PTV Visum 2025

New features at a glance

PTV GROUP
part of Umovity

Imprint

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1 Seamless integration with PTV Hub

PTV Visum 2025 is part of PTV Hub, the industry's first true cloud-based platform that provides an all-encompassing solution through the interplay of multiple apps. Available on a subscription basis, PTV Hub enables you to plan and execute projects in a new way. PTV Hub promotes collaboration between project partners, the efficient use of resources, and facilitates getting started by providing cloud licenses.

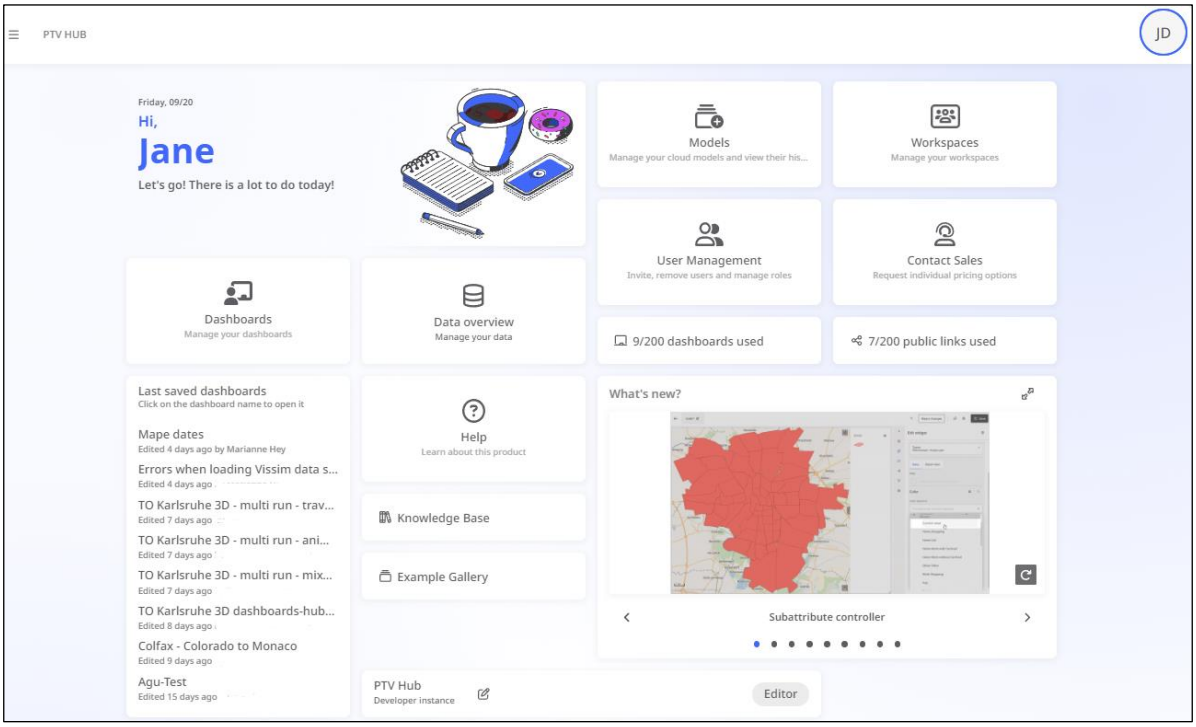

Figure 1: Start page of PTV Hub

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 Visum to the cloud and continue editing them.
- Track changes to the model in the version history or restore a previous state in the Models app.
- Collaborate on models in the Models app by easily 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.
- Let partners and stakeholders comment on model results presented in the Dashboards app.

Your existing Visum 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.

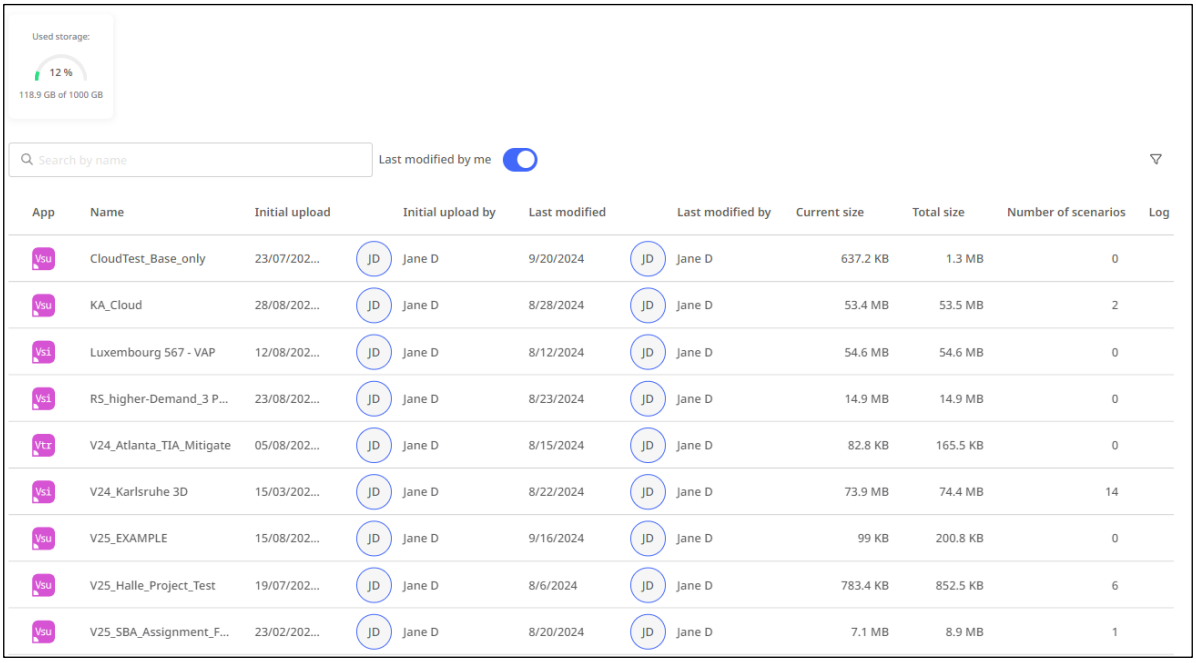

Figure 2: Models App – Overview of cloud models

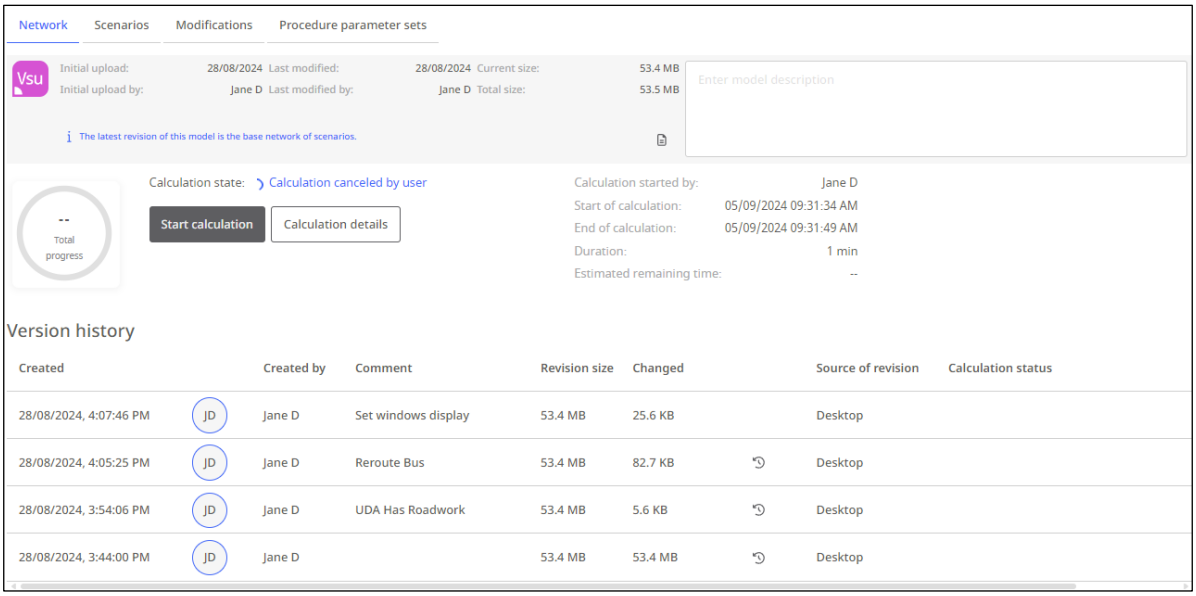

Figure 3: Version history of a cloud model

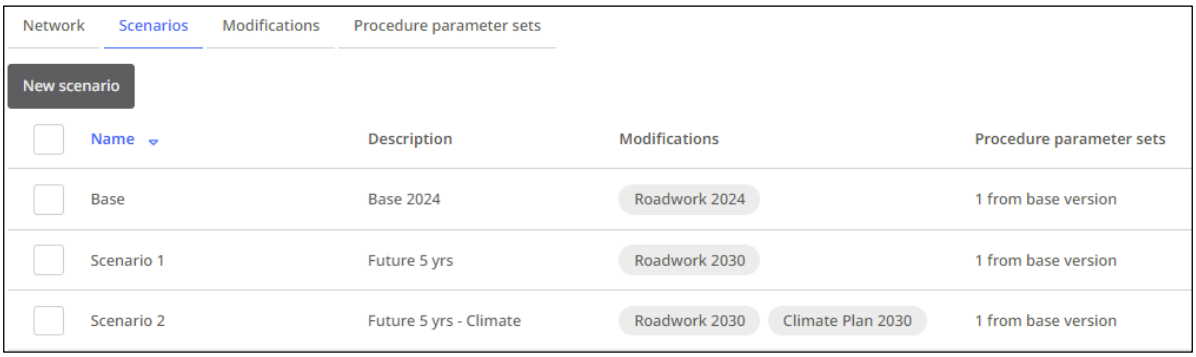

Figure 4: Scenarios of a cloud model

2 Procedures

2.1 Automated Public Transport Network Design

Public transport (PT) network design and timetabling aim to achieve an optimal service for passengers at a minimum operating cost. Visum 2025 offers an algorithmic solution to this optimization problem. For the first time, the public transport supply is not the input, but the result of a calculation.

The public transport infrastructure and demand are the input for creating a public transport supply, i.e. routes and headways. The infrastructure comprises the network that can be used by the PT systems and the stops. New functions in the 'Check network' window check the suitability of the network for the route construction. The associated demand should consist of a desired share of the total demand of all modes.

Optionally, the model can include PT services that already exist and won't be changed by the algorithm. In this way, the connection to other operators, e.g. long-distance trains in an urban context, can be included. Similarly, relations where another 'competing' mode already provides a very good level of service can optionally be ignored when constructing new PT services.

The optimization is steered by a cost function that considers various components such as operating costs, number of vehicles, travel time, or transfers. The weights of the different parameters can be adjusted to direct the optimization for desired use cases.

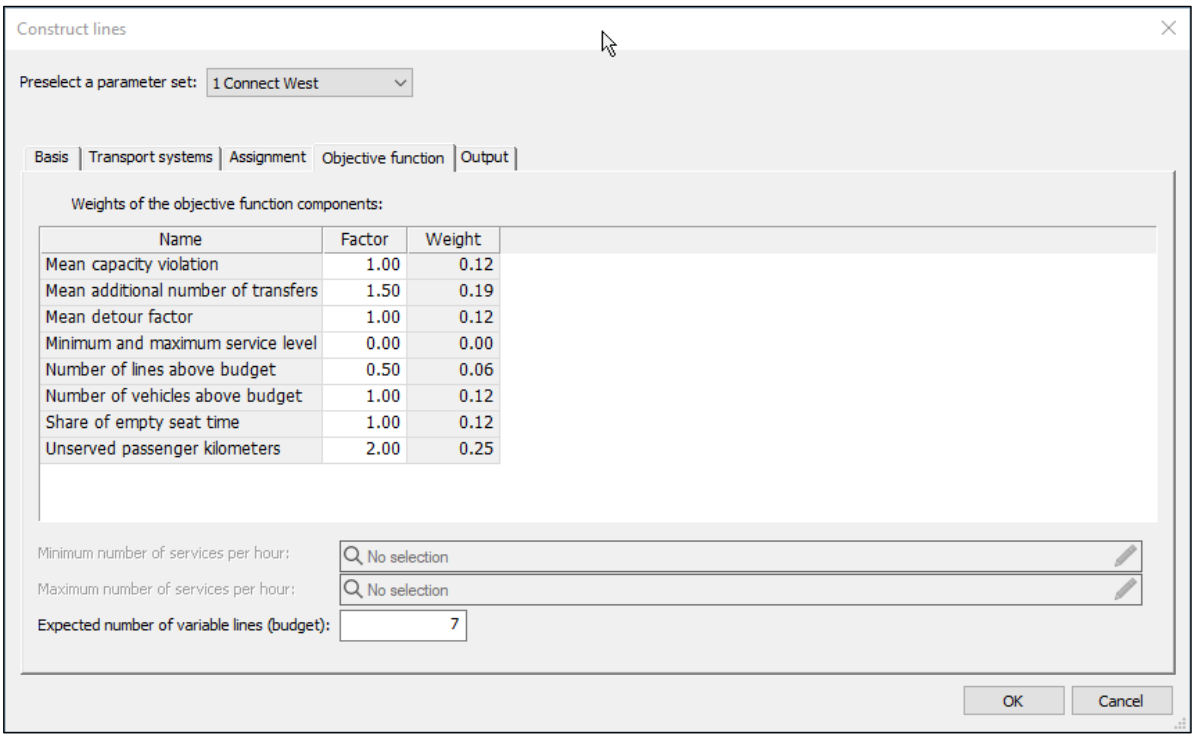

Figure 5: Definition of the objective function for Automated Public Transport Network Design

The line construction algorithm creates a set of possible line routes and, based on that, evaluates various subsets with varying headways for generating suitable network designs. The result is not just one public transport service with the best rating, but many good service concepts. The process is therefore integrated with scenario management, allowing to compare the generated solutions side by side in scenarios.

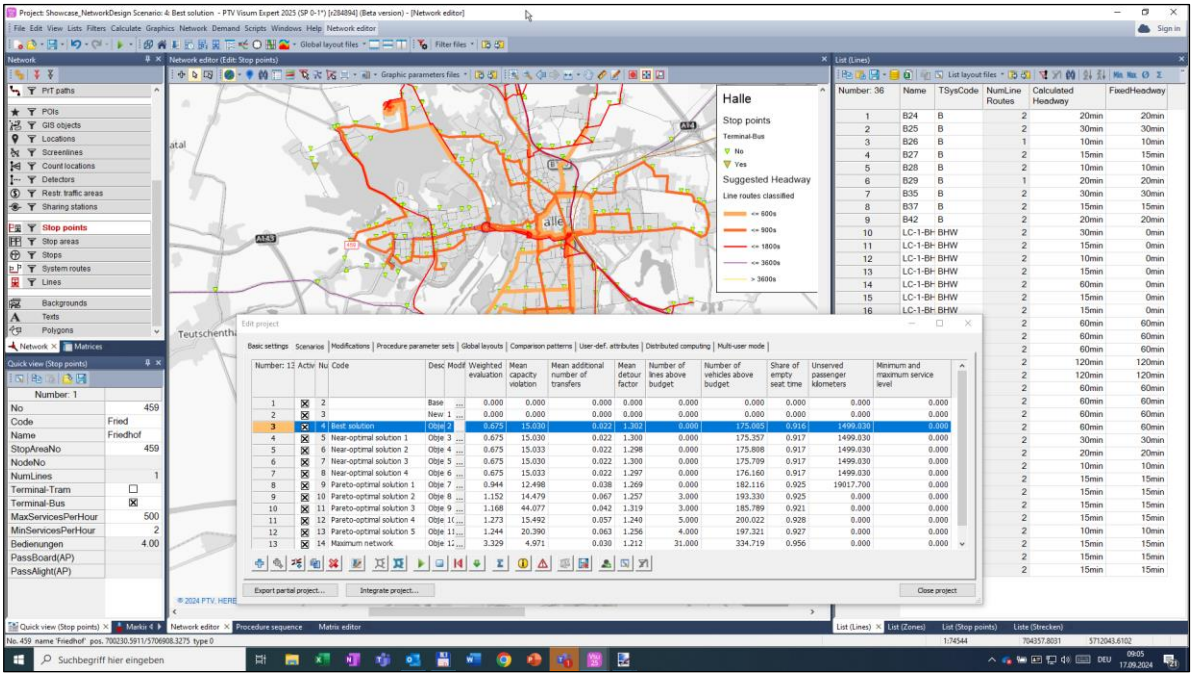

Figure 6: Scenarios generated by Automated Public Transport Network Design procedure

By combining the procedure with the headway offset optimization and the PT line blocking, further optimizations can be carried out to generate a sustainable public transport service.

2.2 Integration of emission calculation according to COPERT

PTV Visum 2025 allows the calculation of emissions from road traffic directly within the transport model. This makes it possible, for example, to assess and compare the decarbonization effects of different scenarios. The emissions are calculated according to COPERT (**CO**mputer **P**rogramme to calculate **E**missions from **R**oad **T**ransport). The COPERT methodology is part of the EMEP/EEA guidelines for the calculation of air pollutant emissions. PTV Visum uses the emission model and the related databases of emission factors and fleets developed by e:misia.

The integration of the emissions calculation based on COPERT complements the existing emissions calculation based on HBEFA. The integration of the additional method follows two objectives:

1. Emissions calculations are now supported for more countries. With COPERT, we offer the data basis for the 27 EU member states, while HBEFA only covers 6 countries.
2. The calculation according to COPERT can be carried out with custom emission factors for vehicle types or countries not covered in the original database. To do this, user-defined vehicle strata with the corresponding emission factors can be defined or imported.

The vehicle strata defined in the COPERT database for the EU member states are distinguished by four characteristics (category, segment, fuel, Euro Standard). Fleet compositions for the years 1990 to 2050 are provided. A fleet composition compromises the shares of the vehicle strata of one category. In Visum, this data is shown in lists.

For all vehicle strata, warm and cold emission factors are provided. The warm emission factors - given in g/km - depend on the speed class. For vehicle strata of the category 'Heavy goods vehicles', the factors additionally depend on the gradient class, which is specified by the link attribute 'Slope'. Cold emission factors are given per period as amount per start. These factors can be examined in the list ‘COPERT vehicle strata’.

The workflow for calculating emissions according to COPERT is similar to HBEFA. You can define user-defined COPERT fleet compositions based on COPERT fleet compositions and then allocate them to a demand segment. This means, for example, that the demand segment ‘Car’ in the model includes shares from the categories passenger cars, light commercial vehicles, and two-wheelers (L-category in COPERT). In case user-defined vehicle strata shall be used, they can be included with the desired share in any user-defined fleet composition.

The emission calculation according to COPERT determines fuel consumption, greenhouse gases, and air pollutants (including CO, NOx, VOC, NMVOC, NH3, particles). These can be calculated per link, territory, or network-wide.

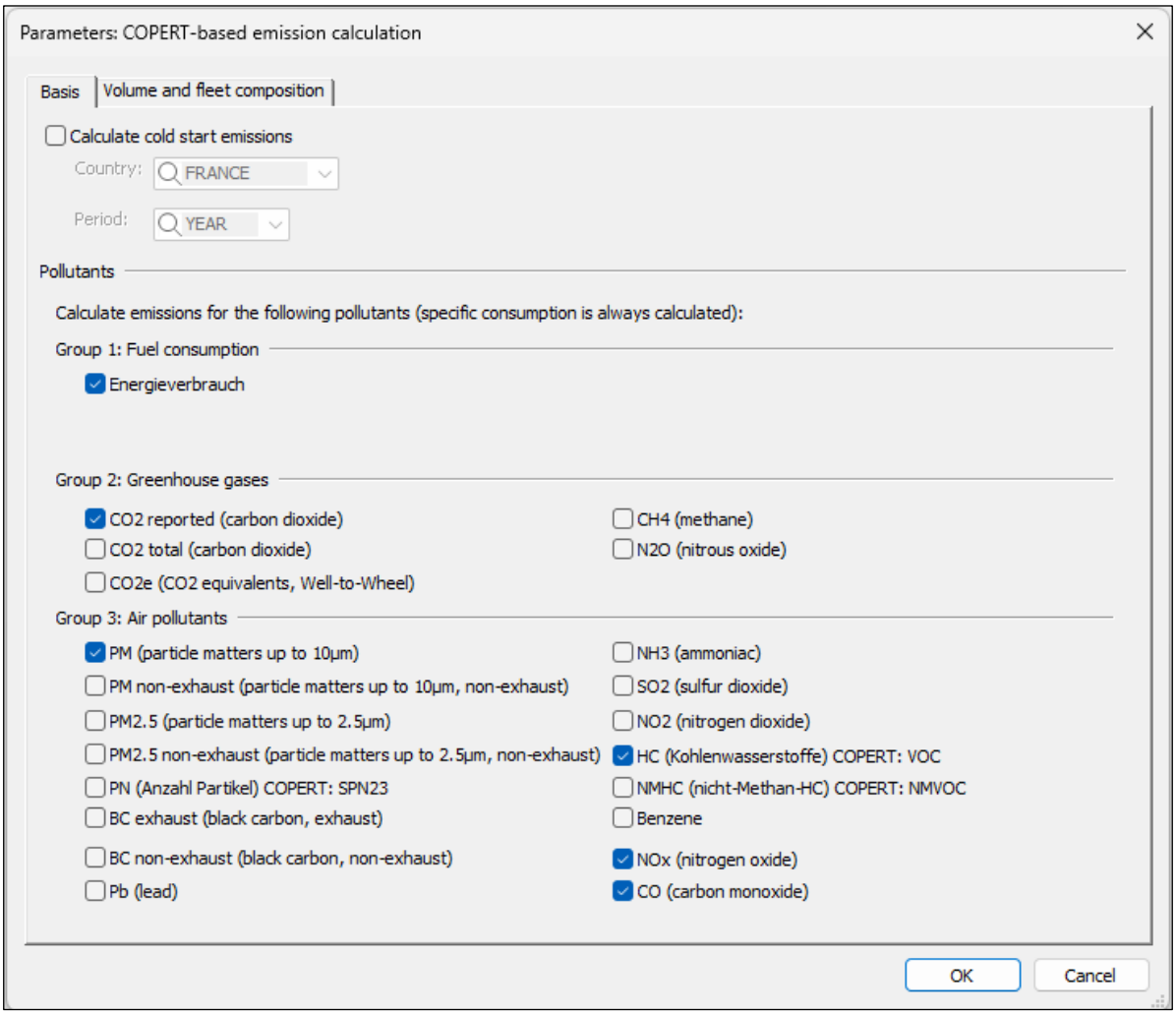

Figure 7: Selection of outputs in the parameter dialog COPERT-based emission calculation

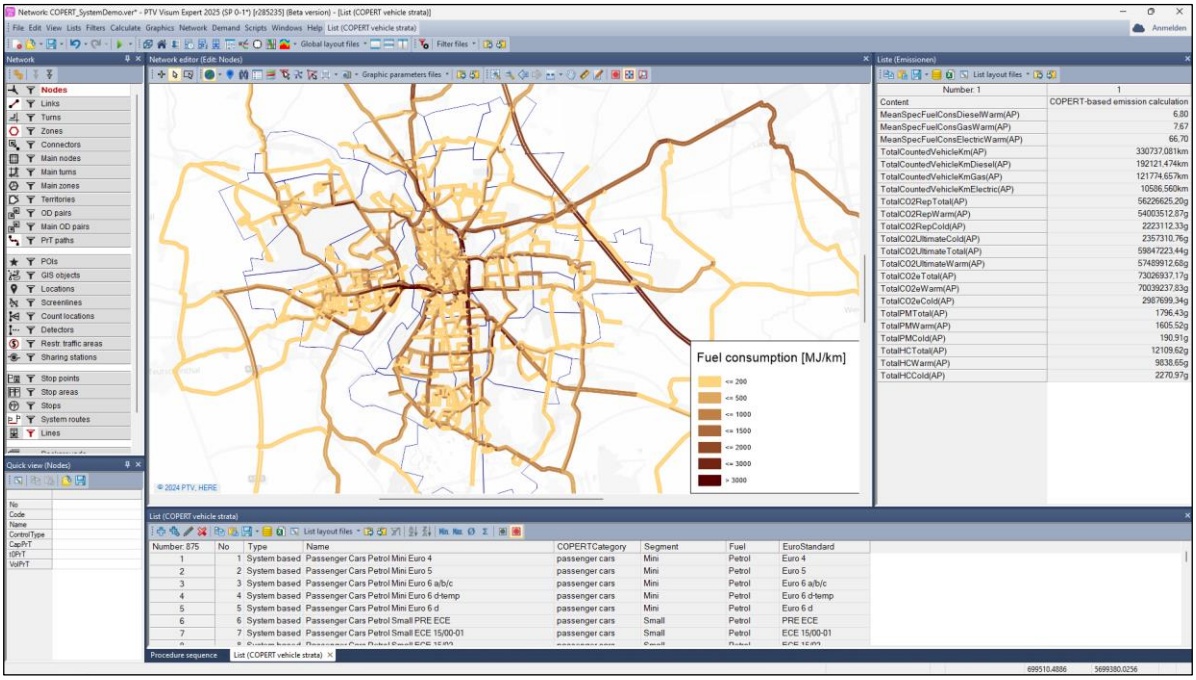

Figure 8: Emission calculation according to COPERT

2.3 ABM extensions: Time-of-day choice, doubly-constraint calculation, internal traffic

The Nested ABM procedures in Visum's ABM models so far covered destination and mode choice. Now the range of functions has been extended to include the time-of-day choice. In addition, the existing functionality of doubly constraint has been completely redeveloped and improved considerably, and an optional internal traffic ban has been added.

Time-of-day choice

The time-of-day choice determines the start time of the main activity of a tour. This allows scenarios to be modeled that lead to time shifts. Examples include, in particular, time-varying measures such as a toll that is only charged during rush hour, increased frequency of public transport services in the morning, and temporary use of highway hard shoulders.

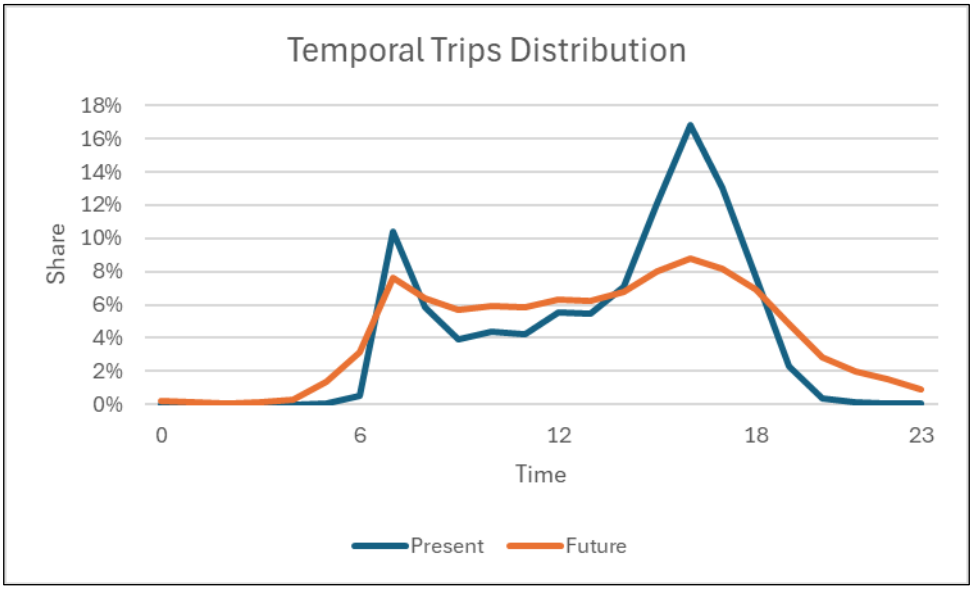

Figure 9: Temporary measures, such as charging a car toll at peak times, can reduce the intensity of traffic peaks and lead to a more balanced distribution of traffic throughout the day.

The time-of-day choice for the main activity automatically influences the start times of all other activities on a tour. To avoid unrealistic execution times, Visum's ABM uses the concept of opening hours: a tour may only be shifted in its time position in such a way that all activities of a tour take place during corresponding opening hours. This can then prevent primary school trips at midnight, for example.

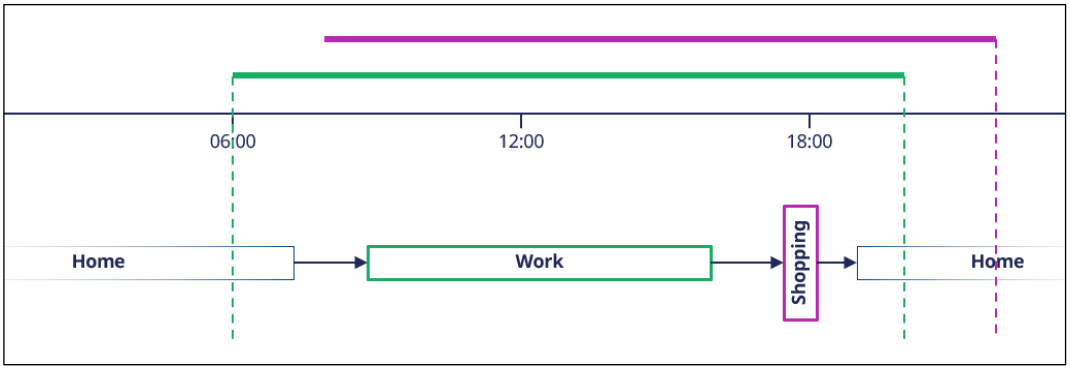

Figure 10: Opening hours per activity type mean that only sensible start times can be chosen.

Retaining previous decisions

Normally, all choice levels (destination, mode, and time-of-day) are recalculated during a demand calculation and existing results are overwritten. With the new calculation options, it is now possible to retain certain results. Common applications are incremental scenario computations in aggregated models, where e.g. destination choice is fixed and only the mode choice is recalculated for a scenario.

Flexible choice sequence

In a nested demand model, the typical sequence of choices is time – destination - mode, which makes sense for many situations. However, there are also activities, such as shopping, where a different order may make sense, such as mode - time - destination. Visum's ABM allows to flexibly arrange the choice sequence: a specific choice sequence can be defined for each tour group. It is also possible to switch off choice levels completely or partially.

Doubly-constraint

While being the default for aggregated models, conventional ABM models can often only roughly comply with a preset or constraint destination volume. This is particularly relevant for work and school activities, as the work and school places are usually known and should be correctly represented by the model. For ABM, a new method has been developed in which a specified destination traffic is always exactly matched.

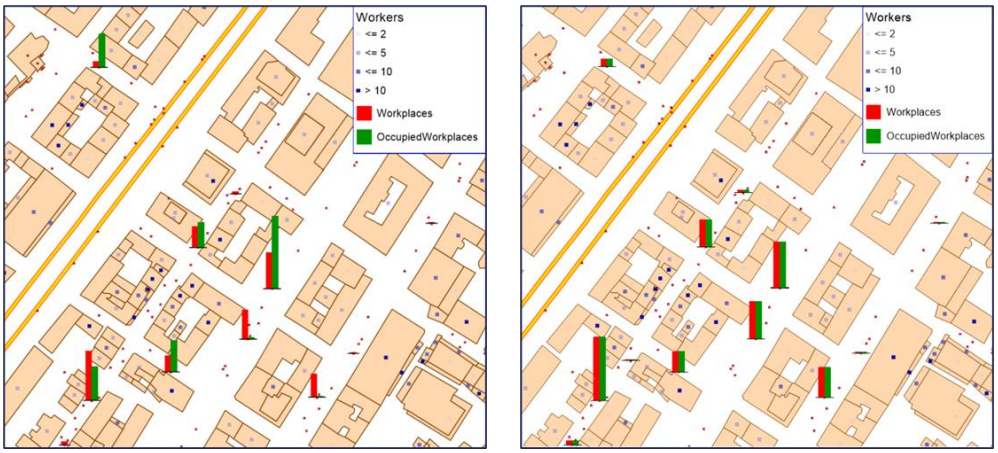

Figure 11: Doubly-constraint: In the traditional approach (left-hand chart), the target destination traffic is never achieved exactly; the number of employees at the place of work does not correspond to the number of jobs. With the methodology used by Visum, on the other hand (right-hand chart), the target figure is hit exactly.

Internal traffic

In some models, the spatial resolution is so fine that locations correspond to individual buildings. In such cases, the modeling of internal location traffic is not useful, as internal trips are not perceived as such by people and are therefore not reported in mobility surveys. To account for this in the model, Visum's ABM now offers an option to ban internal location traffic.

2.4 Must-use mode in headway-based public transport assignment

Data on public transport use is often classified according to the highest-ranking transport system. This data is required to validate demand models and assignment results. The mode choice is based on this segmentation. For the transport modeler, this means that the assignment and the skim matrix calculation must be based on a set of connections that uses specified transport service on at least one path leg of the connection.

This can be illustrated using the metro demand as an example. This was surveyed in urban transport and includes all journeys served by the metro. Included here is the use of feeder

transport systems such as the bus or public transport on foot. Since this data is not always available as trips, but only in its compressed form as a matrix, the information that all trips have used the metro for at least part of the trip should be taken into account when assigning this matrix. This then represents the origin of the matrix and generates consistent skims.

Visum 2025 is capable of enforcing the usage of a specific transport service on at least one leg of each journey during the search algorithm in the headway-based assignment. The definition of the must-use-service is made on the level of time-profiles. Thereby, the service is not restricted to a single transport system, allowing for great flexibility. Visum allows to define two disjoint transport services, which can logically be linked through AND, NOT AND, or EITHER OR, depending on the requirements. Besides simply enforcing two modes per trip, this allows you to consider further use cases, e.g. when competing operators with no cross-usage of tickets serve the same connections so that transfers between the operators shall therefore be excluded.

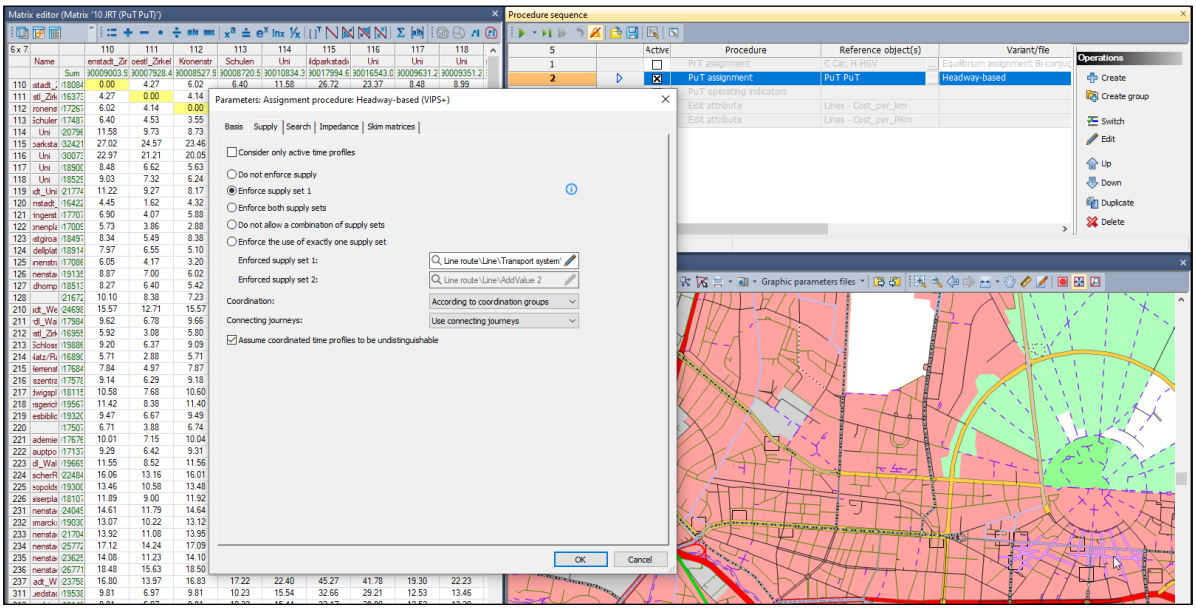

Figure 12: Definition of mandatory public transport services in the headway-based assignment

This extension of the headway-based assignment supports a more realistic estimation of routes from survey matrices and helps better calibrate corresponding demand models using realistic parameters. Run time and memory requirements increase with the number of restrictions on supply. If the compulsory transport service does not match the demand, unrealistic connections are generated, sometimes with very long detours.

2.5 Ridership data

Ridership data includes public transport usage data collected through interviews and automatically recorded ticket data. This data is highly relevant for planning, as it shows the status quo of how the current public transport service is being used. On this basis, key figures for revenue sharing can be calculated, transfer relations validated, and capacity bottlenecks visualized.

Visum reads in ridership data, checks the plausibility and supplements the information about the probable courses of the journeys. The direct assignment then converts this data into a form that allows to use all evaluation tools available in Visum.

While the data was previously read in as preliminary PT paths, which were altered by the plausibility check step, in Visum 2025, the data is first read into specific objects of the new type ‘ridership data’. Thereby, the data remains recognizable as independent input data. From this, the plausibility check generates PT paths, which are linked to the related ridership data records through bi-directional relations.

Treating ridership data as an explicit network object provides several advantages:

- There is a clear separation between input data and results. This makes calculation results more comprehensible.
- PT paths created through direct assignment no longer differ from paths generated by other assignments and can be used in all post-assignment evaluations and procedures. This applies in particular to the flow bundle, the PT path filter and the fail to board analysis in the timetable-based assignment.
- Ridership data can be created, edited and displayed in a dedicated list. This enables interactive editing of ridership data. The list helps the user to enter all the necessary information and avoid incorrect entries.
- Ridership data can be brought into Visum through several ways. Besides using the "Read ridership data" procedure, data can be created manually in the list or read from network files or databases. A COM-API even allows to automate the creation and modification of ridership data through scripts.
- The "ridership data" objects can have user-defined attributes, e.g. for ticket types used for the trips. Through the relations to the corresponding PuT paths, these values can be used e.g. in the path filter or for visualizations.

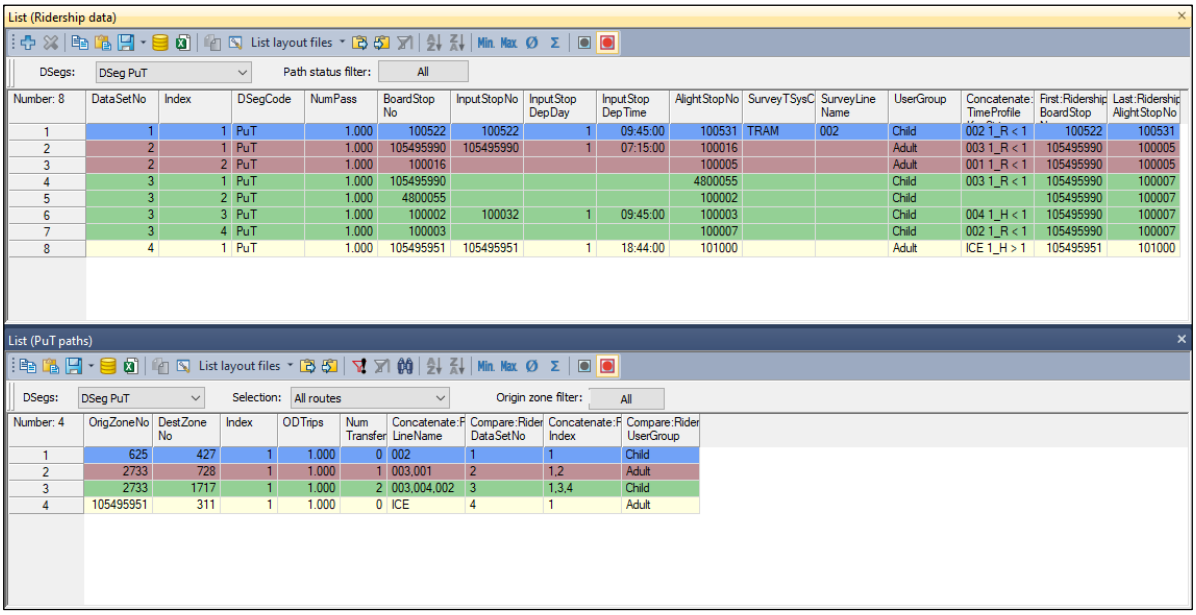

Figure 13: List of entered passenger data and linked public transport routes

The introduction of the object type ridership data leads to further changes:

- The names of the procedures have been adapted. They now refer uniformly to ridership data.
- The ridership data set does not require an origin and destination zone. Zones are associated or generated during the plausibility check for the public transport route.
- The demand segment code of the data set is no longer a component of the key. This now requires data set numbers to be unique across the demand segments.

2.6 Pay once for multiple entrances to toll areas

In some countries and regions, the consideration of congestion charge zones is an important factor when modeling the current situation and evaluating scenarios for planned area toll systems. The best-known example is London, where the ‘Congestion Charge Zone’ (CCZ) was introduced in the city center in 2003. A charge is applied to vehicles accessing the city center of London between 7 a.m. and 6 p.m. Certain vehicles, such as buses, taxis, and emergency vehicles are excluded from the charge. The ‘Low Emission Zone’ (LEZ) was added in 2008 and extended – now known as the Ultra Low Emission Zone (ULEZ) – to the whole of Greater London in 2023. In these areas, thresholds for certain pollutants apply, and a toll is due for vehicles failing to comply with these. Area tolls are therefore an important instrument for regulating traffic and achieving environmental goals.

Since the introduction of Restricted Traffic Areas in Visum 2022, it is possible to consider area tolls in typical static assignments. Different types of trips can be distinguished concerning the toll area, as shown in the following figure:

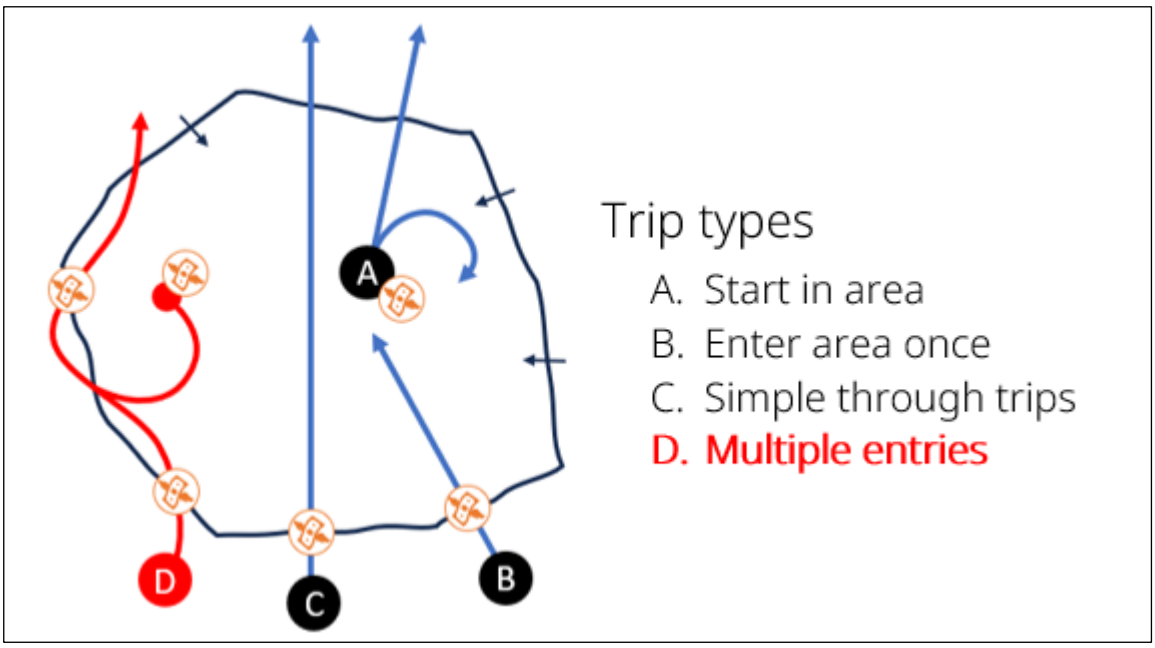

Figure 14: Distinction of trip types with regard to the toll area

For the trip type marked in red – entering the toll area multiple times –, the toll was previously charged for each entry. In most actual toll systems, such trips would only be charged once, as the charge usually only applies once per day for each vehicle. To reflect this, a new type 'Area toll (pay once)' was introduced for restricted traffic areas. Therefore, only the type of restricted traffic area needs to be changed to achieve a more realistic accounting of such trips. The additional type 'Area toll (pay once)’ can be considered in most static private transport assignments and the simulation-based assignment (SBA). Also, the calculations of skims, the calculations of volumes from flow bundles and OD pair filters, and the calculation of toll revenues take the new type into account.

This improvement is already available with the service pack Visum 2024.01-03.

2.7 Multimodal assignment: Additional aggregations for path skims

In multimodal assignment, paths or path sequences are generated that consist of several modes. On the basis of these paths, skim matrices such as total travel time or distance are calculated, e.g. to feed a demand model. The respective skim values of the path sequence

items are added together. For skim matrices such as travel time, this aggregation makes sense: the total travel time is made up of the travel times of the path sequence items.

For other skim matrices such as service frequency, summation is not appropriate; here the minimum would be a suitable aggregation function: the minimum service frequency among all path sequence items defines the service frequency of the entire path sequence. For this reason, Visum now offers further aggregation functions such as minimum, maximum, and weighted average in addition to summation.

2.8 Extended functionality of the procedure matrix aggregation

The procedure ‘Matrix aggregation’ calculates a main zone matrix from a zone matrix. By default, the calculation added up the values of all zone relations according to their allocated main zone.

The procedure has been extended to allow other aggregation functions in the calculation. Specifically, the following functions are available in addition to the sum:

- Minimum
- Maximum
- Average value (arithmetic)
- Average value (weighted)

For the options of average values, a weighting attribute must be specified for the zone relations.

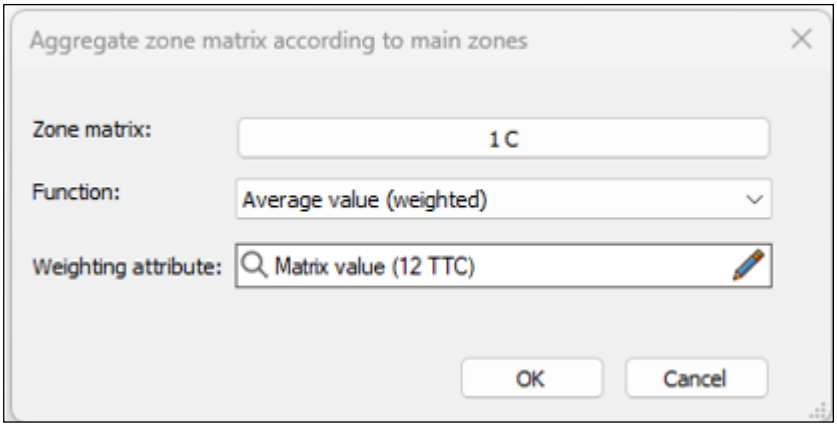

Figure 15: Matrix aggregation – procedure parameters dialog

2.9 Balanced random condensing of matrices

Matrices from classic demand models are typically fully populated, i.e. all cells of the matrix are larger than zero. This leads to long runtimes and high memory consumption during assignments. A typical method to counteract this is the random condensing of the matrix, which is often implemented through randomly rounding the matrix. The disadvantage of this method is that some origin and destination totals (row and column totals) usually deviate considerably from the original values.

The new method condenses a matrix in a similar way, but it preserves all origin and destination totals (with a maximum deviation of usually 1‰). The method is provided as a function within the "Combination of matrices and vectors" procedure.

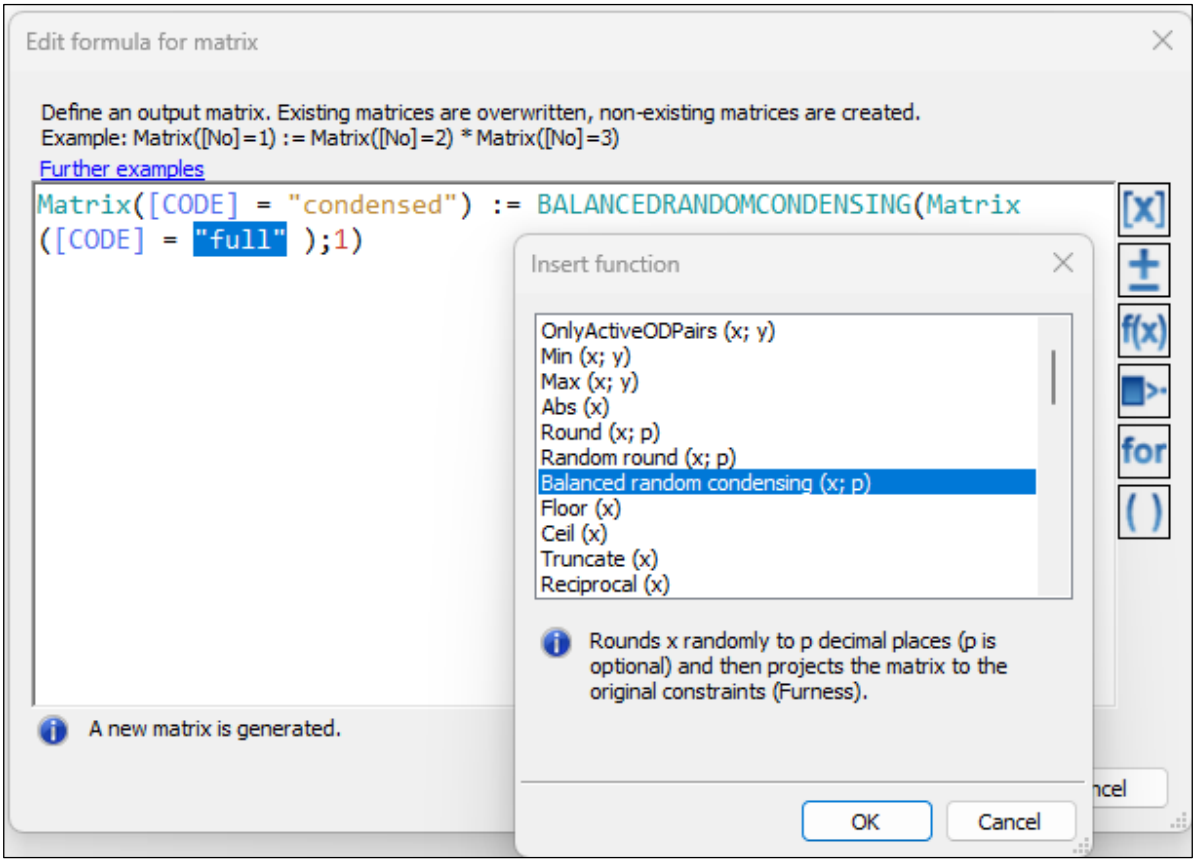

Figure 16: Balanced random condensing of a matrix as a function in the “Combination of matrices and vectors” procedure

When a matrix is condensed, information is lost, which initially seems undesirable. However, this involves very little demand on a large number of relations. This arises in classic demand models because the probability of choosing a very distant destination is very low, but still greater than zero. The informative value of such demand is usually very low. The relations remaining after condensing are interpreted as representatives of the original demand.

The method was, for example, tested on a model with 7000 zones in an equilibrium assignment to a gap of 10^{-3}. The calculation time improved from 60 minutes to 8 minutes when using the condensed matrix. At the same time, the memory requirement was reduced by 80%.

3 Interfaces

3.1 GeoJSON import and export

For many years, the ESRI shapefile format was the standard for exchanging geospatial data. These days, geodata is often offered as GeoJSON files, especially by open data portals. This format seems to replace the ESRI shapefiles in many places. In addition, GeoJSON is provided and used by many web services. Given that development, the expansion of the interfaces to include GeoJSON export and import is a logical consequence, as it enables the direct exchange and use of this data.

The GeoJSON interface is structured in the same way as the shapefile export and import.

When exporting, network objects can be restricted to active objects. The attributes can be selected either directly or using the corresponding list layout. A file with the usual extension .geojson is created for each network object. User-defined attributes (UDA) can be generated automatically during import if an automatic allocation to existing target attributes is not possible.

GeoJSON files in line with the specification (RFC 7946) can be imported. This means that the files use WGS84 as the reference coordinate system.

3.2 Improvements for the GTFS export

Timetable data are now often exchanged between planning systems via GTFS (gtfs.org). As part of Open Data initiatives for passenger information, many providers publish their service data in this format. The high availability of data in this format makes this interface particularly important for Visum.

The data models of GTFS and Visum differ in many respects. The import process converts the data to a form that can be read by Visum. Attributes from GTFS that are not explicitly represented in the Visum data model are preserved as user-defined attributes. The attributes are named according to the scheme "GTFS_" + attribute name from GTFS.

This approach also applies to the IDs of the GTFS objects. While these must be integers in Visum, they are alphanumeric in GTFS. Therefore, object IDs inevitably change during the import process. As Visum is often used in a planning loop with operational planning systems, preserving the object IDs is essential for smooth bidirectional data exchange.

With Visum 2025, it is possible to use the preserved original IDs from user-defined attributes when exporting to GTFS instead of the numerical IDs used in Visum.

Visum recognizes the existence of suitable attributes and suggests their use to the user in the export dialog. Objects that were added when editing the feed in Visum do not contain an entry in the user-defined attributes. As usual, the Visum key is exported here. In the case of duplicate objects, a postfix is appended to the duplicate.

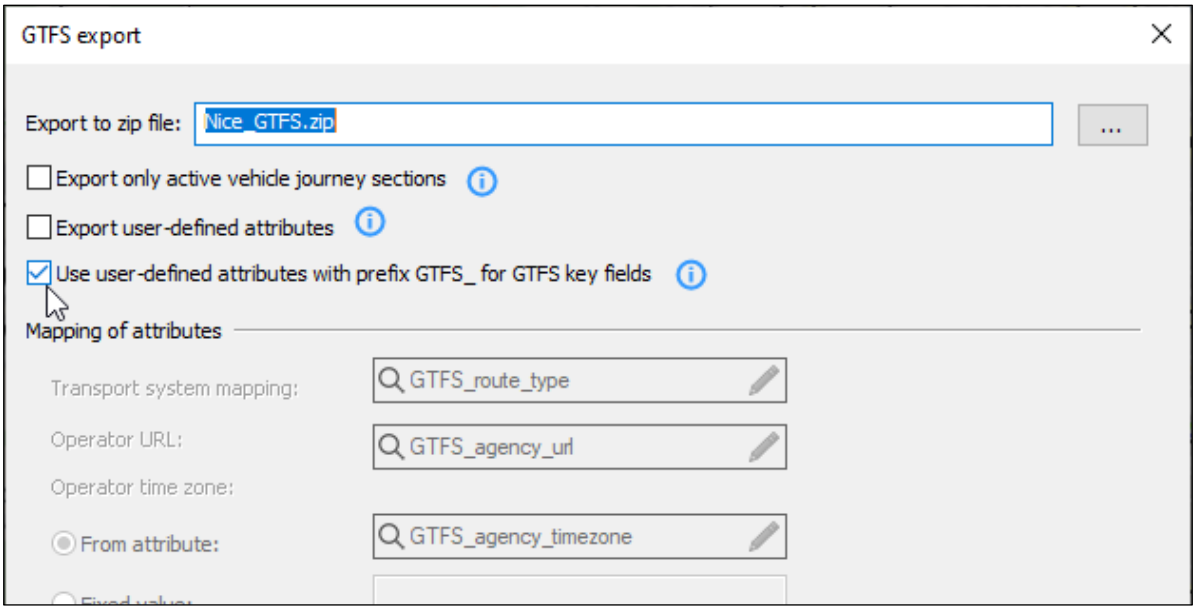

Figure 17: Use of keys in export from previous GTFS data

Trivial stop points, from which the stop point, stop area, and stop were created in Visum during import, are now only exported as single stop points, as is usual in GTFS.

The use case of using Visum as a GTFS editor is now better supported through this extension.

3.3 Export of origin-destination data to Dashboards

Data on relations between origin and destination either show the demand or describe the relationship by means of skim values. Data such as traffic demand, travel time, average speed, or transfer frequencies show the importance and quality of a relation. These are core elements of planning and are often presented as graphics in reports.

In Visum, relation-based data is stored in matrices on the basis of (main) zones and stop areas. With Visum 2025, the stop area relations can be displayed in lists, as is already possible for (main) zone relations.

The presentation of OD data is important for communicating transportation projects. It is therefore possible to export such data to dashboards and present it interactively.

The base objects are always exported along with the actual matrices. Exporting zone matrices therefore requires the export of the zone objects to enable subsequent referencing and filtering. The user can select the attributes of the base objects to be exported.

The visualization of the data is then configured in Dashboards.

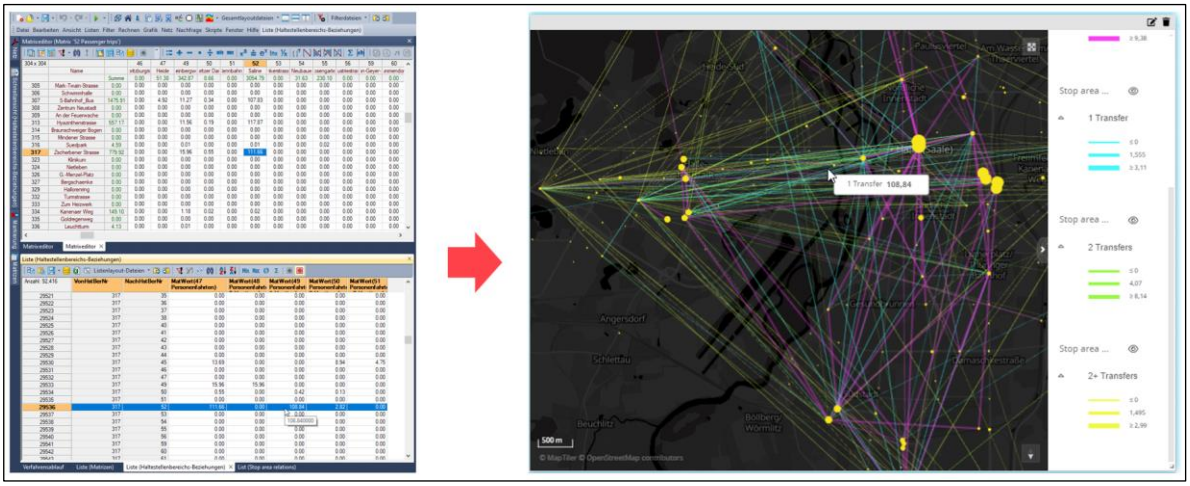

Figure 18: Visualization of stop area relations in Visum and Dashboards

4 Usability and visualizations

4.1 Redesign of the flow bundle tool window

One of the most frequently used features in Visum is the flow bundle or selected link analysis. It offers numerous options for defining conditions for single object and/or set conditions for links. These can be combined in different ways and restricted by using additional parameters. The results can be displayed in the network editor and lists. The functionality has grown over the years, but usability has not improved to the same extent. In particular, the combination of conditions and input parameters were not always clear. To eliminate this shortcoming, the flow bundle tool window has been revised.

The biggest change is the introduction of partial flow bundles, which are arranged on individual tabs. Partial flow bundles and their conditions apply to a combination of the type of transportation system, i.e. private or public transport, and a set of demand segments. Several partial flow bundles can be defined. They are always linked by ‘OR'.

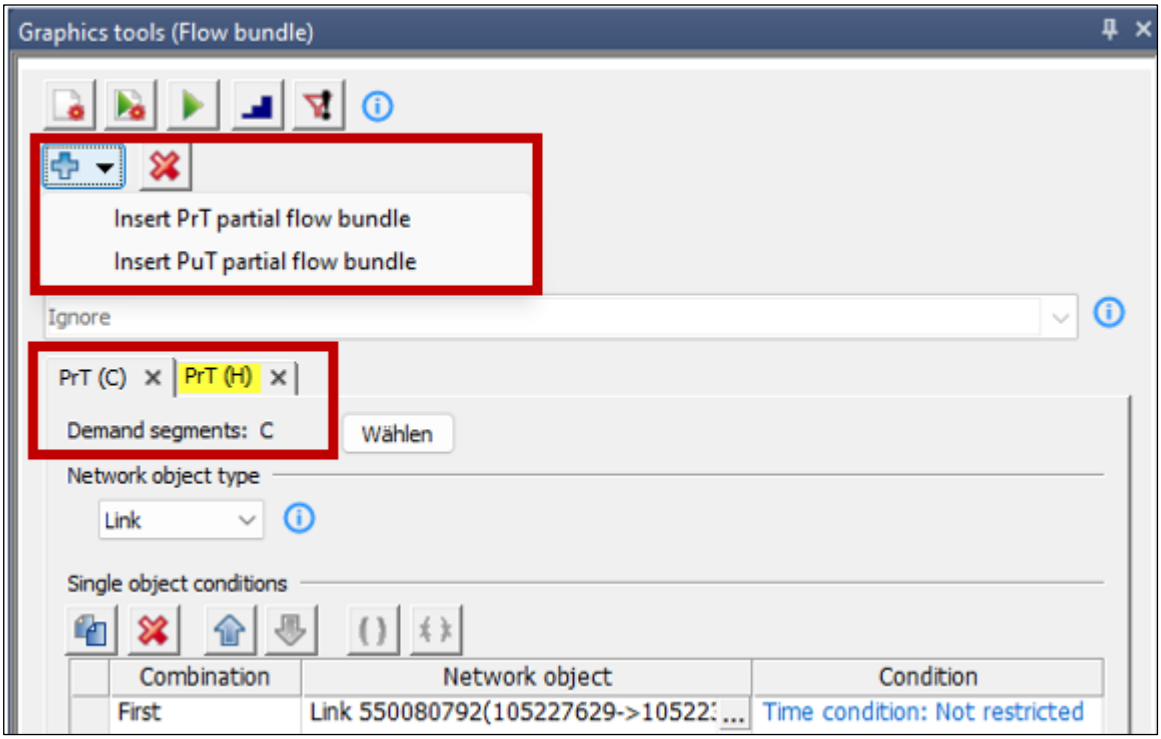

Figure 19: Flow bundle dialog – Inserting partial flow bundles

By separating the single object conditions from set conditions for links, it is clearer how these two types of conditions can be combined. Single object conditions have an order and can be moved up and down using the arrows. They can only be combined with set conditions in the displayed way. Other parameters for individual conditions are visible and can be edited by clicking on them.

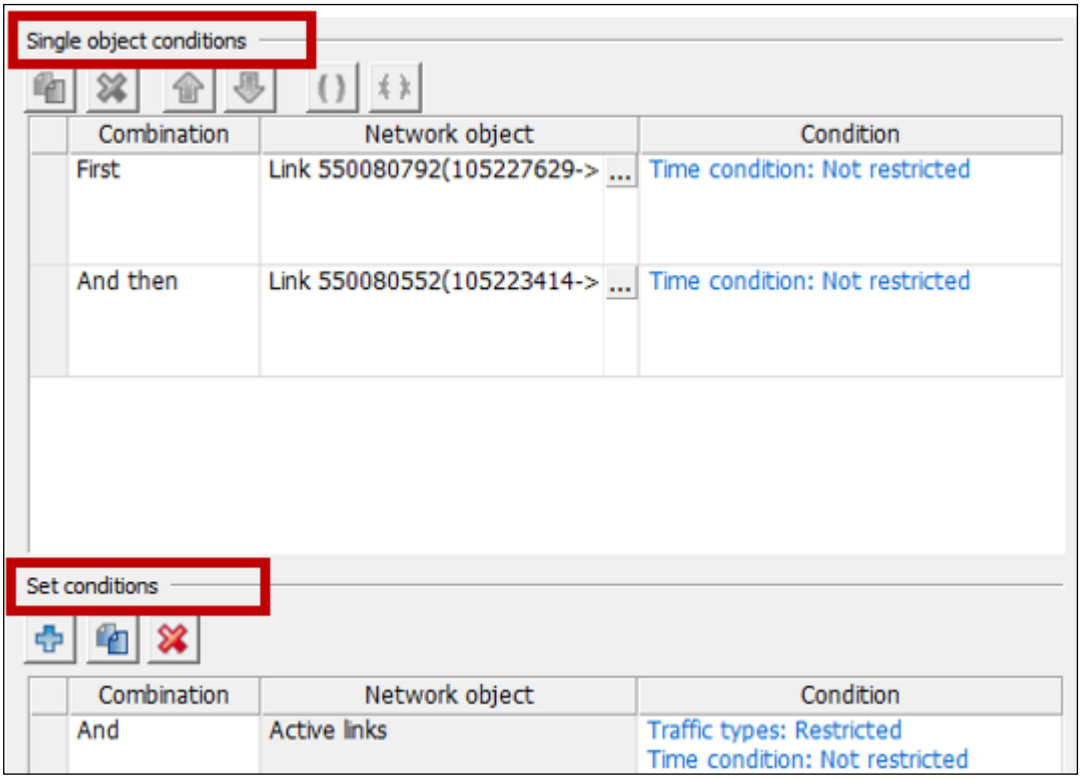

Figure 20: Flow bundle dialog – Grids for single object and set conditions

Further options for the flow bundle calculation are accessible at the top of the dialog by icons or the checkbox for alternative routes. Inserting the link bar for the flow bundle volumes is an action and decoupled from the execution of the flow bundle calculation. Direct access to the OD pair filter in the flow bundle dialog makes it clearer that these conditions always apply in combination.

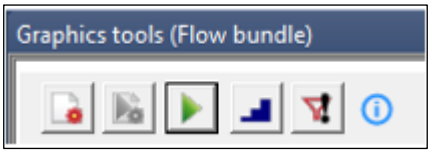

Figure 21: Flow bundle dialog – Icons for more direct access

The options for calculating results for analysis time intervals can only be used in combination with a dynamic assignment result from the simulation-based assignment (SBA) or the procedure pseudo-dynamic volumes (PDV).

4.2 Positioning and rotating route course labels

The display of route courses of PT lines provides a quick overview of the routes in the network model. The labeling in Visum 2025 is easier to adjust for the user. Route course labels can be freely positioned and moved along the course. The labeling can no longer be aligned only along the course segments but can be set to any angle of rotation.

The labels can be shown and hidden individually. This does not affect the settings for placement and alignment. The settings made are saved in the graphic parameters file.

Global settings can be made via the context menu of the "Line" entry in the network window. This makes it possible to display, delete, or hide the line labels for all lines or to set the rotation angle.

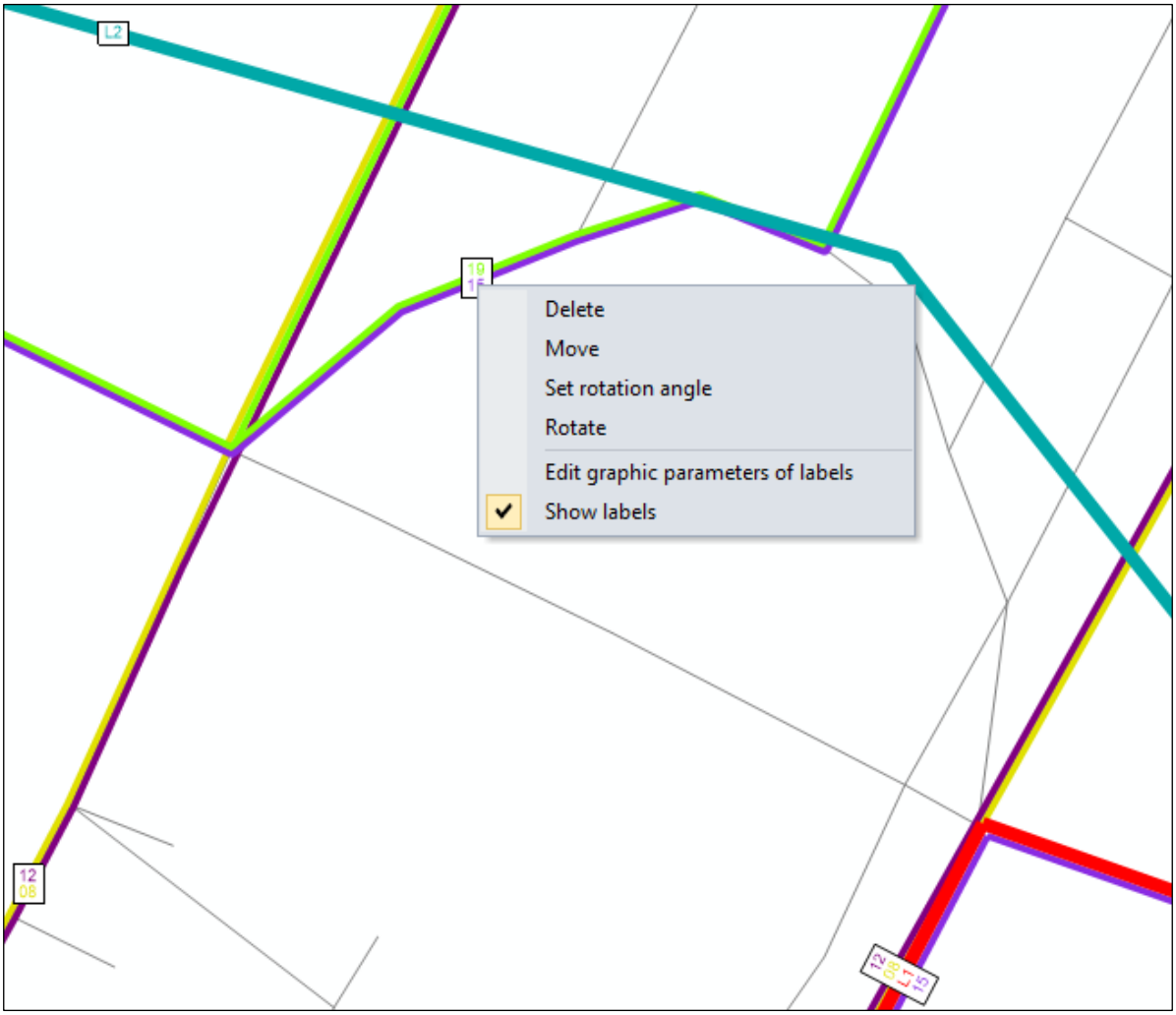

Figure 22: Editing and setting individual route course labels

4.3 Easier transfer of user-defined attributes (UDA)

The import and transfer of user-defined attributes (UDA) have been simplified in two ways: first for the UDA of network objects in general and second for the UDA of the network.

If you save a **network file with selected network objects and UDA are also selected for these network objects**, the table 'User-defined attributes' is also written in the network file. This table contains all the UDA that have been selected for the network objects and are therefore saved in the network file. When importing the network file into a version, these UDA can be created if they do not yet exist, or the attribute values of the network objects can be overwritten if these UDA already exist.

Example: If you write a network file with links and some UDA, the network file contains the UDA definitions in the corresponding table in addition to the link table.

```
*
* Table: User-defined attributes
*
$USERATTDEF:OBJID;ATTID;CODE;NAME;VALUETYPE;MINVALUE;MAXVALUE;DEFAULTVALUE;DEFAULTSTRINGVALUE;
LINK;UDA_FLOATING;UDA_Floating;UDA_Floating;Double;MIN;MAX;0.000;;;0;2;Data;;0;SUM;0;;0;;
LINK;UDA_INTEGER;UDA_Integer;UDA_Integer;Int;MIN;MAX;0.000;;;0;0;Data;;0;SUM;0;;0;;
LINK;UDA_TEXT;UDA_text;UDA_text;Text;MIN;MAX;;;;255;0;Data;;0;SUM;0;;0;;

*
* Table: Links
*
$LINK:NO;FROMNODENO;TONODENO;UDA_INTEGER;UDA_TEXT;UDA_FLOATING
3118;100201;100202;0;;0.000
3118;100202;100201;0;;0.000
```

Figure 23: User-defined .net file with three UDA for links

For **UDA of the network**, you can now read attribute files and create UDA contained in the .att file as well as overwrite their values if these UDA already exist. It is also possible to transfer the UDA and their values from one version file to another via the clipboard using copy & paste.

4.4 Improvements for filters

There are three improvements for filters:

It is now possible to switch off individual filter conditions. This eliminates the need to remove and add conditions or to change between different filter files.

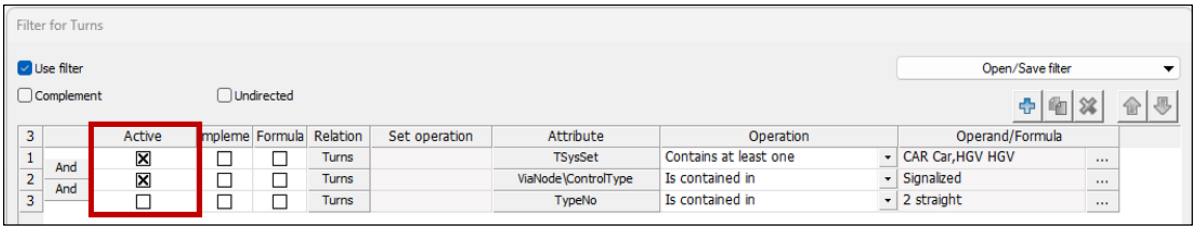

Figure 24: Switch off individual filter conditions

In addition, the 'Is empty' operation is now only available for attributes that can be empty by definition, clarifying the effect of this condition.

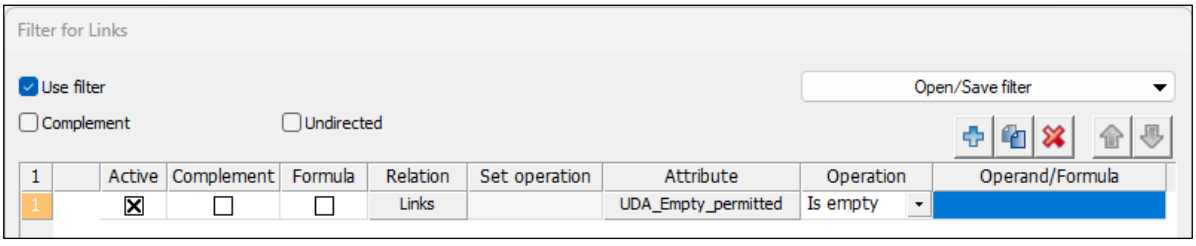

Figure 25: Filter for UDA for which empty values are allowed

Filters for blocks and block items have been newly introduced. It is a hierarchical filter that sets blocks or block items to an active or passive state.

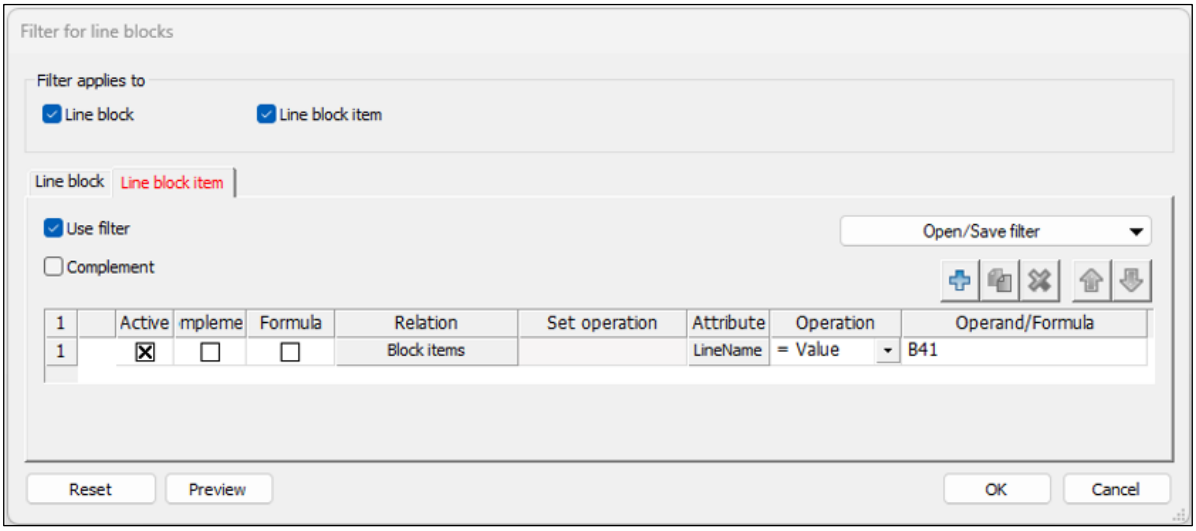

Figure 26: Filter for blocks and block items

Access to the filter is provided from the various windows and lists for blocks and block items. These include the line block editor, the tool window 'Block selection', and the lists for blocks and block items.

In the line block editor, the filter enables the highlighting of active objects. An additional option in the parameters of the line block view can be used to restrict the display to rows with active elements.

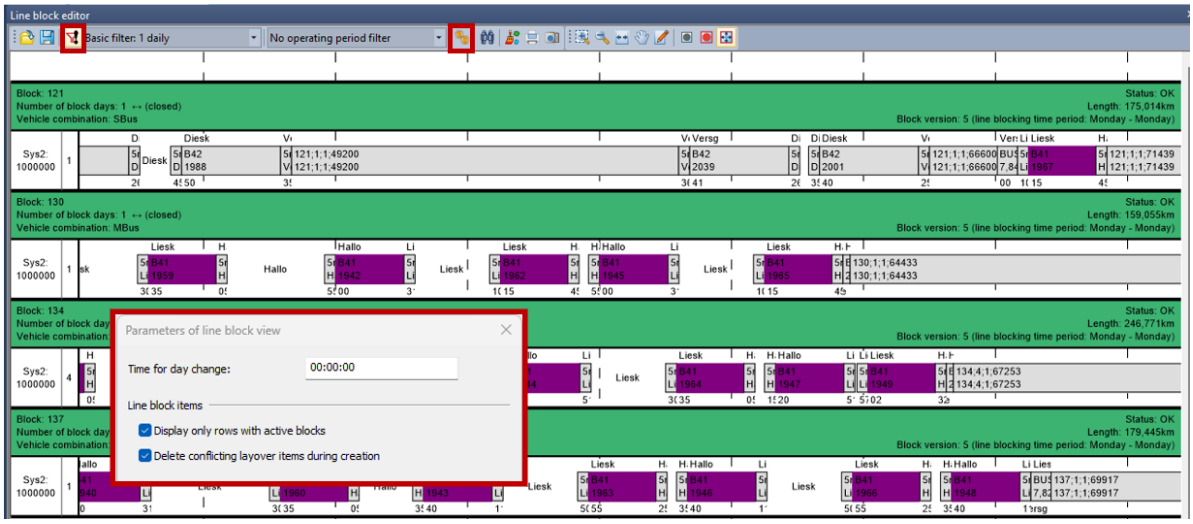

Figure 27: Line block editor – Display of blocks with active block items

A use case for this filter is the checking of imported blocks, e.g. by railML, where certain comments are stored in the user-defined attributes of blocks or block items. With the help of the filtered comments, the imported data can be checked more effectively.

4.5 Companion – Integration of AI-based support

Companion is your first point of contact for Visum support. It is an AI-powered conversational interface based on large language models (LLMs) and additional sources of knowledge. The underlying sources are restricted to product-related documents such as online help, sample descriptions, webinars, and other files. Therefore, it will not answer general questions that are not related to the product, like a general GPT (generative pre-trained transformer), helping to reduce the number of hallucinations and misleading answers.

Please note that some predefined system answers are only available in English and the AI may provide incorrect results. We therefore advise you to check the citations of the answers carefully. However, as AI evolves rapidly over time, answers will improve. In some cases, rephrasing your question can also lead to better and more relevant answers.

You still have the option of posting your inquiries via the existing channels. In the future, it will be possible to automatically create support requests from the conversation with Companion, thus ensuring a seamless transition.

Companion can be accessed from the Help menu and via the start page.

4.6 Colors of public transport lines

The color of a line is used for recognition for the passenger, but also the planner. The color can be found not only on the steels of the stop posts but also in all publications of the public transport service. The color information is included in many of the public transport data provided.
In Visum 2025, color attributes have been added to the line, which are populated interactively or imported with GTFS, HAFAS, and OpenStreetMap data. This data can be used in the route course layer, so that the colors shown correspond to the standard colors of the lines and they can be quickly recognized.

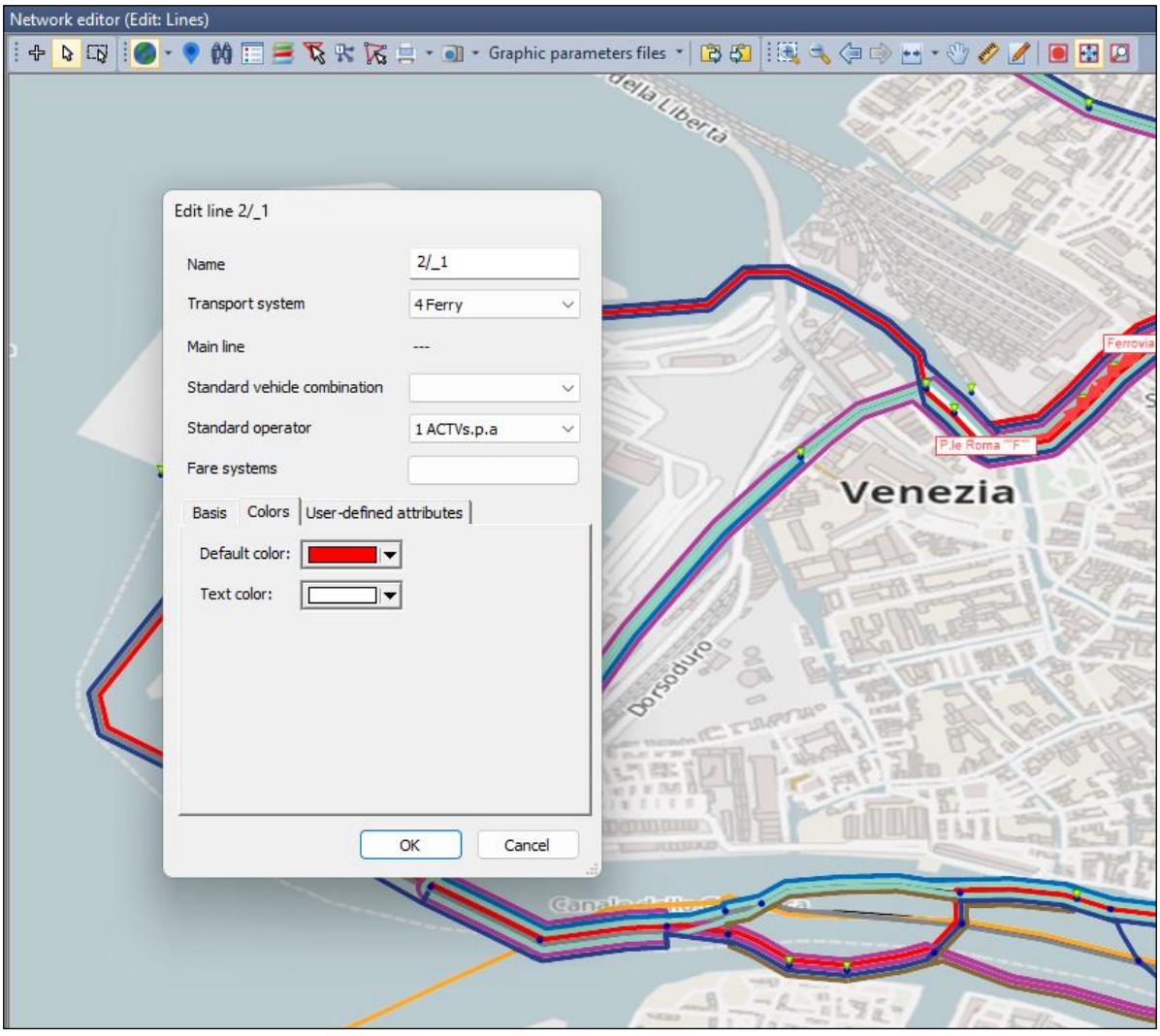

Figure 28: Editing the new color attributes for PT lines

5 Changes to the data model

5.1 Restructuring of the PT path data model

PT paths are the basic results of the assignments and their number in real models can be large. Rapid processing of these paths is essential for the evaluation of assignment results in the various tools provided in PTV Visum.

In Visum 2025, PT paths are based on a new, more efficient data model. This does not limit their functionality, but it provides some advantages.

- The evaluation of paths is greatly accelerated. This is particularly helpful for flow bundle evaluations (up to 60% faster), PT paths and volume filters (up to 30% faster), as well as for list filters and their exports.
- The data structure enables a path leg relation to the previous and subsequent path leg.
- The transfers between stop areas of the same stop are assigned the direct distance as the travel length.
- The separation of input and result data for ridership data was made possible.

5.2 Scenario management: Conversion of files to the current format

When a scenario management project is opened in a new release version, the project database is automatically converted to the current format, whereas all other files in the project remain unchanged. This means that data model changes, in particular their subsequent changes to the model transfer files, are not adopted. This potentially results in changed behavior with additional warnings and notes, which is time-consuming to investigate.

In Visum 2025, a new option allows to also convert the other relevant files when a scenario management project is opened in a newer software version. This includes the following files:

- base version
- model transfer files
- procedure parameters
- global layouts
- global layouts as the basis of comparison patterns

The files can be converted when opening a project, but also at a later point in time using the 'Update project files' button. The process of the conversion requires all selected files to be opened and saved in the new format. After the conversion, a summary report is generated and allows to accept or reject the changes to each individual file.

All files that can be read with Visum 2025 can be converted.

5.3 Global layouts of scenario management

The allocation of global layouts to scenarios in the 'Scenarios' tab has been removed. This global layout was applied to the input scenario before the calculation. Changing the allocation of global layouts affected the calculation status because global layouts can also contain filters. This was often undesirable.

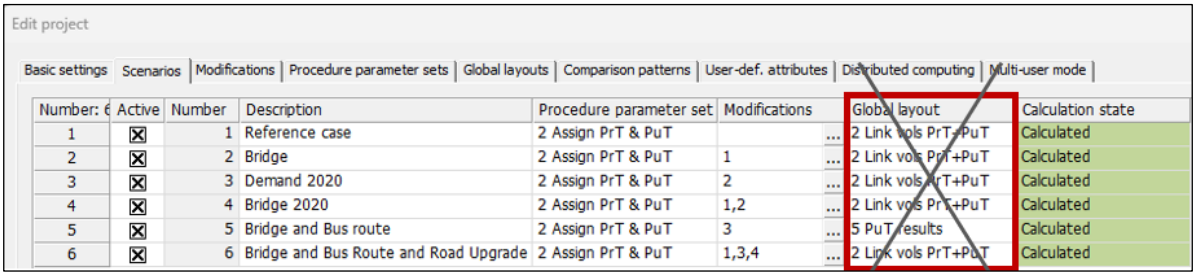

Figure 29: Scenario management – removal of the allocation of global layouts to scenarios

You can still use global layouts to analyze and display calculation results. To do this, use the 'Apply' entry from the context menu in the tab 'Global layouts' or the button 'Apply marked global layout to the background network'.

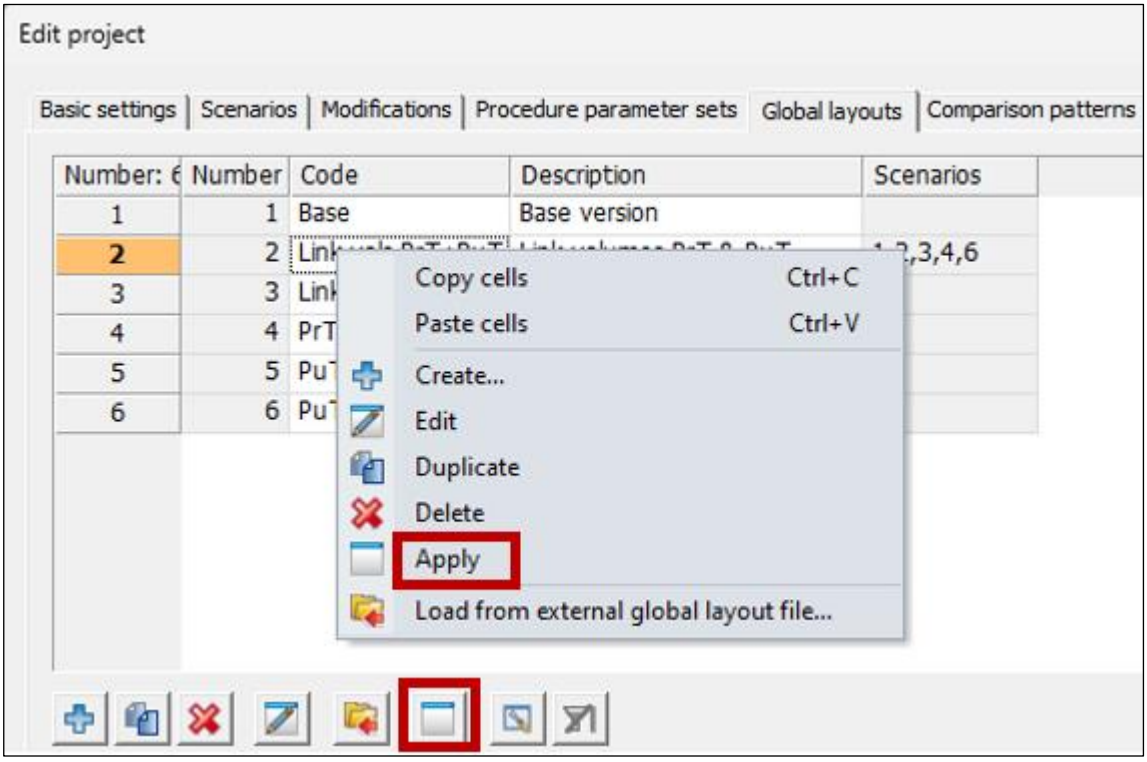

Figure 30: Scenario management – Options to apply a global layout to the loaded network

6 Technical changes

6.1 Changes to the COM-API

The following section lists changes to the COM-API for Visum 2025 compared to Visum 2024, which may require adjustments to your custom scripts. Please also refer to the Release Notes for a full list of changes.

- Aggregation of line routes

  The property ‚OnlyActive‘ was removed from the parameter object ILineRouteAggregationPara. To aggregate active line routes only, the method ILineRoutes.Aggregate must be called with a new explicit argument controlling this behavior:

  ILineRoutes.Aggregate ([in] VARIANT LineRouteAggPara, [in, defaultvalue(FALSE)] VARIANT_BOOL OnlyActive)

- Changed behavior for exports with attribute aliases

  So far, aliases have always been considered when exporting data to attribute files or databases. The respective methods now have an additional optional argument controlling this behavior. If the argument is omitted, this leads to a diverging behavior as aliases are then not considered for the export.

  This affects SaveToAttributeFile, SaveToAccessDatabase, SaveToSQLiteDatabase, and SaveToMsSqlServerDatabase for all lists and the generic method IIO.SaveAttributeFile.

- Adjustments to hierarchical filters

  The types and methods for hierarchical filters have been revised. All filters now have a property ‘Complement’. The class IGroupElementFilter was removed and is replaced by either ISelectableFilter or ISingleFilter. The latter is used for line route elements, time profile elements, and path items, which don’t support the selection of individual network objects. Therefore, the technical change does not affect the actual functionality.

- Only active items in line block list

  The SetObjects method of the line block list ILineBlockingBaseList now allows to restrict the list to active line blocks. To harmonize the method with the SetObjects methods of other lists, the signature of the method was changed from

  ILineBlockingBaseList.SetObjects ([in] VARIANT NewVersion);

  to

  ILineBlockingBaseList.SetObjects ([in, defaultvalue(FALSE)] VARIANT_BOOL OnlyActive, [in, optional] VARIANT NewVersion);

- Renaming of SurveyData to Ridership data

  The parameter class IReadSurveyDataParameters used in the procedure ‘Read survey data’ was renamed to IReadSurveyDataParameters. This also affects the corresponding methods at IOperation and the subclass IReadRidershipDataAttributeItemPara.

- New default for PrintNetEditor2D

  The default value assumed for the argument 'PrintPageOrientation' of the method IGraphic::PrintNetEditor2D had an invalid value. The default value is now ‘2’ (= automatic selection of the orientation). This was changed in Visum 2024.1-5.

The COM methods corresponding to discontinued functionality (see **Fehler! Verweisquelle konnte nicht gefunden werden.**) have been removed.

6.2 Discontinued functionality

The following functions have been removed:

- Procedure Tour planning: re-optimization of tour planning

  In the functionality for simulating ride pooling systems, the option for re-optimizing tours has been removed. The parameters ‘Tour optimization interval' and 'Calculation mode for tour planning' are no longer available. That means the tour planning algorithm without re-optimization successively dispatches trip requests in the order of their creation time and does not alter tours subsequently.

- Support of older MS Access versions

  The options for exporting lists and networks to older, no longer supported versions of Microsoft Access 2003 or older have been removed.

- Network merge mode

  The Network merge mode has been replaced in the past by various newer functionalities such as the version comparison, the creation of model transfer files, and the corresponding display of statistics.

- Balance & Epics

  Signal controllers of these products are no longer supported in Visum. The signalization type, the add-in ‘Preprocess Balance Epics’, and corresponding attributes in the ANM interface have been removed.

- WCF (Windows Communication Foundation)

  This component has been removed. Microsoft has discontinued its development and support. The removal affects distributed computing, as it is no longer possible to identify computing nodes automatically. A manual connection to a calculation node is easily possible with the information after starting the calculation server on the calculation node. The connection is also password-protected.

Please note that this list is limited to a few essential functions. Other functions that are no longer available are listed in the Release Notes.

6.3 Discontinuation of functionality in future releases

The following functions will be removed in future versions:

- PuT assignment: the option for 'Coordination everywhere' in the headway-based assignment will be removed because it has no relevance for practical applications as it assumes unrealistic conditions. Its careless use leads to misleading results.

- Interfaces: Connection to a ‘Personal Geodatabase’

  The function supports ArcGIS in the version up to 10.3. This version is outdated and is no longer supported by ESRI and therefore also removed in Visum.

- COM-API: AddIns

The set of AddIns installed with PTV Visum will be reviewed. Many AddIns have been superseded by built-in functionality or are no longer required. Please review the AddIns used in your model.

- 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/exporting Shapefiles into the network is not affected by this change.