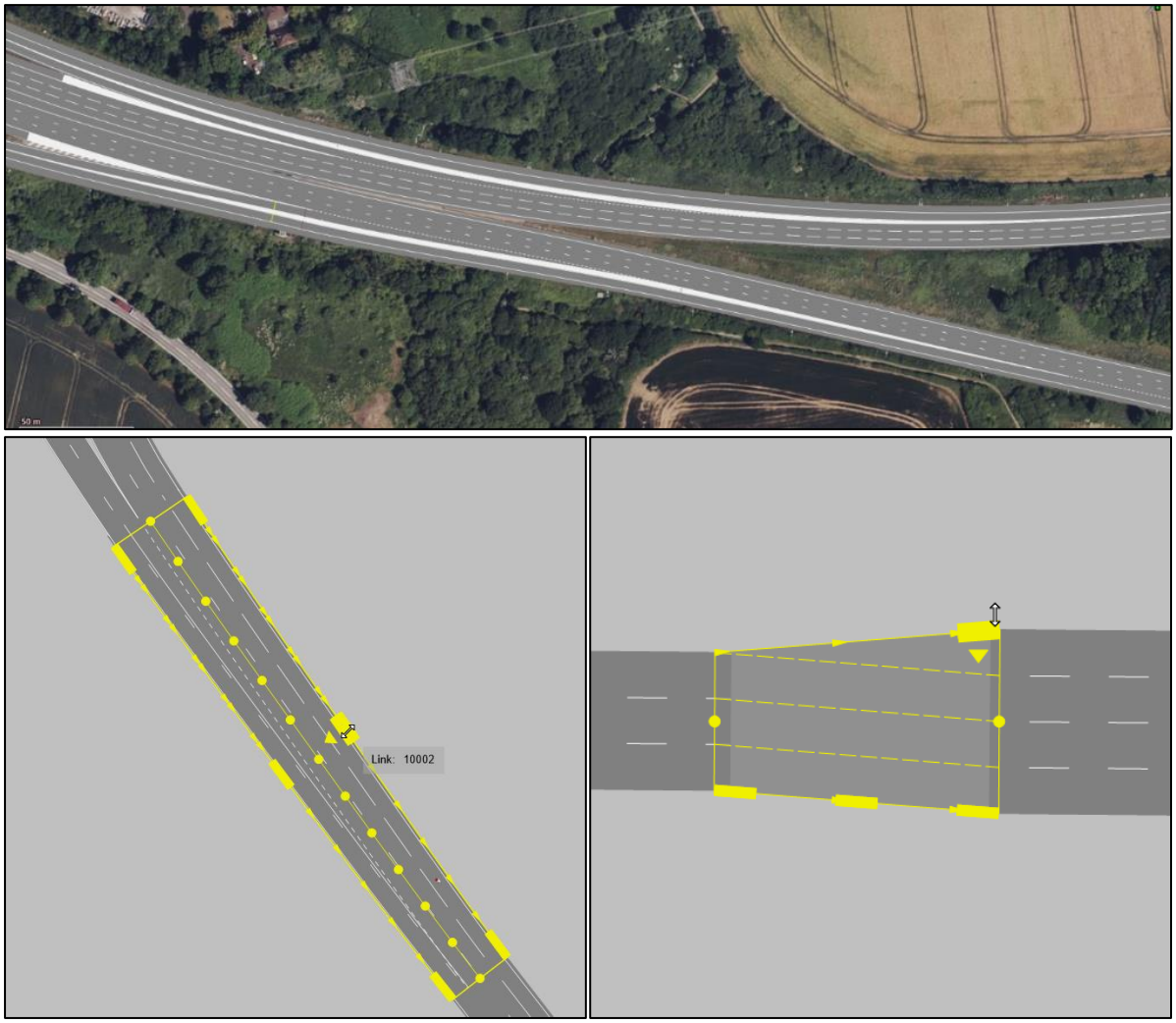
2.1 Connectors with changing number of lanes

Vissim 2025 improves the modelling of lane merging and diverging. Previously, depending on the situation to be modeled, several **connectors** had to be created in a cumbersome way and attention had to be paid to their interaction with **routes** and, if necessary, within a dynamic assignment.

Vissim 2025 allows to define **connectors** along which the number of **lanes** can change, simplifying the modelling of merging and diverging. The modelling allows that there may be one **lane** on the very edge or between **lanes**, which has no **from-** or **to-link**, that is, either starts or

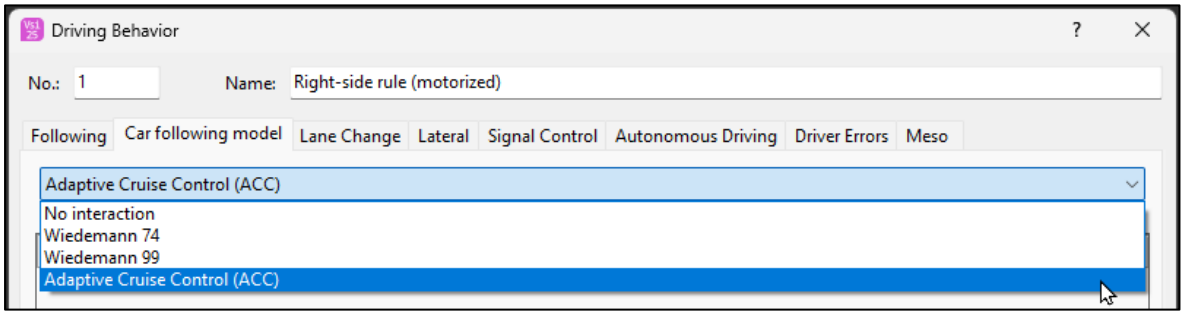
ends. Editing is done directly in the **network editor** using the new handles, which can be used to add or remove **lanes** for **links** and **connectors**.

Modeling examples can be found in C:\USERS\PUBLIC\DOCUMENTS\PTV VISION\PTV VISSIM 2025\EXAMPLES TRAINING\MERGE & DIVERGE.



2.2 Car Following Model „Adaptive Cruise Control (ACC)“

The car following model **Adaptive Cruise Control (ACC)** allows the modelling of vehicles with autonomous longitudinal behavior (adaptive cruise control).

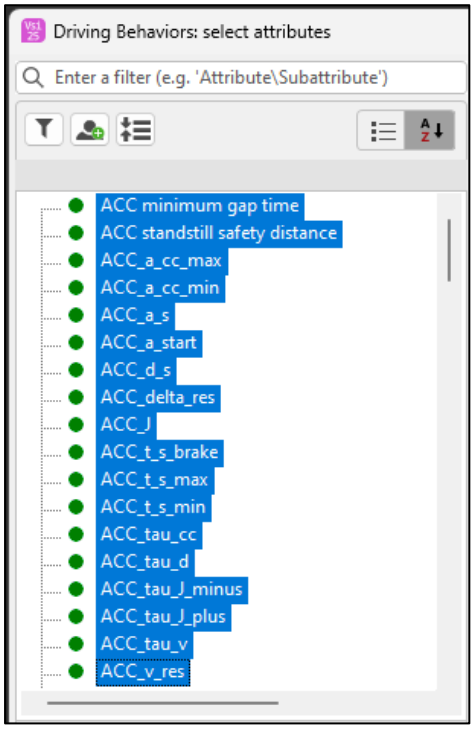


At its core, the ACC controller consists of three components: a time gap controller (for following a leading vehicle), a target brake controller (especially when the leading vehicle is braking), and a target speed control when driving freely.

The parameters can be set via the attributes **ACC_*** in the list of **driving behaviors.** In addition to the new car following model, a new model for the lane-changing behavior of autonomous vehicles is under development. Both models together enable the modeling of autonomous vehicles and will then be able to be parameterized together via the graphical user interface for **driving behavior**. (Take note that, up until then, Wiedemann 99 parameters are relevant, when the **Adaptive Cruise Control (ACC)** is used in combination with the **slow lane rule** for **lane change.**)

The most important parameters for the new car following model are:

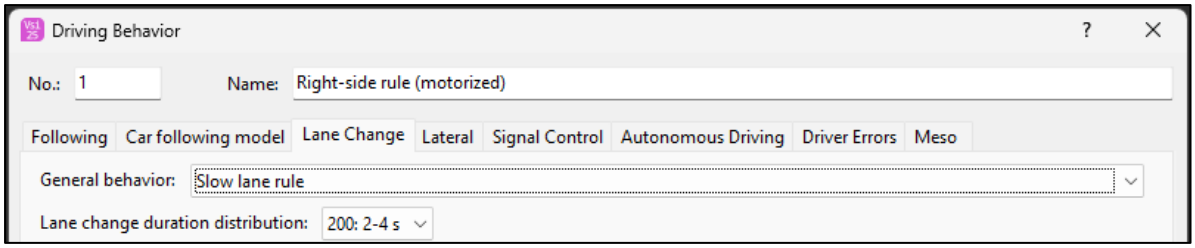
1. **ACC standstill safety distance**
   Desired distance to the interaction target at standstill (the analogion to **ax** for **Wiedemann 74** respectively **CC0** for **Wiedemann 99)**.
2. **ACC minimum gap time**
   Target gap time between the vehicle and its interaction target (the analogion to **CC1** for **Wiedemann 99**).



2.3 User Defined Lane Change Duration

In previous versions, there was no way to set the duration of a lane change, which by default is three seconds. In Vissim 2025, it is now possible to set a **lane change duration distribution**. For this purpose**, time distributions** can be selected in the **lane change** tab in the Driving Behavior dialog.

If lane change times that exceed three seconds are used, the **emergency stop position** on **connectors** must be adjusted accordingly.



2.4 Improved Behavior for Slow Lane Rule

Vehicles with a **Driving Behavior** for which the **General Behavior** of the **Lane Change** is set to **Slow lane rule** will no longer avoid overtaking on the slower right lane if the change from the right to the left lane would cause a collision – instead the vehicle decelerates and eventually overtakes on the right lane.

2.5 Formula-based Parking Routes

Formula-based **parking routes** allow the selection of a route among several others leading to the same **parking lot** by using a formula to determine the **relative flow for the same parking lot**. This allows for example modeling that certain vehicles skip **parking routing decisions** because vehicles, that parked already, should not park again in a parking lot facility with multiple **parking routing decisions**.

2.6 Maximum Waiting Time Distributions for Parking Routes

[This feature is still under construction and will be available in an early service pack.]

It will be optionally possible to assign a maximum waiting time distribution to a **parking routing decision**. For the behavior **Waiting** when the **parking routing decision** is fully occupied, the maximum time for the vehicle to wait for the reserved parking space to become available is drawn from this maximum waiting time distribution. When this time is up, the vehicle will return to its previous route sequence without parking.

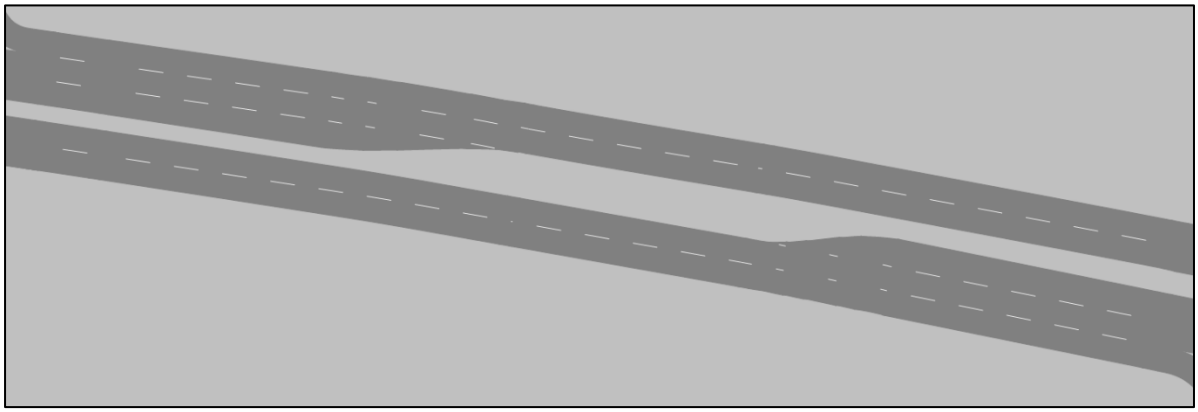
2.7 OpenDRIVE Import Improvements

Vissim 2025 supports the new version ASAM OpenDRIVE 1.8.0. This was released in November 2023.

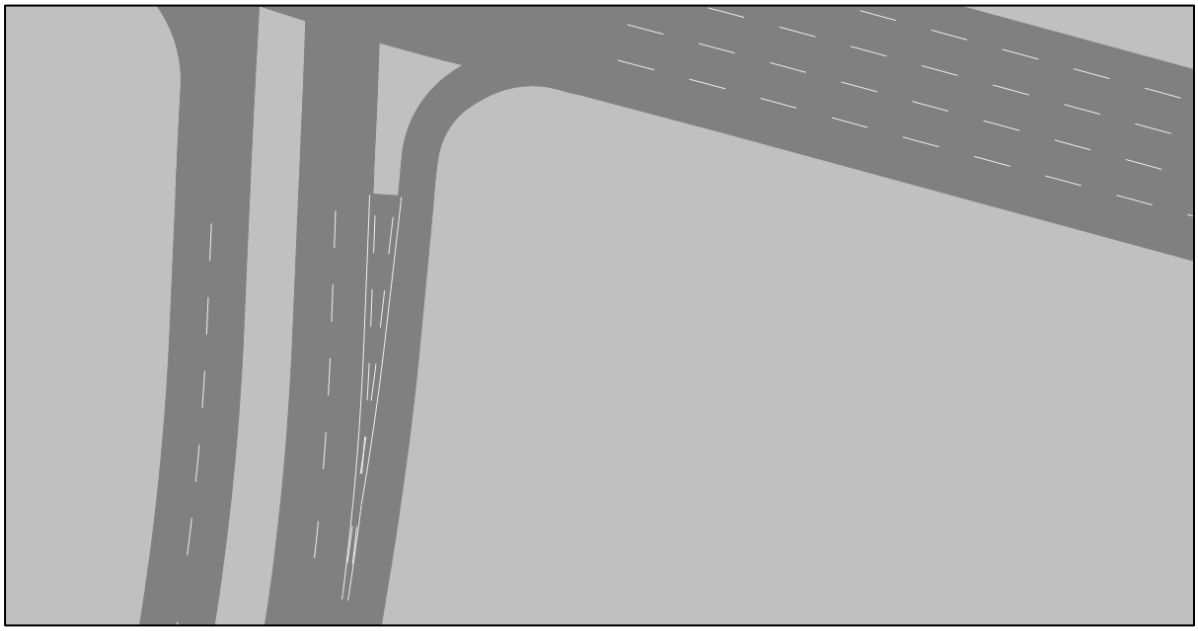
This upgrade allows Vissim to use new features and objects that describe the network geometry and infrastructure which expands the capabilities of the import. Furthermore, the existing import features have been improved as well.

2.7.1 OpenDRIVE Improved Import of Geometry

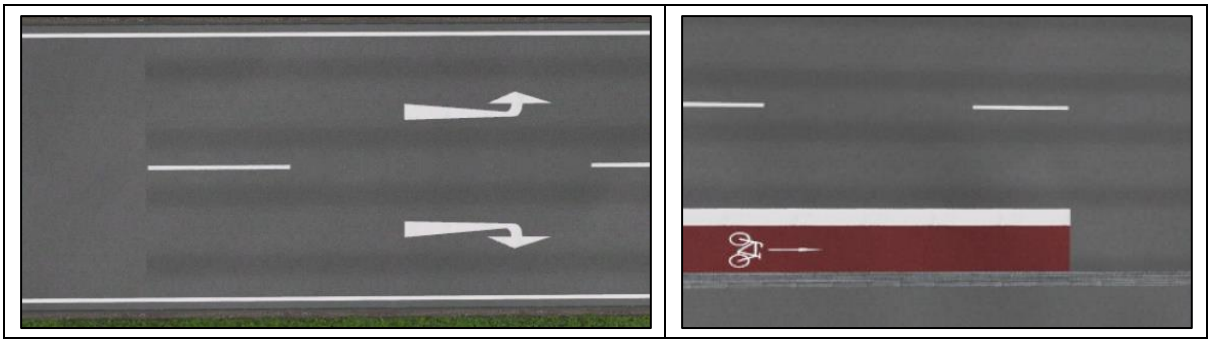
The OpenDRIVE import now considers variable changing road widths and creates a sequence of **links** and **connectors** in Vissim to correctly map the course of the road width.



The OpenDRIVE import now considers OpenDRIVE-Lanes, that are non-drivable, if they are between drivable lanes. The import creates **connectors** for this purpose, where the respective **lanes** are blocked for all **vehicle classes**.



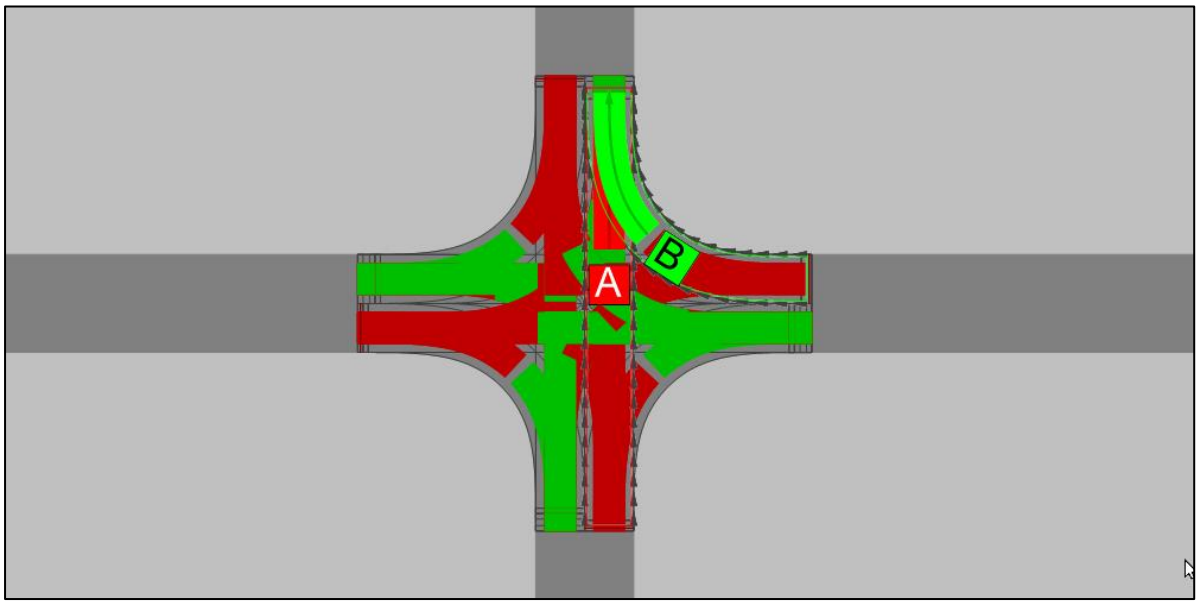
The OpenDRIVE import now considers OpenDRIVE-Lanes that have several OpenDRIVE-predecessors or OpenDRIVE-successors. This makes it possible to model merging or splitting of lanes between nodes.



2.7.2 OpenDRIVE Improved Import of Signs and Signals

The OpenDRIVE import automatically creates **nodes** of the type **segment**. These are used, among other things, to take OpenDRIVE-signal elements into account. This allows the automatic creation or setting of **conflict areas**, **signal controllers**, **stop signs** and **desired speed decisions**. For this purpose, OpenDRIVE semantic elements are used. These were introduced with OpenDRIVE version 1.8 and must be modeled accordingly in the OpenDRIVE file.

The OpenDRIVE import automatically configures **conflict areas** at intersections. For this purpose, the **status** of the **conflict area** is set within an OpenDRIVE-junction according to the OpenDRIVE-signals elements priority and type priorityRoad and priorityRoadEnd (similar to manual use of the **major flow** tool).



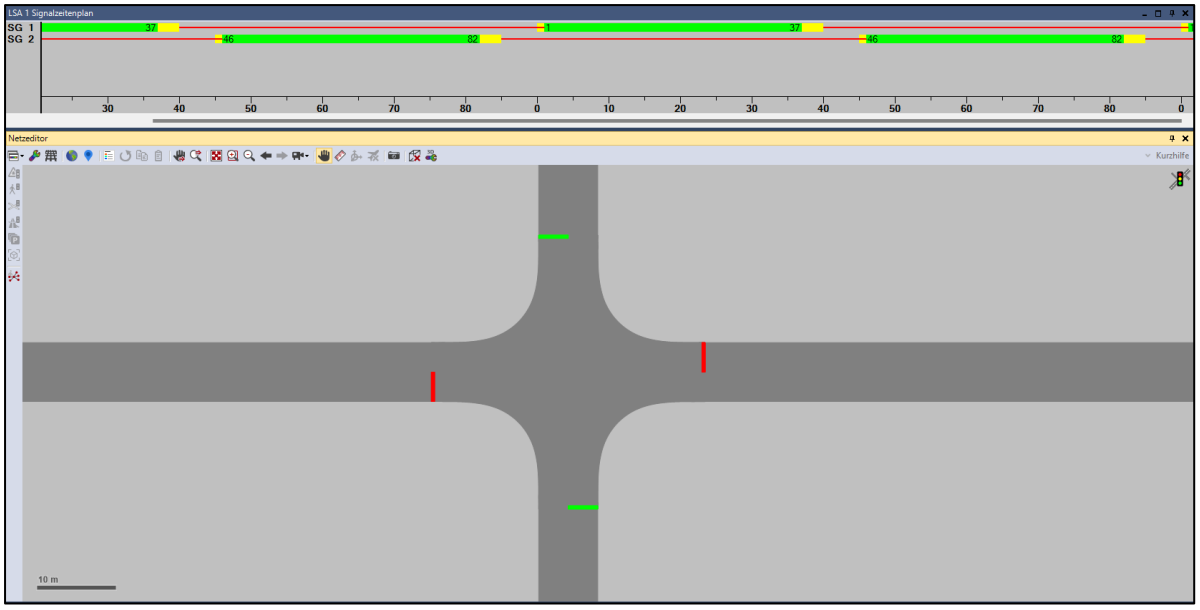
The OpenDRIVE import now generates **signal heads** and **signal controllers** of the type **Fixed Time (simple).** For this purpose, the OpenDRIVE-signal elements priority with the types trafficLight and stopLine and their OpenDRIVE-semantics are used. A **signal group** is created for each OpenDRIVE-controller element and a **signal head** is created for each corresponding OpenDRIVE-control element. A **signal controller** is generated for an OpenDRIVE-controller of an OpenDRIVE-junction. Since OpenDRIVE only describes the position of the **signal heads** and does not contain any information about the switching of the **signal controller**, a **cycle time** of 90s is assumed, and the green times of the **signal groups are** distributed equally.

The OpenDRIVE import now generates **stop signs** from OpenDRIVE-signal elements if they have OpenDRIVE-semantic elements with the name **priority** and the type **stop**.

The OpenDRIVE import generates **desired speed decisions** from OpenDRIVE-signal elements, if they have OpenDRIVE-semantic elements named **speed** with type **maximum** or **zone**.

The OpenDRIVE import considers the information of the OPENDRIVE_SIGNALSEMANTICS.XML file. In this file, you can store and configure your own mappings of OpenDRIVE-semantic elements to Vissim objects, for example the **desired speed distributions** to be used.

The OpenDRIVE import first searches for and uses this file in the same directory as the OpenDRIVE file to be imported. If it does not exist there, then in the directory %APPDATA% \ROAMING\PTV VISION\PTV VISSIM 2025, or in the last instance in the installation directory of Vissim. The default version can be found in this directory.



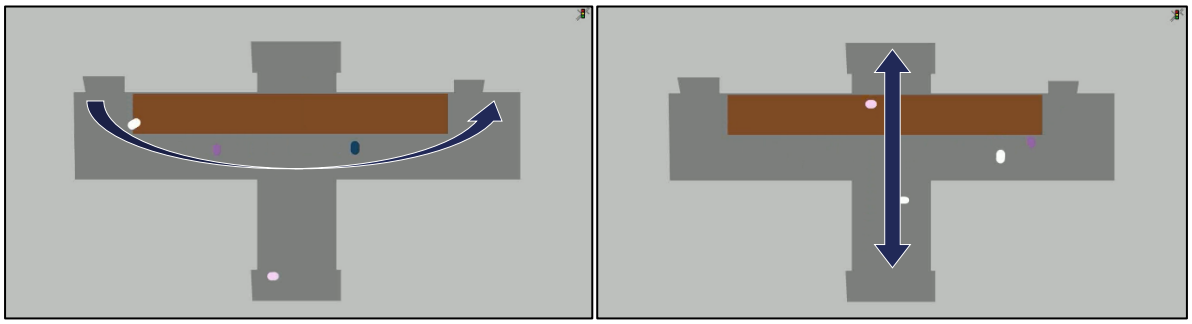
2.8 Update of HBEFA Emission Class Distribution to 4.2

The emission class distributions example based on HBEFA has been upgraded from version 4.1 to version 4.2 and to the year 2025. It is located at C:\USERS\PUBLIC\DOCUMENTS\PTV VISION\PTV VISSIM 2025\EXAMPLES TRAINING\VEHICLE FLEET & SETTINGS DEFAULTS\EMISSION CLASS DISTRIBUTIONS. If you need data for other years, please contact support.

3 Pedestrian Simulation

3.1 Attribute Walking Attractiveness for Areas

Walking attractiveness allows modeling large areas where smaller subareas are preferred or reluctant to be used by pedestrians. Values larger than 100% increase the attractiveness to use such an area even if this requires a detour. This allows for example more realistic behavior on areas with different risks (edge of a platform in the case of tracks), differently attractive surfaces or different levels of rain protection or exposure to the sun.



3.2 Attribute Fractional Effective Concentration (smoke)

[This feature is still under construction and will be available in an early service pack.]

Pedestrians will receive a new attribute **Fractional effective concentration (smoke)** that complements the existing attributes **Fractional effective dose (asphyxia), Fractional effective dose (convective heat)** and **Fractional irritant concentration** to assess the effect of fire smoke on people. Like **Fractional irritant concentration, Fractional effective concentration (smoke)** is a momentary quantity, but easier to calculate because it depends only on the optical smoke density.

4 Signal Control

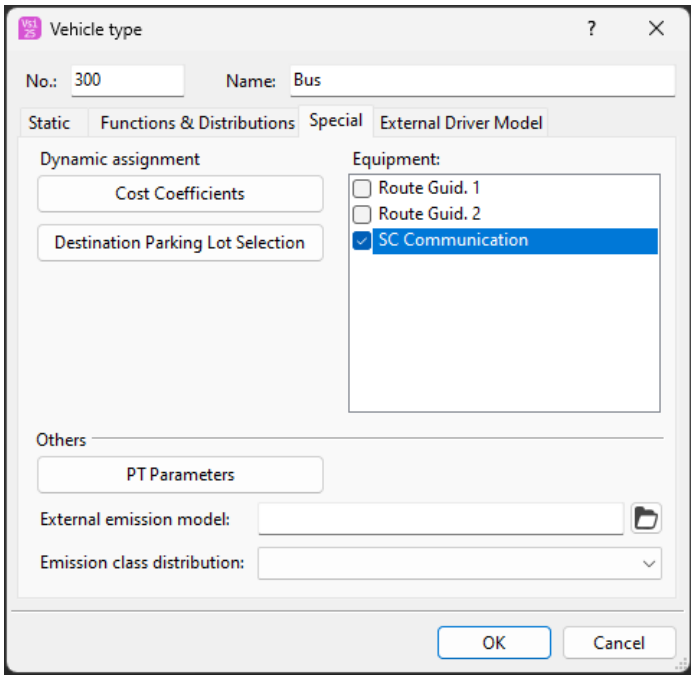
4.1 V2I Improvements

Vissim 2025 expands **Vehicle to Infrastructure** (V2I) data. In other words, information that vehicles can provide to signal controllers to change the current control – for example to prioritize an emergency vehicle based on its estimated time of arrival at the stop line and the desired turning maneuver, or for public transport prioritization that utilizes more than just check-in and check-out detectors.

On the one hand, this concerns data, that is made available to the signal controller directly via the signal controller interface, and, on the other hand, data that is now also available as vehicle attributes and, for example, can therefore be used with script-based solutions.

In earlier versions, some of this data was already available in a prototype implementation.

Vehicles of a **vehicle type**, for which **SC communication** is enabled and that are travelling on a **lane** where the **V2I-MAPLane** attribute is set, send V2I data via the signal controller interface to the signal controller with the next **signal head** downstream of the vehicle (if the signal controller requests V2I data). This data is also available in VAP/VisVAP.

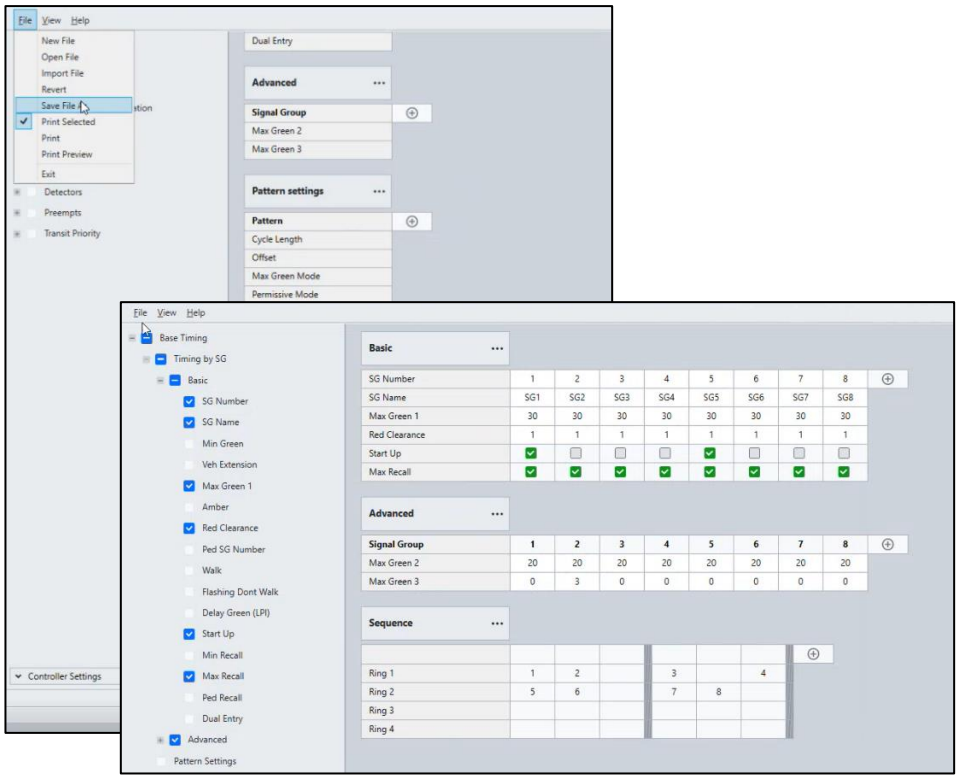


The data provided in Vissim 2025 now also includes:

1. The vehicle attributes **Latitude (WGS84)** and **Longitude (WGS84)**
2. The vehicle attribute **V2I destination MAPLane**:
   The value of the first **V2I MAPLane** downstream of the **signal head**, which is different to the current **V2I MAPLane**, if the vehicle follows a route.
3. The vehicle attribute **V2I signal head**:
   The **signal head** to which the other attributes refer.
4. The vehicle attribute **V2I stop line distance**:
   The distance to the next **signal head**.
5. The vehicle attribute **V2I stop line ETA**:
   The estimated travel time to the next **signal head**. For vehicles that still have to serve a **public transport line stop** before reaching the **signal head**, the (remaining) expected dwell time and delays for braking and accelerating are considered in the estimate.
6. The vehicle attribute **Priority**:
   An integer attribute that can be used to prioritize the vehicle by the signal controller. The attribute can be set during the simulation with scripts or with **vehicle attribute decisions**.
7. The lane attribute **V2I MAPLane**:
   The value of the corresponding **lane** attribute on which the vehicle is located.
8. The PT Line Stop attribute **V2I expected dwell time**:
   The expected dwell time of the vehicle's next **public transport stop**.

4.2 New RBC-Editor

The editor for **Ring Barrier Controller** signal controllers has been redeveloped and replaces the previous editor.



4.3 New Signal Controller Type Econolite EOS [2024 SP 07]

Econolite EOS is available as a new signal controller type. **Econolite EOS** is an RBC-style (Ring Barrier Controller) controller used by Econolite in the field in ECUs and is the successor to **Econolite ASC/3**.

The integration with Vissim enables a very realistic evaluation and parameterization of the control. In addition, **Econolite EOS** is an advanced power-user alternative to the already existing signal controller type Ring Barrier Controller due to its more comprehensive range of functions. For more information on EOS, please refer to https://www.econolite.com/solutions/traffic-signal-controllers/eos/.

Econolite EOS is deployed completely with Vissim and can be purchased and unlocked as a separate module.

5 Usability

5.1 "Companion" – Integration of AI-powered support

Companion is the first point of contact for Vissim support. It is an AI-powered conversational interface based on Large Language Models (LLMs) and other knowledge sources.

Companion can easily answer a variety of questions. This ranges from simple requests to solving problems that require more complex dialogs.

Companion allows conversations in different languages. Some predefined responses are only available in English.

The underlying sources are limited to product-related documents such as the online help, example descriptions, webinars, and other files, which limits **Companion** to answering questions related to Vissim, which in turn reduces the so-called "hallucinations". It is possible that **Companion** will provide incorrect answers. Each answer is linked to a source that should be used for verification. However, as AI evolves rapidly over time, answers improve. In some cases, rephrasing the question can lead to better and more relevant answers.

Still it remains possible to submit inquiries in the previous format via the classic support form. In the future, this connection will be even more direct through the automatic creation of support cases from the conversation with **Companion**.

Companion can be accessed from the **help** menu and from the **start page**.

5.2 Attribute Direction HCM for Movements at Nodes

The new attribute **Direction HCM** for **movements** at **nodes** provides a description of the movement that is based on the HCM (Highway Capacity Manual), e.g. NBS Northbound Straight. **Direction HCM** is defined in the DEFAULT.LAYX and can be removed using a custom default layout if necessary.

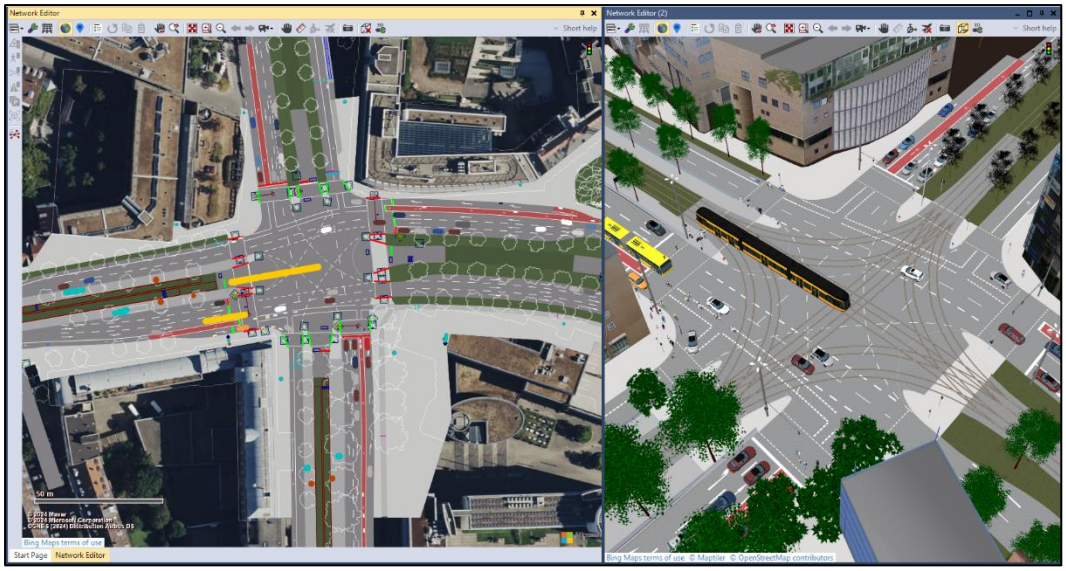
6 Application Example “3D - Complex Intersection Karlsruhe.DE”

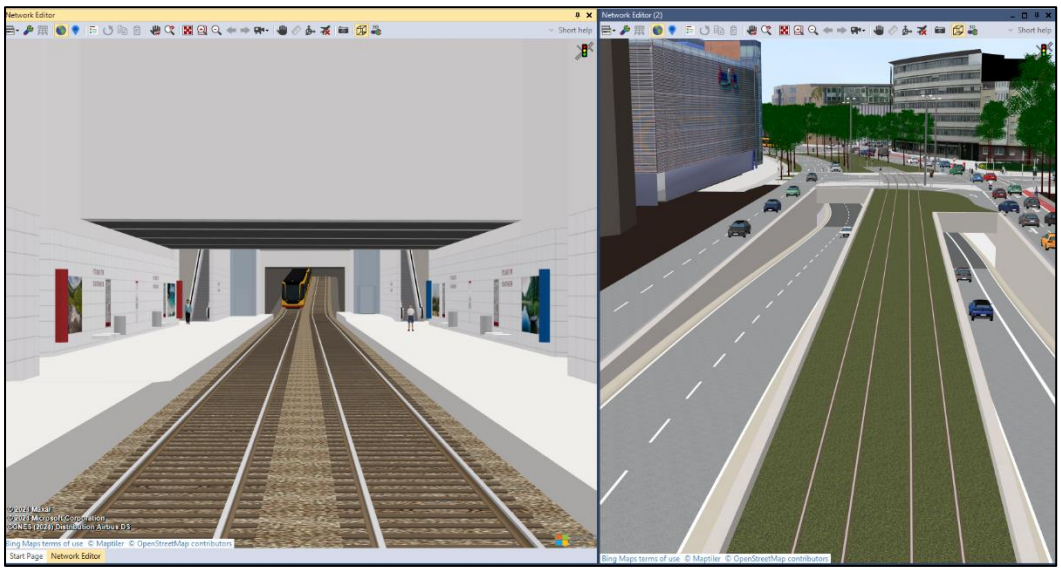
The famous example “3D - Complex Intersection” - also known as “Karlsruhe 3D” - was completely overhauled and upgraded. It highlights Vissim’s capabilities for modeling complex urban environments and their visualization in 2D and 3D graphics. Besides the update to the most recent rail and road layout, based on construction plans and Bing maps, it now includes the following features:

- Dual-tube road tunnel of varying width, including ramps and intermediate exits
- Public transport underground station complete with lifts, escalators, stairs and mezzanines
- Area-based pedestrians (Viswalk) and passengers including wheelchairs throughout the network
- Hybrid public transport platforms to serve trains and trams with different floor height (“camel platforms”)
- Detailed road markings: lines of various styles, arrows and pictograms
- Shared and dedicated cycle lanes of various configurations and widths
- Coordinated fixed time signal controls plus actuated pedestrian-tram crossings

And all this visualized both in 2D and 3D graphics. As before, the example is located at C:\USERS\PUBLIC\DOCUMENTS\PTV VISION\PTV VISSIM 2025\EXAMPLES DEMO\3D -

COMPLEX INTERSECTION KARLSRUHE.DE. It also contains a description PDF with several tips on modelling techniques. Be prepared to be amazed by Vissim’s versatility.





7 Automotive

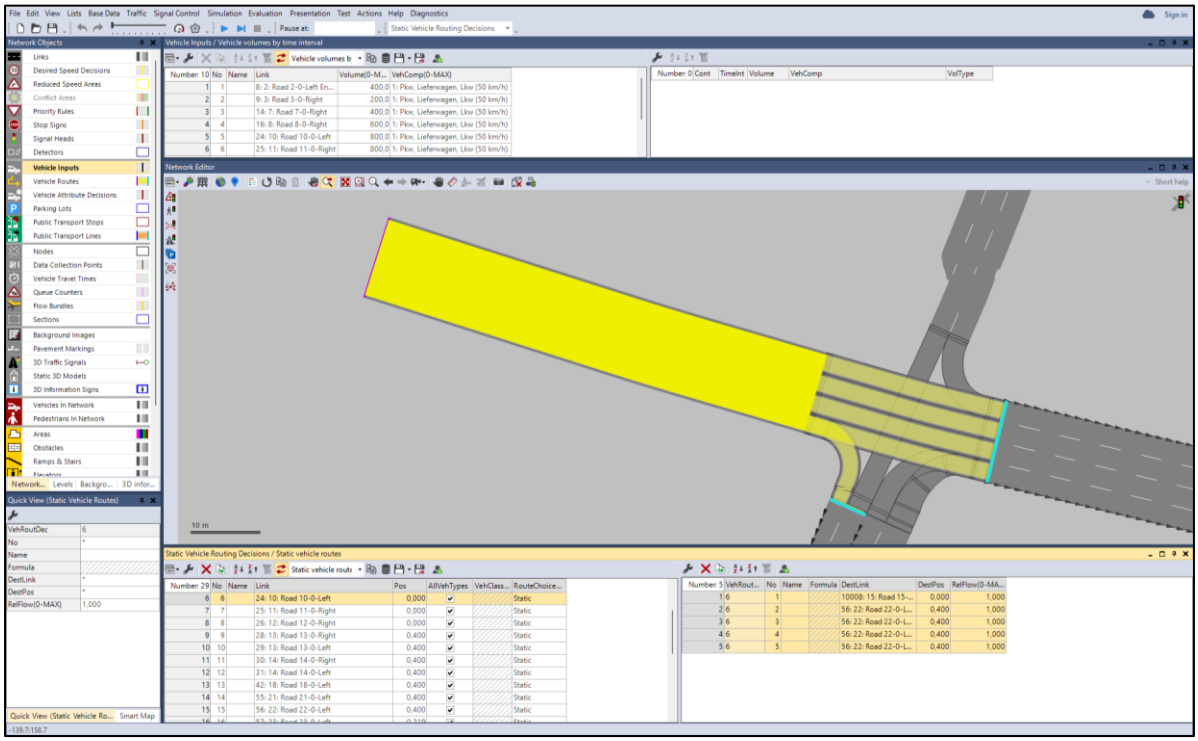
Vissim 2025 introduces the license module Automotive. This module includes functionality that is particularly helpful for the use case where Vissim provides the surrounding traffic for an ego vehicle under test. In this use case, an ego vehicle is controlled externally (from Vissim's point of view) via the DriverModell.dll or Driving Simulator interface. Vissim simulates all other vehicles and provides information about them to the ego vehicle, which then calculates its driving maneuvers and reports its positional changes back to Vissim to make the surrounding traffic react accordingly.

The focus here is on the convenient and fast generation and variation of simulation-ready models. The functionality combines well with models which were generated initially by an OpenDRIVE import and therefore have no traffic demand. In addition to demand generation, it is possible to change the behavior of the surrounding traffic in a stereotypical way, e.g. make all vehicles act more aggressively or defensively. This functionality is not suitable or necessary for classic use cases for analyzing the capacity of transport infrastructure under typical conditions and a specific transport demand.

Other aspects of the automotive module cover technical functionalities and interfaces.

7.1 Generation of Basic Surrounding Traffic

Automotive allows to create basic surrounding traffic via the menu item **Traffic - Generate basic surrounding**. The typical use case is a model without demand, for example from an OpenDRIVE import for traffic that fills the entire network without oversaturating it.



When executed, existing **vehicle inputs** and **static vehicle routes** are deleted (after user confirmation). **Vehicle inputs** are then generated for all **links** that are recognized as entry links. A **link** is recognized as an entry link, if there are no incoming **connectors** 50 m downstream at

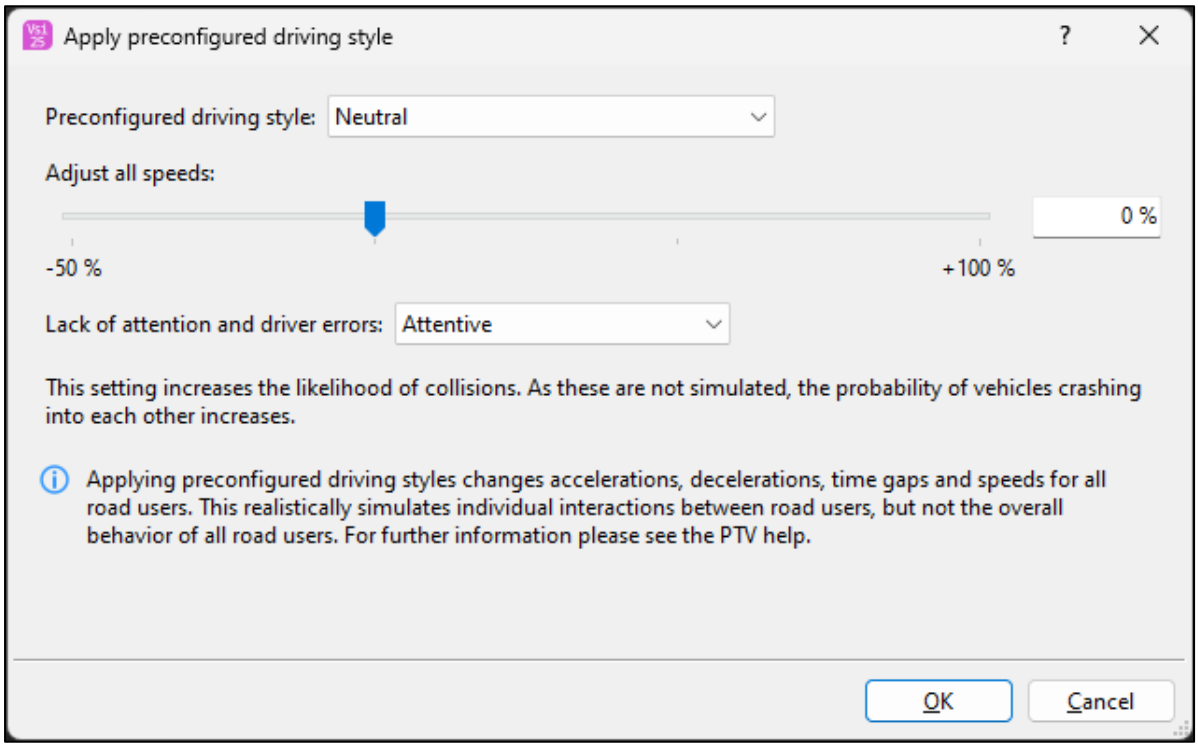
the start of the **link**. The **vehicle volumes** use the **vehicle composition** with the lowest **number** and the **volume** is set to 200 vehicles/h per **lane** of the **link**.

If the model contains **nodes** that are marked to be used for evaluation, **static vehicle routes** are then generated. For this purpose**, static vehicle routing decisions** are created at the entry links or at the cross sections leaving a **node,** and the destinations of the **static vehicle routes** are created at the beginning of the next downstream **nodes**. The **relative flow** for these **routes** is equal to the minimum number of **lanes of** the **links** over which this **route** passes.

7.2 Preconfigured Driving Styles

Automotive allows the application of pre-configured driving styles via the menu **Traffic - Apply preconfigured driving styles...**. The typical use case is a model from an OpenDRIVE import, possibly - but not necessarily - in combination with the **Generate basic surrounding traffic** functionality. The model provides the surrounding traffic for an ego vehicle, and the overall behavior of the model should be changed quickly and comfortably to create situations of varying challenge levels for the ego vehicle.

The dialog **Apply preconfigured driving style** allows to select a **preconfigured driving style** from **very comfort-oriented** over **neutral** to **very aggressive**. This changes parameters of the driving behavior, acceleration and deceleration, speed in curves and behavior at conflict areas using fixed values. A repeated application of **very aggressive** does not lead to any increase.



The dialog also offers the possibility to change all speed distributions in the model by percentage. Then, a repeated application has a multiplicative effect.

The options for **lack of attention and driving errors** change **driving behavior** parameters in the **driving errors** section. These can be combined with the **preconfigured driving styles** and also

set fixed values so a repeated application does not lead to any increase. This setting increases the probability of driving maneuvers, which are usually perceived as critical, and therefore also the probability of collisions of vehicles.

The full list of changes can be found in the online help.

7.3 High Calculation Frequency of up to 1 kHz

Automotive allows a **simulation resolution** of up to 1000 **time steps per simulation second**. This is useful for implementation in hardware or software-in-the-loop environments where the other components rely on higher frequencies.

Higher simulation resolutions proportionally increase the computational time and affect the updates of the visualization, enabling you to record videos with smoother animation.

7.4 Driving Simulator Interface Parallel Usage

Automotive allows the simultaneous execution of several simulations for the Driving Simulator Interface in parallel. In this case, the new version of the DRIVINGSIMULATORPROXY.DLL must be used. Otherwise, the previous version of the DRIVINGSIMULATORPROXY.DLL can still be used.

7.5 Driver Model Interface for Linux Kernel [2024 SP 03]

The Driver Model Interface is available for the Vissim kernel for Linux operating systems. See \EXAMPLES\DRIVERMODEL\README.MD in the installation directory for more details.

8 Technical Changes

8.1 CodeMeter Runtime

The CodeMeter runtime version deployed with PTV Vissim has been updated to CodeMeter 8.20.

8.2 Python

The Python version delivered with PTV Vissim has been updated to 3.11.

8.3 Discontinuation of functionality in future releases

The following functions will be removed in future versions:

- Offline Backgrounds: Some file formats are no longer supported. Some file formats will no longer be supported for adding backgrounds to the network editor from local files. This affects the formats TGA, Mr. Sid and Shapefile. The functionality for importing Shapefiles into the network is not affected by this change.