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## + New Features and Changes

### Add-Ins

- + Accelerated Add-In 'Nested Demand Model': The AddIn 'Nested Demand Model' was accelerated for models containing many Demand segments. **(15295)**

### Miscellaneous

- + Visum icon with release number: For a better distinction of different Visum installations the PTV Visum icon includes now the release number. **(15263)**

### Network Editor

- + Undo of creating or deleting POI categories: Undo and redo can now be used for the creation or deletion of POI categories without deleting the last actions. **(15212)**

### Timetable Editor

- + Improvements: The tabular timetable editor got some small improvements. The attributes at pass-through stops are shown in tooltips. Attribute values are generally centered. The selection in the vehicle journey items is synchronized with the global stop point selection. Settings for service trip patterns in the regular services mode can be altered directly from the grid. **(15177)**

## ✓ Fixed Bugs

### ANM

- ✓ Broken data at nodes with identical coordinates: When two nodes connected by a link have identical coordinates, the ANM export would eventually produce broken data. The link was missing completely, and turns were only present for the first node, leading also to routes using the link being broken. This error was fixed. **(15197)**

### Add-Ins

- ✓ CalculateMatrix: If string comparisons were used for the expression in "changing cells only if", the calculation was canceled with an error message. This bug was fixed. **(15193)**

### Add-Ins, Demand Procedures

- ✓ Infinite Values in the 'Nested Demand Model': If infinite values (infinite large and small) occur during calculation, the procedure continued using '0'. This issue is solved. **(15298)**

### COM

- ✓ Checking complex object keys in SetMultipleAttributes and SetMultiAttValues: When setting attribute values through SetMultipleAttributes or SetMultiAttValues for object types with complex composed keys (e.g. line routes), the check for existing objects with the same key did not work properly. This was fixed. **(14472)**

### COM-API

- ✓ IVehicleJourneys.RemoveAllItems: The program does not crash anymore if the method RemoveAllItems of the IVehicleJourneys-Object is called. **(15336)**

### Daten Model

- ✔ Walk times between stop areas: If the number of a stop area was changed in a way that it influences the order of stop areas of one stop, then the walk times were wrongly swapped. The same happened if a new stop area with a smaller number as other stop areas of the same stop was added. This error has been fixed. **(15380)**

## Dialogs

- ✔ Edit POI-Categories: The Undo-function did not work properly after adding, editing or deleting POI categories. The command history was reset without warning, and in some situations Visum crashed. A messagebox now warns about the reset of the command history when adding or deleting POI categories (this can be switched off) **(15065)**
- ✔ Editing flow bundle term: In the dialog 'Edit flow bundle term' of Active lines the options 'Active vehicle journeys' and 'Active vehicle journey sections' under Tab 'Filtering' have been colored in yellow even if the selection was unchanged compared to the moment when the flow bundle was last executed. This error has been fixed. **(15248)**
- ✔ railML-Export: Visum no longer crashes when the attribute selection in the dialog 'Export to railML' is changed after the dialog was already opened before for another network loaded in the same Visum session. **(15155)**

## Formulas

- ✔ Initialize formula matrices: Formula matrices cannot anymore be initialized. 'Initialize' can only be applied to data matrices and changes their values to zero. So far the initialization of a formula matrix resulted in the deletion of the formula itself. **(14807)**

## Graphical Procedures

- ✔ Flow bundle with vehicle journey section conditions: Visum won't crash if a graphic parameter is imported, which contains a flow bundle condition of a vehicle journey section, which won't exist in the network. **(15321)**

## Graphics

- ✔ Diagrams of Enumerations: It's possible to display attributes containing enumerations. **(15331)**
- ✔ Graphic parameters and deleting POI categories: After undo of a deletion of a POI category, the original graphic parameters haven't been applied, but the default parameters. This error has been fixed. **(15317)**

## I/O Interfaces

- ✔ Import of PuT supply from Visum: So far the import settings allowed to define the attribut 'Number' for the comparison attribute in the source network. The import could fail when several stop points must be created from one stop point or a stop point with this number already exists in the target network. To avoid this cause of failure the selection of 'Number' is not possible anymore. **(14188)**
- ✔ Messages during export to database: When errors occur during the export of lists to databases, it was not possible to suppress further similar messages ('No further warnings'). This is now possible. **(15166)**
- ✔ SATURN-Import with empty rows: When a row in a \*.dat-file only contained blanks, the SATURN-Import would get tracked in an infinite loop. This bug was fixed. **(15206)**
- ✔ Synchro import: If in the input Synchro network two nodes are connected by multiple links with intermediate nodes (of Type 'Bend'), the data could not be imported. This is now possible. **(15314)**
- ✔ railML export: The .xml file could be invalid, when warnings appeared during the railML export process. This error has been fixed. **(15203)**
- ✔ railML import: The corresponding vehicle section could not be inserted, if at the first or at the last operation control point of a 'trainPart' element boarding and alighting, respectively, is not permitted. Now boarding or alighting will be permitted and a corresponding message is issued. **(15223)**

## Junction Editor

- ✔ Vissim-Preview for roundabouts: The ANM-export from the junction editor to the Vissim-Preview did not contain some link attributes relevant for roundabouts. This error has been fixed. **(15200)**

## Lists

- ✔ Abort calculation of PuT path lists: Visum could crash if the calculation of a PuT path (-legs) list was aborted by the user. This issue is solved. **(15346)**
- ✔ Aggregation results when writing version files: If lists with aggregation results existed, the aggregated values became occasionally invalid. This error has been fixed. **(15266)**
- ✔ Endless loop when building up an list: If an attribute whose calculation takes some time is included in a list view, PTV Visum sometimes got in an endless loop during building up the list view. This bug has been fixed. **(15393)**

## Matrix Editor

- ✔ Filter in matrix view options: To set a filter in the view options of the matrix editor could take a long time. This functionality has been accelerated. **(15277)**
- ✔ Pan mode in matrix comparison: The pan mode could not be toggled using the space key in the matrix comparison window. This was fixed. **(15050)**

## Matrix Estimation

- ✔ Missing paths for TFlowFuzzy: TFlowFuzzy cannot work, if routes are not saved during the assignment prior matrix estimation. An error message is shown if the matrix estimation procedure fails because of missing routes. **(14508)**
- ✔ Use of filter matrix in TFlowFuzzy: The program does not crash anymore if a filter matrix is used to only update active OD relations (option 'Adjust only active OD pairs'). **(15290)**

## Network Editor

- ✔ Aggregate line routes: The program does not crash anymore when aggregating line routes if line routes without time profiles exist. **(15213)**
- ✔ Rotate text objects: It's now easier to access the rotate functionality. **(15148)**
- ✔ Shifting of zone or main zones: The program does not crash anymore when shifting zones or main zones. This was the case when labels or in a diagram attributes of matrix row or matrix column sums have been used. **(14975)**

## PrT Assignment

- ✔ Matrix time series and connectors by share: If a PrT demand segment uses a matrix time series and if there are zones with multiple connectors using shares for total trips, the demand used within the PrT assignment could be too high. This bug has been fixed. **(15218)**
- ✔ Procedure Route import: The program does not crash anymore during the procedure 'Route import' if the imported routes contained cycles. **(14983)**
- ✔ Warm start in Assignment with ICA: Warmstarting and assignment with ICA did not work when multiple demand segments were assigned simultaneously. In this case, the existing assignment result was always discarded. This bug was fixed. **(15230 🚫)**

## PrT Assingment

- ✔ Node Impedance calculation at signalized nodes: Visum won't crash during the node impedance calculation at signalized nodes if the cycle time isn't an integer. **(15377)**

## Procedure Sequence

- ✔ Go to the operation: Visum no longer crashes when two 'Go to' procedures in the procedure sequence have the same procedure as the jump target. **(15345)**

## Procedure Sequence, Scenario Management

- ✔ Too many Visum instances: When calculating several scenarios or applying the distributed execution of procedures the number of instances started was not in line with the settings in the user preferences. This was the case for using several cores of one machine as well as for using several computation nodes. This error has been fixed. **(15311)**

## PuT Assignment

- ✔ Capacity-restrained assignment and circle lines: The program does not crash anymore if in a timetable-based PuT assignment the walk time is 0s and the PuT supply contains circle lines. **(15247)**
- ✔ Timetable-based assignment with MPA: The timetable-based assignment could not be executed properly, if through the use of MPA more than 65535 virtual zones were generated. This error has been fixed. **(15214)**

## Scenario Management

- ✔ Key conflicts for POIs: When new POIs of the same POI-Category were added in separate modifications, key conflicts could occur in scenarios using combinations of these modifications. This is now avoided for new modifications, except when identical key values are used explicitly. **(15164)**

## Schematic Line Diagram

- ✔ Delete line: When deleting a line the entire selection of vehicle journeys was lost in the schematic line diagram if the level 'Vehicle journeys' has been used and the level 'Line and direction' has not been used before. **(15199)**

- ✔ Delete vehicle journeys of an edge: If vehicle journeys of a marked edge are deleted from the selection of vehicle journeys via the context menu, the selection of vehicle journeys was only changed temporarily when the level was set to 'Lines and directions'. The deleted vehicle journeys appeared again after the version was saved and opened again. This error has been fixed. **(15183)**
- ✔ Set window section: When using the icon Set window section to enlarge the rectangle remained until the next drawing action. This error has been fixed. **(15189)**
- ✔ Reading of layout file: Opening of a layout file or interactiv changes of the layout in the schematic line diagram could lead to instable results, e.g. different edge courses could be generated for identical changes using the same data. This error has been fixed. **(15303)**

## Timetable Editor

- ✔ Extending/shortening vehicle journey sections: If vehicle journey sections have been shortened or extended by selecting a From/To time profile item or identifier in the tabular timetable, it was possible to also select time profile items at which boarding or alighting was not allowed. This error has been fixed. **(15371)**

## Visum Files

- ✔ Quotes in \$O-format matrix files: When quotes were used in zone names stored in matrix files in \$O-format, these files could not be read. This bug was fixed. **(13134)**
- ✔ Reading detectors from network and model transfer files: When reading network or model transfer files, the association of detectors to lanes at main nodes did not correctly account for the leg orientation of the cordon links. This was fixed. **(15286)**
- ✔ Writing model transfer files: After writing a model transfer file the loaded network was considered as changed. This error has been corrected. **(15368)**
- ✔ Writing model transfer files: If the option 'Hide attribute with default values' was active all attributes have been compared and written to the file, also those which were not selected by the user. This error has been fixed. **(15367)**

## ❗ Breaking Changes

### PrT Assignment

- ❗ Warm start in Assignment with ICA: Warmstarting and assignment with ICA did not work when multiple demand segments were assigned simultaneously. In this case, the existing assignment result was always discarded. This bug was fixed. Therefore, the Assignment with ICA will now regard the existing assignment result for warm starting, leading to different final assignment results. **(15230)** ✔

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## + New Features and Changes

### Dialogs

- + Supply selection of the flow bundle: On the 'Supply' tab of the 'Edit flow bundle term' dialog, a shortcut menu has been added with the entries 'Select all', 'Remove selection for all', and 'Select marked items exclusively'. **(14268)**

### PuT Assignment

- + Assignment with MPA: The combination of the volumes after an assignment with MPA has been accelerated. **(15080)**

### Timetable Editor

- + Repeatedly traversed stops, Opening from search windows: If a stop of a line route is traversed repeatedly and the respective line route items are allocated to the same item of the stop sequence, in the tabular timetable, this is indicated by appending '...' to the output. The tooltip displays the attribute values of all traversings. Moreover, both timetable editors as well as the block editor can now be opened directly from different search windows, e.g. for links, stop points, or blocks, via new shortcut menu entries. The object selection is automatically adjusted to the selected search hit. **(13784)**

## ✔ Fixed Bugs

### Data Model

- ✔ String length of indirect attributes: The maximum string length for attributes under Network settings can be exceeded if the aggregate function Dictinct or DistinctActive is used for indirect attributes of at least two relations. **(15167)**

## Dialogs

- ✔ Dialog 'TSys/Modes/DSEg': A crash no longer occurs if you create a transport system while the licenses for PrT and PuT are switched off or if you create a demand segment yet no license (PrT or PuT) is available for any of the existing modes. **(14992)**
- ✔ Special characters in message windows: The character '&' which is frequently used in formulas was not displayed in message and warning windows. This was fixed. **(15079)**

## Formulas

- ✔ Changes to BDA definitions and Undo: If you changed the definition of a user-defined attribute and later undo it, the necessary adjustments at formula matrices were not reset to the previous state. This error has been fixed. **(15046)**
- ✔ Column and row numbers of formula matrices: The calculation of the column and row sums of a formula matrix could yield false and ever-changing values if they were simultaneously called from a parallelized context, for example by calculation of the summation rows in lists. This error has been fixed. **(15128)**
- ✔ Numbers in matrix references: If a number occurred in the first place of a matrix reference which did not exclusively contain numbers (e.g. 'Matrix ( 3 = [ATTRIBUTE] )' ), the reference was not resolved correctly. This error has been fixed. **(14878)**

## Graphical Procedures

- ✔ Evaluating PrT flow bundles: The evaluation of a PrT flow bundle was slowed down unnecessarily when using multiple cores, in fact all the more so the more cores were used. This error has been fixed. **(14835)**

## Installation

- ✔ 'Silent' installation: Even if a 'silent' installation was required by command line parameter, the user was queried in specific cases. This error has been fixed. **(14374)**

## Lists

- ✔ PrT path lists: A crash no longer occurs if a procedure sequence is run while the PrT path list is open with a set origin zone filter after deleting the zone used for the filter. **(15024)**
- ✔ Territory PuT detail list: Visum no longer crashes when editing the network if the Territory PuT detail list displays projected user-defined attributes in the procedure 'PuT operating indicators' beforehand and the display is grouped by at least one column. **(15078)**

## Lists, Junction Editor

- ✔ Deleting via DEL-Key: When pressing the DEL-key the currently selected network objects in the network editor were unintentionally deleted while working in lists of network objects which cannot directly be selected. The same applied to the junction editor if none of the objects were selected. Now the selected network objects in lists and the junction editor, respectively, are deleted, if that is possible, but selected objects in the network editor are unaffected. **(14538)**

## Matrix Editor

- ✔ Arithmetic operations on entire rows or columns: A crash no longer occurs if you mark an entire row or column by clicking a row or column header and then use function 'Arithmetic operations on marked section' after exiting the selection dialog for the operand with 'OK' without any further action. **(15081)**

## Network Editor

- ✔ Creating POIs with restricted category selection: If the network editor was restricted to one POI category and its subcategories and this category had both one parent category and at least one subcategory, no categories could be selected when creating a POI. This error has been fixed. **(15175)**
- ✔ Creating profile points: The Multi-edit special function 'Create profile points for line route items' used to permit boarding and alighting at the new profile points if they were located at a stop point. This error has been fixed. **(14928)**
- ✔ Marking of linear POIs: In the network, it was sometimes difficult to mark linear POIs, i.e. polygonal POIs with an open polygon, with the mouse. This error has been fixed. **(15103)**
- ✔ Moving point objects: If two point objects (or points of point/polygonal objects) were located closely enough, the other object was sometimes moved when clicking one object and trying to move it with the mouse. This bug has been fixed. **(15010)**

- ✔ Moving stop points: When moving a link stop point (directed or undirected) along the same link, values of user-defined attributes of line route items were lost, even if the order of all stop points on the link remains unaltered. This error has been fixed. **(14962)**
- ✔ Splitting a link: When splitting a link, the new node was placed at the position 0/0 at first. Only after moving the mouse, the mouse position was used. This bug has been fixed. **(15109)**

## PrT Assignment

- ✔ Analysis time intervals in dynamic assignment: When executing a dynamic PrT assignment DUE with option 'Use time intervals as analysis time intervals' deactivated, the current time interval was set back to the first analysis time interval. This error has been fixed. **(15093)**
- ✔ Formula and data matrices: A crash no longer occurs in different PrT assignment procedures if a data matrix is allocated to one of the demand segments to be assigned while, in the same step, a formula matrix is allocated to a different demand segment. This applied to the procedures LUCE, TRIBUT-Equilibrium\_Lohse, Stochastic assignment and Dynamic stochastic assignment. **(15124)**
- ✔ ICA calculation: So far, slightly different results could occur when repeatedly executing the ICA calculation. This error has been fixed. **(15016)**
- ✔ Stochastic and dynamic stochastic assignment: So far, the detour test in the context of the stochastic or dynamic stochastic assignment failed to compare the run times of all links of the mesh distinguishing the paths. This error has been fixed. **(15115)**

## PuT Assignment

- ✔ PuT-Aux in headway-based assignment: In headway-based assignments, paths were sometimes not found if they were covered with PuT-Aux transport systems only. This error has been fixed. **(14926)**

## PuT Passenger Survey, Lists

- ✔ A crash no longer occurs if a non-trivial path status filter is set in the PuT paths list and imported yet not plausibilized survey data exist. **(15151)**

## Scenario Management

- ✔ Write protection warning: A warning concerning a possibly existing write protection of the respective file is no longer issued when finishing the edit of a modification or when opening the base version. It is not required as the file is only read in both cases. **(15126)**

## Subnetwork Generator

- ✔ Transfer of tour-based demand model: The generation of a subnetwork with option 'Include the demand model in the subnetwork' activated failed if the network contained a demand model of the type tour-based model including an activity pair with a reference to a time series. This error has been fixed. **(15084)**

## Timetable Editor

- ✔ Creating vehicle journeys: The tabular timetable as well as the 'Vehicle journey items' list were not refreshed when creating a new vehicle journey. This error has been fixed. **(15083)**
- ✔ Optimum column width in the tabular timetable: If you set the optimum column width in the tabular timetable by double-clicking one of the separators in the column header of the items grid, the separators and the column header diverged. This error has been fixed. Furthermore, the calculation of the optimum column width no longer considers the column header but the column width is exclusively adjusted to the content of the cells. **(14209)**

## Visum Files

- ✔ 'Effective control type' at nodes and main nodes: After reading in a version file, the attribute 'Effective control type' could display a false value in case of signalized (main) nodes with external control of the signal control (Vissig) if the associated sig file did not contain a signal program. This error has been fixed. **(14977)**
- ✔ Compared attributes in model transfer files: If the compared attributes should also be saved to file when generating a model transfer file, so far, the program only saved attributes of tables which contained at least one object with deviating data. This error has been fixed. **(15087)**



## + New Features and Changes

### Graphics

- + Background maps (Bing Maps): The license for the use of the map service 'Bing Maps' by users of PTV Visum with a maintenance contract has been extended for three more years. **(13823)**

### Junction Editor, PrT Assignment

- + ICA calculation for signalized nodes: If a shared lane at a signalized node has different signal groups, a warning indicating this characteristic is now issued during an ICA calculation. The calculation is still executed. **(14961)**

## ✓ Fixed Bugs

### ANM, Data model

- ✓ The attributes 'Roundabout circulating speed' and 'Roundabout circular lane width' used to have pointless defaults at main nodes which led to error messages during ANM exports to Vissim. These defaults have been improved. **(14971)**

### COM

- ✓ Opening an attribute file: If you read in an attribute file via COM which contained several columns for the same attribute, the dialog to allocate the attribute IDs opened. This error has been fixed. **(15034)**
- ✓ Releasing IMapMatcher objects: A crash no longer occurs if you release an IMapMatcher object only after the network to which it refers (it is generated from INet) no longer exists, because, for example, a different version file has been opened. A further use of the IMapMatcher object is still not secure after the destruction of the reference network. **(14820)**

### Data Model

- ✓ Editing durations: Wrong values could be stored when editing duration values in the format m:s (minutes:seconds). This was fixed. Additionally, the evaluation of decimal places for durations was restricted to situation when either pure seconds or full durations with hours, minutes and seconds are entered. **(15042)**

### Dialogs

- ✓ Improvement of the 'Demand data' dialog: When finishing the entry of a start time on tab 'Demand segments' of the demand data dialog, this entry was not displayed in time format, but the numbers were displayed as entered. Further updates were missing in the dialog. The error has been fixed. **(14993)**
- ✓ Indirect deletion of constraints: If you deleted a demand stratum indirectly by deleting a person group or an activity in a demand model of type EVA-P, the corresponding entry remained on the 'Constraints' tab. This error has been fixed. **(14995)**

### Dialogs, Formulas

- ✓ In dialog 'Demand data' as well as in the parameter dialogs of different procedures, switches between upper case and lower case letters in a matrix reference were not saved. This error has been fixed. The evaluation of matrix references depends on the use of upper case and lower case letters. **(14998)**

### Dialogs, Matrix Editor

- ✓ Adding an external matrix: If you selected an external matrix in dialog 'Select operand' of the matrix editor to, for example, add it to the current matrix, the 'OK' button was grayed out. This error has been fixed. **(14913)**

### Foreign Formats

- ✓ VDV452 import: Data sets of the table OPERATING\_DEPARTMENT in which attribute OP\_DEP\_NO has value 0, could not be imported so far even though value 0 is permitted. This error has been corrected. This case can only occur if the VDV data are imported without line blocks. **(14963)**

### Graphics

- ✓ Markings with thick borders: Markings with thick borders are no longer cut off when drawn. **(15011)**
- ✓ User Agent and background maps: When calling background maps in the information issued as 'User Agent', so far, Visum declared that the call was done from a Windows XP system. In some environments, the requests were not allowed as a result. This error has been fixed. **(15032)**

## I/O Interfaces

- ✔ Add-In GTFS-Import: When importing files containing some special characters, the Add-In would stop the import. This was fixed and the messages during the import were improved. **(14892)**

## Installation

- ✔ Dongle not accessible: So far, you could not close the installation if the dongle was not accessible. This error has been fixed. **(14721)**

## Junction Editor

- ✔ Switching the node in the Vissim preview: If you switched to another node in the junction editor while the Vissim preview was open, the program sometimes issued an error message instead of displaying the newly selected node. This error has been fixed. **(14677)**

## Lists

- ✔ Timetable Editor: Jump to the top (Ctrl + Pos1): If you jump to the top using the shortcut Ctrl + Pos1, the list did not scroll up if it contained an analysis row. Similarly, in the tabular timetable, the focus only jumps to the first column yet without scrolling the timetable. This error has been fixed. **(15013)**

## Main Window

- ✔ Width of tool windows: In situations where no docked main window existed, tool windows were a great deal too wide. This error has been fixed. **(15025)**

## Miscellaneous

- ✔ Chinese demo version: The demo version of PTV Visum ran in an infinite loop if it was started in Chinese. This error has been fixed. **(15052)**

## Network Editor

- ✔ Disaggregating lines: A lot of storage space was used when disaggregating lines with the risk of not being able to perform the operation in larger networks. This error has been fixed. **(14402)**
- ✔ Editing polygons: Editing polygons that exist of enclaves only no longer leads to a crash. **(15037)**
- ✔ Selecting a polygon: Visum no longer crashes while in mode 'Edit polygon' of the network editor if you open a new network (by loading a different network or via menu 'File > New'). **(15007)**

## PrT Assignment, PuT Assignment

- ✔ Time series of matrices and formula matrices: In the two assignment procedures 'Headway-based assignment' (PuT) and 'Dynamic equilibrium assignment DUE' (PrT), no formula matrices could be used in combination with matrix time series. This error has been fixed. **(14921)**

## Procedure Sequence

- ✔ 'Open' icon for files: Clicking the Open icon in the File column of a procedure step with reference to a file did not always open the right directory (i.e. the project directory of the file type or, if an absolute path was specified, the absolute path). This error has been fixed. **(15027)**

## Schematic line diagram

- ✔ Swapping edges: If you swapped two marked edges in the schematic line diagram, so far, the edges were swapped without the label options ('Show centered label'). This error has been fixed. **(15022)**

## Timetable Editor

- ✔ 'Divergence' of the tabular timetable: In specific cases, the tables for vehicle journeys and vehicle journey sections diverged, i.e. columns belonging together were not displayed one below the other any more. This error has been fixed. **(14959)**
- ✔ Marking in the tabular timetable: If you used the arrow buttons of the middle or the lower scroll bar to scroll the tabular timetable, the marking was sometimes lost. This error has been fixed. **(14914)**

## Visum Files



- ✔ Saving matrix data files: A crash no longer occurs if option 'Save matrix data as separate matrix data file' is checked and the version and the matrix file are then saved under a different name for the first time. **(15055)**

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## + New Features and Changes

### Foreign Formats

- + 6-digit HAFAS format: Since HAFAS version 5.40, train numbers can have six digits. PTV Visum now also supports this format when importing HAFAS raw data. **(14635)**
- + VDV452 export: The VDV452 export has been improved on certain points. Now, a vehicle length is always written in VEHICLE\_TYPE. Furthermore, a table JOURNEY\_WAIT\_TIME has been added and user-defined attributes are saved for blocks if blocks exist and the general option is checked. **(14737)**

### Lists, Visum Files

- + POI list: In the general POI list (thus the list of all POIs, not the POIs of a specific category), POIs are now sorted differently. The list sorts first by the category number and then by the number. This way, the list is sorted in the same way as the lists of the POIs of a category including its subcategories. The same applies to attribute files generated on the basis of this list. **(14861)**

### PrT Assignment

- + Acceleration of the LUCE procedure: The PrT assignment procedure LUCE has been accelerated, particularly in networks with very high impedances. **(14941)**

### Procedure Sequence

- + Expand all groups: You can now expand all groups in the procedure sequence with a single (new) operation. **(13356)**

## ✔ Fixed Bugs

### ANM

- ✔ Paths via just one node: So far, paths which led via exactly one node (i.e. origin zone - connector - node - connector - destination zone) were also written to the anmRoutes file during an ANM export. As a result, the anmRoutes file could not be read in PTV Vissim. This error has been fixed. **(14865)**

### COM

- ✔ Access to nodes of a path: A crash no longer occurs when accessing the nodes of an assignment path via IDemandSegment.GetPathNodes. **(14868)**
- ✔ IMarking.Add with just one network object: Calling the method Add at the IMarking object no longer causes a crash if a single network object is passed as parameter. The crash only occurred in certain programming languages (e.g. VBA) while others (e.g. Python) were not affected. **(14932)**
- ✔ INodes.ItemByKey: If, at an INodes container, you called method ItemByKey with a key for which no object existed in the container, further calls afterwards even failed if the container included an object with a matching key. This error has been fixed. **(14869)**

### Demand Procedures

- ✔ Nested mode choice and matrix references: The use of matrix references decelerated the calculation of the 'Nested mode choice' procedure. It has now been accelerated accordingly. **(14855)**
- ✔ Mode choice (4-step model), nested mode choice, EVA weighting and Time-of-day choice: In procedures 'Mode choice' and 'Nested mode choice' of the 4-step model as well as procedures 'EVA weighting' and 'Time-of-day choice', the specified transformation was ignored at each constant term in the utility definition, i.e. the constant was used as specified. This error has been fixed. **(14930)**

### Dialogs

- ✔ Auto value 'erstellt am' (created on): The German auto value 'erstellt am', used as a label (print frame, legend), was not translated into any other language. This error has been fixed. **(14590)**

- ✔ Edit line routes, set route points: So far, clicking the 'Set exclusively' button in the subdialog 'Set route points' of the 'Edit line route' dialog did not set the route point property exclusively, i.e. route points which already had the desired property kept them even if they did not meet the required criterion. If option 'Adapt time profiles automatically' on tab 'Items and time profiles' was also active, the setting only affected the first route points that were switched on or off, but not all route points. Both errors have been fixed. **(14943)**
- ✔ Units in case of classification in graphic parameters: If graphic parameters are classified by an attribute with units, in the table, the units in the column of the class limits were not treated correctly. Particularly in the Edit mode of the cell, the internal value was displayed without a unit and entries with units were not accepted either. This error has been fixed. **(13049)**

## Dialogs, Network comparisons

- ✔ A crash no longer occurs if the Edit network object dialog is open for a network object for which user-defined attributes of the type formula exist which stem from a version comparison. Such attributes are no longer displayed in the Edit network object dialog (analogous to formula attributes of your own network). **(14901)**

## Foreign Formats

- ✔ Directions in VDV452 export: So far, the VDV452 export could not be carried out if the directions in Visum did not have the codes ">" or "H" and "<" or "R". This error has been fixed. **(14912)**

## Graphical Procedures, VISUM Files

- ✔ If you read a (binary) graphic parameters file while the 'Graphics tools (Flow bundle)' tool window was open, the flow bundle definition contained in this window was not displayed immediately, but only when clicking the 'Reset to parameter of the last execution' icon. This bug has been fixed. **(14490)**

## Matrix Editor

- ✔ Non-symmetrical external matrices: The Quick view displayed a false diagonal sum (attribute diagonal sum) when editing a non-symmetrical external matrix. This error has been fixed. **(11451)**
- ✔ Opening skim matrices automatically: When calculating skim matrices, you can optionally open them. During the execution, a matrix editor will then be opened for these matrices. In the past, this also happened if a matrix editor already displayed the data. This error has been fixed. **(13332)**

## Network Editor

- ✔ Deleting enclaves, normalizing surfaces: Crashes could occur when using the two functionalities 'Delete enclaves' and 'Normalize surfaces' for polygonal network objects if operations were undone afterwards. Furthermore, lists were not updated. Both errors have been fixed. **(14851)**
- ✔ Floating dialog for lines, line routes, system routes, and PrT paths: In the floating dialog for lines, line routes, system routes, and PrT paths, you can now navigate the list of objects with the mouse keys again, if the focus is on the table of the objects. This includes the navigation with the mouse wheel. **(14434)**

## Network comparisons

- ✔ Attributes with subattribute 'transport system': A version comparison based on attributes now also works for attributes with subattribute 'transport system' if the code of the transport system contains small letters. **(14817)**
- ✔ Codes of demand objects in model transfer files: So far, it was impossible to change the code of an object of the demand model (e.g. demand stratum, activity, person group, etc.) by means of a model transfer file. This error has been fixed. **(14864)**

## PrT Assignment

- ✔ ICA, on-street parking: The parking maneuver rate is now calculated correctly when both left-hand side and right-hand side parking are possible and there is only one lane group on the approach. The parking maneuver rates for left- and right-hand side are now added, while previously only one of the values was used. **(14909 🚫)**

## PrT Assignment

- ✔ Bypass in ICA calculation: So far, a turn in a roundabout was considered a bypass in the context of the ICA calculation, even if the attribute 'Share bypass volume' had value 0. Such a turn then had unlimited capacity and neither capacity nor tCur were calculated. Turns with a 'Share bypass volume' of 0 are now considered common turns, so that capacity and in-vehicle time are calculated. **(14853 🚫)**

## Timetable Editor

- ✔ Switching the current analysis time interval: The graphical timetable was not refreshed if you switched to the next analysis time interval and selected an attribute with the subattribute 'CurlInt'. This error has been fixed. (14922)

## VISUM Files

- ✔ Corrupt version files due to vehicle journey items: With the service packs Visum 14.00-00 to 14.00-11, you could save version files with inconsistent vehicle journey items. So far, reading such files led to crashes or you could continue editing the data and the program crashes later on, for example during a PuT assignment. The cause was eliminated with VISUM-14738 (in Visum 14.00-12). Visum can now identify affected version files and repair them if possible. In this case, data will be lost at vehicle journey items (volumes as well as values of user-defined attributes). A warning appears when opening and correcting an affected version file. (14897)

## ❗ Breaking Changes

### PrT Assignment

- ❗ ICA, on-street parking: The parking maneuver rate is now calculated correctly when both left-hand side and right-hand side parking are possible and there is only one lane group on the approach. The parking maneuver rates for left- and right-hand side are now added, while previously only one of the values was used. This changes results of both ICA calculation and assignment with ICA. (14909 ✔)

### PrT Assignment

- ❗ Bypass in ICA calculation: So far, a turn in a roundabout was considered a bypass in the context of the ICA calculation, even if the attribute 'Share bypass volume' had value 0. Such a turn then had unlimited capacity and neither capacity nor tCur were calculated. Turns with a 'Share bypass volume' of 0 are now considered common turns, so that capacity and in-vehicle time are calculated. The results of the ICA calculation and assignment with ICA change accordingly. (14853 ✔)

## 14.00-13 [96560]

2015-05-04

## + New Features and Changes

### Main Window

- + Initial position of new windows: If you open a new window (e.g. a list, timetable editor), it will now be displayed as topmost window in the group which currently has the focus (so far: in the group in which the last new window has been opened). (14233)

### PuT Assignment

- + Negative vehicle journey impedance in search: If a vehicle journey items attribute was specified for the search impedance of the timetable-based assignment and delivered negative values, these negative values were cut at 0 so far. Now, the total of all (search) impedance components for each path leg is cut at 0, i.e. negative attribute values enter the impedance as long as the value is not higher than the values based on journey time, number of transfers, and transport system supplement. In addition, the aggregate function 'Minimum' always returned 0 as a result. This error has been fixed. (14798 ❗)

### Scenario Management, VISUM Files

- + Projects with many POIs: Loading scenarios (base version and modifications) with a lot of POIs in various categories has been accelerated significantly. Besides scenario management, reading model transfer files as well as reading network files additively also benefit from this. (14423)

## ✔ Fixed Bugs

### VISUM Files

- ✔ 'Nested mode choice' procedure: Matrix references at root nodes were lost when saving the parameters of the 'Nested mode choice' procedure to a binary procedure parameters file or a version file (\*.par or \*.ver). This error has been fixed. (14836)

## COM

- ✔ Loading a database: Errors that occurred when loading a database via COM (using the `IVisum.LoadAccessDatabase` method) were not passed on as messages. This error has been fixed. **(14811)**

## COM, Listings

- ✔ `IList.SaveToAccessDatabase`: The export of a list via COM to an Access database (`SaveToAccessDatabase`) no longer leads to a crash if the path to the target database has a valid length (< 255 characters), the entire connection string, however, has more than 255 characters. **(14805)**

## Data Model

- ✔ Editing polygons via WKT string: If you changed the polygon of a polygonal network object (e.g. zone or POI) by editing the attribute WKT string (for example in a list or via COM), then edited the shape of the polygon in the network editor and finally opened and closed the Edit dialog for this object without making any changes, the polygon was reset to the state before editing the shape. This error has been fixed. **(14806)**

## Demand Procedures

- ✔ 'Nested mode choice' procedure: Matrix references at root nodes were lost when saving the parameters of the 'Nested mode choice' procedure to a binary procedure parameters file or a version file (\*.par or \*.ver). This error has been fixed. **(14836)**

## Dialogs

- ✔ 'Select operand' dialog: The 'Select operand' dialog, provided when editing a formula, was not displayed correctly under specific circumstances. This error has been fixed. **(14725)**
- ✔ Saving a matrix to file: In the 'Save matrix' dialog, the 'Random round' option is no longer provided if the binary format is selected, because it is irrelevant when saving matrices in binary format. **(14784)**
- ✔ Sporadic crashes: Sporadic, non-reproducible crashes occurred when sending messages to dialogs (for example progress dialogs) in highly parallelized code. This error has been fixed. **(14830)**

## Filters

- ✔ POI filters and POI to POI allocations: If you inserted or deleted an allocation of one POI to another POI, a filter on the indirect attribute 'Count:ReferringPOIs' would not be evaluated anew. This error has been fixed. **(14795)**

## Foreign Formats

- ✔ Database import with POI UDAs: Reading definitions of user-defined attributes at POI categories from a database no longer causes a crash if the network does not contain the POI category. **(14808)**
- ✔ Database import with POIs: So far, from a database, you could not import new POI categories as well as POI objects contained in these categories at the same time. This error has been fixed. **(14632)**

## Junction Editor

- ✔ Node preview of main nodes: Main nodes can be displayed with the Vissim node preview again if the number of the Vissim node differs from the number of the main node. **(14803)**

## PuT Assignment

- ✔ Simultaneous vehicle journeys in the timetable-based assignment: The timetable-based assignment no longer crashes if it contains simultaneous vehicle journeys (i.e. such which belong to the same time profile and simultaneously depart at the same time profile item) and transfers between vehicle journeys are saved in addition. **(14826)**
- ✔ Skim 'Discomfort due to capacity overload' : A crash no longer occurs when calculating the timetable-based assignment if the 'Calculate skim matrices' option is disabled on the Basis tab, yet the 'Discomfort due to capacity overload' skim is activated on the Skim matrices tab. **(14818)**

## Timetable Editor

- ✔ Multiply served stops: In the tabular timetable, the data of the last line route item was always displayed in mode Vehicle journey course as well as in mode Vehicle journey section course in case of stop sequence items served by a line route more than once, no matter whether the vehicle journey of this line route item was used at all and irrespective of the selection of a preferred allocation in the stop sequence. This error has been fixed. **(14841)**
- ✔ Opening the graphical timetable based on marking: Opening a graphical timetable based on a line or line route marking no longer leads to an infinite loop if a graphical timetable is already open and it is zoomed out very far. **(14804)**

## VISUM Files

- ✔ Reading demand files additively: When reading demand files (\*.dmd) additively, the "Create warnings for conflicts in the 'Ignore' mode" button had no effect, i.e. warnings were issued even if the option had been disabled. This error has been fixed. **(14707)**
- ✔ Version files with timetable line and block layouts: If an error occurred when reading in a version file which contained a timetable line or block layout, up to now, the import was cancelled. Now, in this case, the import can be continued. The layout concerned will, however, be empty. **(14858)**
- ✔ Vol/Cap ratio-dependent impedance per demand segment: If the procedure sequence contained a step 'Timetable-based PuT assignment' for multiple demand segments and the 'Same vol/cap ratio-dependent impedance parameters for all demand segments' option was disabled, i.e. parameters were set for the vol/cap ratio-dependent impedance per demand segment, these settings were lost when saved to a binary procedure parameters file (\*.par) or to a version file and then read in again. This means all demand segments had the same data afterwards. This error has been fixed. **(14862)**

## ❗ Breaking Changes

### PuT Assignment

- ❗ Negative vehicle journey impedance in search: If a vehicle journey items attribute was specified for the search impedance of the timetable-based assignment and delivered negative values, these negative values were cut at 0 so far. Now, the total of all (search) impedance components for each path leg is cut at 0, i.e. negative attribute values enter the impedance as long as the value is not higher than the values based on journey time, number of transfers, and transport system supplement. In addition, the aggregate function 'Minimum' always returned 0 as a result. This error has been fixed. The use of negative vehicle journey impedances or the aggregation function 'Minimum' leads to different assignment results. **(14798 +)**

14.00-12 [95757]

2015-04-01

## + New Features and Changes

### Graphics

- + Optionally, do not load Leadtools: Via the new option 'Load Leadtools during program start' (refer to menu Extras - Options - GUI - Miscellaneous), loading the application component Leadtools can be disabled. In this case, the display of image files in raster graphics formats (such as jpg, bmp etc.) exceeding 5.000x5.000 Pixel is only possible to a limited degree. On the other hand switching off might be advantageous to oppress the display of error messages which in certain network environments could be returned for component licensing. **(11655)**

### Main Window

- + Tooltip on POI filter icon: The filter icon in the tool window 'Network' is active for network objects POI and GIS objects if at least one category has an active filter. The tooltip of this icon now also displays how many categories have an active filter. **(14217)**

## ✔ Fixed Bugs

### Add-Ins

- ✔ Add-In 'Nested Demand Model': If, during the calculation of the alternatives in the Add-In 'Nested Demand Model', alternatives exist whose code is a substring of the code of another alternative, output matrices are generated several times when using the Add-In. This error has been fixed. **(14775 ❗)**

### Dialogs

- ✔ Copying and pasting bars: Copying and pasting entire columns on dialog page 'Links - Bars - Display' of the graphic parameters dialog no longer leads to a crash when pasting a line bar from one Visum instance into a standard bar of a different Visum instance. **(14595)**
- ✔ Dialog 'Read network data additionally': In the 'Read network data additionally' dialog, which is used to specify how to handle conflicts as part of the additive reading of network files, a label was missing in the table header. This error has been fixed. **(14412)**

- ✔ Formula dialog: If you opened the attribute selection dialog by double-clicking an attribute name in a formula of the formula dialog, the formula dialog was sometimes displayed incorrectly when closing the attribute selection dialog. This error has been fixed. **(12806)**

## Foreign Formats

- ✔ Import 'PuT supply from Visum': During the import 'PuT supply from Visum', couplings between imported time profiles of the source network were not transferred correctly. This error has been fixed. **(14780)**
- ✔ Link stop points during import 'PuT supply from Visum': When importing PuT supply from Visum, the program sometimes tried to create link stop points on relative positions which were too close to nodes and thus forbidden. This error has been fixed. **(14728)**
- ✔ Long texts during SQL Server export: When exporting a database to MS SQL Server, long texts in attributes were cut after 255 characters. This particularly affected the specification of projections in the network settings. This error has been fixed. **(14524)**
- ✔ Speeds during database export with imperial units: When exporting a network with imperial units to a database, so far, speeds were saved in unit km/h anyway. This error is particularly problematic as the unit mph was adopted when reading in the data. The error has been fixed, i.e. speeds are also now saved in imperial units. **(14733)**
- ✔ Tags at POIs with OpenStreetMap: When importing data from OpenStreetMap, so far, additional tags were not transferred reliably to POIs (e.g. 'capacity' at parking lots). This error has been fixed. **(14772)**

## Graphics

- ✔ Bars with thick boundaries: Bars with thick boundaries were printed differently than they were displayed on screen. This error has been fixed. **(14783)**
- ✔ Printing of background maps: In large-format printouts (paper format DIN A0), background maps were not visible. This error has been fixed. **(13665)**
- ✔ Printing of background maps: When printing a network which contained a background map from the map service provider Bing Maps, the names of copyright holders (bottom left) and the logo (bottom right) were not displayed. This error has been fixed. **(14764)**
- ✔ Shifting backgrounds: If you changed the position of a background, the positioning frames were not always drawn correctly. This error has been fixed. **(14760)**

## Junction Editor, PrT Assignment

- ✔ The ICA calculation no longer causes a crash if there is a leg at the node which only has lanes that are closed for all transport systems. **(14735)**

## Listings

- ✔ Aggregation in very large networks: Under specific circumstances (for example when using operating system Windows Server 2008), displaying a list with enabled aggregation in very large networks led to an infinite loop. This error has been fixed. In this context, the calculation of the aggregation classes has been accelerated as a whole. **(14726)**
- ✔ Lists with relations to screenlines: The display of a list (for example a link list) no longer crashes if the list contains indirect attributes that have a relation to screenlines while analysis rows are output in the list. **(14761)**

## Network Editor

- ✔ Editing the shape of line routes / system routes / PrT paths: When fixing nodes / stop points that are traversed several times, you could not fix multiple traverses any more. This error has been fixed. **(14147)**
- ✔ Editing the shape of multiple line routes: When editing the shape of multiple line routes, multiple shortest paths to the respective boundaries of the section to be edited can now be seen. Moreover, the fix/drag behavior of a line route item that is used more than once has been improved. **(14744)**
- ✔ Network editor status in the uni version: Once the permitted service life of a uni version is over, ongoing changes in the network editor are now completed until a version file is saved and the program has to be terminated. The version files saved in this way can always be read in again, because they contain a consistent network status. **(14299)**

## PuT Assignment

- ✔ Fare points on circle line transfers: Fare points can be used in the search impedance when calculating a timetable-based assignment. So far, however, fare points on circle line transfers did not enter the search impedance correctly. This error has been fixed. **(14790)**

## PuT Operating Indicators



- ✔ Revenues and vehicle combinations: If you calculated results for 'Territory x ... x vehicle combination' with procedure 'PuT operating indicators (LLE)', incorrect values were sometimes calculated for the indicators 'Revenue total (fare point-proportional)' and 'Revenue-DSeg (fare point-proportional)' at territory and territory PuT detail. This error has been fixed. **(14706)**

## Scenario Management

- ✔ Infinite loop upon closing a project: Closing a scenario management project sometimes led to an infinite loop. This error has been fixed. **(14690)**

## Scenario Management, VISUM Files

- ✔ When reading in older model transfer files (Visum 12.5 or older) or when opening modifications in scenario management projects that were created with older Visum versions, the value of the attribute 'ICAUpstreamAdj' was changed for all turns and main turns (if the value existed at all in the model transfer file or modification) instead of for the outgoing (main) turns of those links for which a value has actually been specified. This error has been fixed. **(14723)**

## Timetable Editor

- ✔ If you rerouted a line route, opened a timetable for this line route and then undid the rerouting process, an inconsistent state of the data occurred. As a result, the program could crash or version files saved under these conditions could not be read in any more. This error has been fixed. **(14738)**
- ✔ Line selection after modifications to a line route: A crash could occur if you moved a line route contained in the current line selection to another line route and subsequently deleted vehicle journeys in the timetable. This error has been fixed. **(14303)**
- ✔ Removing all attributes from the tabular timetable: If you removed all attributes from one of the attribute selections of the tabular timetable, attributes could no longer be added later on. This error has been fixed. **(14180)**

## VISUM Files

- ✔ Reading networks additively, frequent cases: When reading a network additively, different defaults are provided for frequent cases. The default for the case 'Read timetable - Retain all existing vehicle journeys unchanged' suggested 'Overwrite object' for line routes, time profiles and transition walk and dwell times, so that existing vehicle journeys were still changed when reading the file. This error has been corrected, i.e. a more defensive conflict handling is now suggested. **(14699)**

## ❗ Breaking Changes

### Add-In

- ❗ Add-In 'Nested Demand Model': If, during the calculation of the alternatives in the Add-In 'Nested Demand Model', alternatives exist whose code is a substring of the code of another alternative, output matrices are generated several times when using the Add-In. As the demand is also distributed to these surplus matrices, results vary considerably. This error has been fixed. **(14775)** ✔

### PuT Assignment

- ❗ Fare points on circle line transfers: Fare points can be used in the search impedance when calculating a timetable-based assignment. So far, however, fare points on circle line transfers did not enter the search impedance correctly. As a result, a negative search impedance could occur, so that the entire preselection provided useless results (especially no connection at all for an OD pair in some cases). This error has been fixed. **(14790)** ✔

14.00-11 [94998]

2015-03-05

## + New Features and Changes

### COM

- + List 'Arrivals / departures': It is now possible to produce a list of arrivals/departures at all stop points by passing an empty object of type VARIANT to the 'SetObjects' method of the IStopPointTimeTableList COM object. **(14495)**

## Data model

- New attribute 'CurrentModeChoiceMatrix': At the procedure parameter object 'EVAModeDStratModeChoicePara' ('EVA distribution/mode choice'), a calculated attribute 'CurrentModeChoiceMatrix' has been added, which issues the number of the matrix currently indicated by the matrix reference (or 0 if no or no unique matrix is indicated by the matrix reference). **(14550)**

## Graphical Procedures

- Recalculating a flow bundle: If a flow bundle includes filter condition 'Active links' or 'Active lines', the 'Execute' button of the flow bundle is now active as soon as the filter is changed, so that the flow bundle can be recalculated based on the new filter result. **(14597)**

## ✔ Fixed Bugs

### Add-Ins

- ✔ Add-In 'Google Maps': The display of a node in Google Maps with the Add-In 'Google Maps' now works again after the necessary URL has been adjusted to the current requirements. **(14648)**
- ✔ Matrix references in 'EVA evaluation' Add-In: The Add-In 'EVA evaluation' did not work if one of the relevant procedure parameters contained a matrix reference which used the keyword 'Context'. This error has been fixed. **(14551)**

### Data Model

- ✔ Attribute VistroShareHGV: Attribute 'VistroShareHGV' was renamed 'ShareHGV' but the change of name was not announced as such, so that older files could not be read in any more. This error has been fixed. **(14713)**
- ✔ Number of lanes of links within a main node: The value of the attribute 'Number of lanes' could not be edited under certain circumstances for links inside of main nodes. This error has been fixed. **(14688)**

### Demand Procedures

- ✔ EVA distribution/mode choice: Running the EVA distribution/mode choice procedure no longer leads to a crash if no mode choice matrix has been specified or when performing balancing, however the matrices specified in the matrix reference do not exist yet. **(14682)**

### Dialogs

- ✔ Bar pages of graphic parameter dialogs: In specific cases, Visum used to crash when exiting the dialog or when switching from the page for bars to a different dialog page in one of the different graphic parameter dialogs (network graphic parameters, graphical timetable, schematic line diagram, transfers display of regular services). This has been fixed. **(14663)**

### Dialogs, Demand Procedures

- ✔ Insertion in aggregated grid cells: The program no longer crashes if you insert a utility definition in a demand procedure parameters dialog while the view is aggregated. **(14683)**

### Graphical Procedures

- ✔ Flow bundle and filter for PuT paths: The calculation of the flow bundle volume considered conditions on OD pairs in the OD pair filter, however, it did not consider the conditions on PuT paths in the same filter. This error has been fixed. **(14681)**

### Listings

- ✔ Analysis rows: While the values of analysis rows in listings were recalculated in the background, several actions (e.g. splitting a link) could lead to a different data basis and cause the computation to crash. **(14652)**
- ✔ Listing 'Territory PuT detail objects' with synchronization: A crash no longer occurs when marking all objects of the list 'Territory PuT detail objects' by a click on a column header if the list is synchronized with the network editor. **(14647)**

### Main Window

- ✔ Restoring the window configuration upon program start: The restoration of the window configuration upon program start is now more robust against corrupt data in the registry. **(14646)**

## Network Editor

- ✔ Edit functionalities and graphics tools: If a graphics tool (for example flow bundle) was selected, some of the edit functionalities (for example Multi-edit or Renumbering) were not available so far. Now all edit functionalities are provided which can be combined with the respective tool. **(14406)**
- ✔ Marked PrT paths: A crash no longer occurs if you open a version file (with selection dialog for PrT paths open) while a PrT path is marked. **(14710)**
- ✔ Network check: Some of the network check functionalities could not be cancelled and returned no information on the progress in the progress dialog. This error has been fixed. **(14675)**

## PrT Assignment

- ✔ Wait time calculation for signal control with volume 0: The wait time calculation for signal-controlled nodes according to HCM 2010 returns 0 if no volume exists. However, this prevents convergence during assignment with ICA in case of wait times. Therefore, a very small volume is now assumed in this case for the calculation (corresponds approximately to the approach in HCM 2000). **(14623 ⚠)**

## PuT Assignment

- ✔ 'Impedance' indicator in headway-based assignment: The number of fare points always entered the indicator 'Impedance' calculated with the headway-based assignment, even if the 'Fare' option had been selected for the impedance. This error has been fixed. The assignment procedure itself used the correct value. **(14655 ⚠)**
- ✔ Fares for zone-based fares: If option 'Fare zones being traversed multiple times are counted multiple times' was set for the ticket type in case of a zone-based fare, the number of fare zones used within the assignment was sometimes calculated too high, which affected the distribution to the paths. However, the number of fare zones displayed as attribute of the PuT path was correct. This error has been fixed. **(14654 ⚠)**
- ✔ Parallel calculation of the number of fare zones: Calculating the number of fare zones with more than one core no longer causes a crash. **(14715)**

## Timetable Editor

- ✔ Click behavior of the graphical timetable: The click behavior of the graphical timetable has been improved:
  - The tolerance zone around the vehicle journeys has been enlarged.
  - Right-click marks objects so that the shortcut menu can be opened directly.
  - Click marks an object before it is released so that a vehicle journey can be clicked and directly moved to a different time when holding down the mouse button. **(14429)**
- ✔ Shortening a vehicle journey with a shortened vehicle journey section: If a vehicle journey consisted of a single, yet shortened vehicle journey section, and the vehicle journey had been shortened via dialog 'Edit vehicle journey' in such a way that the course used by the vehicle journey section was removed, Visum used to crash, because the vehicle journey section and thus the vehicle journey itself were deleted. Now, the vehicle journey section is initialized in this case and thus placed on the entire remaining course of the vehicle journey. **(14656)**
- ✔ Switching between stop reference and stop point reference: When changing a stop sequence from a stop point reference to a stop reference, attributes of the stop sequence items (for example 'Double-row display', 'Draw object') were lost. Furthermore, if, in the original stop sequence, two or more stop points of the same stop had allocations for a line route, these allocations were lost. Both errors have been fixed. **(14639)**

## Transfers display of regular services

- ✔ Screenshot with marking: The screenshot functionality did not refresh the marking so far, i.e. if the marking had changed and a second screenshot was generated, the screenshot still displayed the marking that was valid during the first screenshot. This error has been fixed. **(14599)**

## VISUM Files

- ✔ To length of line route items from network file: If a network file contains a To length > 0km at the last line route item of a line route, when reading the network file, a warning is issued stating that this value is ignored. However, this value was still imported. This error has been fixed. **(14642)**

## ⚠ Breaking Changes

### PrT Assignment

- ⚠ Wait time calculation for signal control with volume 0: The wait time calculation for signal-controlled nodes according to HCM 2010 returns 0 if no volume exists. However, this prevents convergence during assignment with ICA in case of wait times. Therefore, a very small volume is now assumed in this case for the calculation (corresponds approximately to the approach in HCM 2000). This changes the results of the assignment with ICA. **(14623 ✔)**

## PuT Assignment

- ❗ 'Impedance' indicator in headway-based assignment: The number of fare points always entered the indicator 'Impedance' calculated with the headway-based assignment, even if the 'Fare' option had been selected for the impedance. This error has been fixed. This changes the skim matrix for the impedance in the headway-based assignment when selecting the 'Fare' option. The assignment procedure itself used the correct value. **(14655 🟢)**
- ❗ Fares for zone-based fares: If option 'Fare zones being traversed multiple times are counted multiple times' was set for the ticket type in case of a zone-based fare, the number of fare zones used within the assignment was sometimes calculated too high, which affected the distribution to the paths. However, the number of fare zones displayed as attribute of the PuT path was correct. This error has been fixed. This changed the assignment results regarding the distribution to the individual paths. **(14654 🟢)**

14.00-10 [94372]

2015-02-12

## + New Features and Changes

### Dialogs

- + Deleting user-defined attributes at POIs: If you delete user-defined attributes at POI categories, the program asks whether you also want to delete attributes of the same name at subordinated POI categories. At this point, you can now cancel, i.e. the user-defined attribute is kept. **(14516)**

### Foreign Formats

- + Personal geo database: For a connection with a personal geo database, Visum now also supports the ArcGIS versions 10.1 to 10.3. **(12130)**

### Scenario Management

- + Unintentional rounding in modifications: So far, the network settings for the number of decimal places for decimal numbers applied (as elsewhere) when creating model transfer files for the representation of a modification. If the option 'Always output floating point numbers with maximum precision' was not checked here, values were rounded to the set number of decimal places. Now these settings do not apply any more, i.e. model transfer files are always output with maximum precision in the context of scenario management. **(14574)**

## 🟢 Fixed Bugs

### COM, Listings

- 🟢 I...List.SaveToArray for network objects: If you called the SaveToArray method on a COM list object which represented the list for a network object type of which no object presently existed in the network, the resulting array had an empty entry as of PTV Visum 14.00-09 (and thus was no empty array any more). This error has been fixed. **(14594)**

### Data Model

- 🟢 To length at line route items: So far, you could not set the To length to 0 for line route items which were no route point or the last item of the line route, even though this is the expected value and all other entries would be data errors. This error has been fixed. **(14641)**

### Filters

- 🟢 Filter for OD pairs and flow bundle: A crash no longer occurs when terminating Visum while a network is loaded in which a flow bundle has been calculated and a filter for OD pairs is active with option 'Filter network volumes' on. **(14564)**

### Foreign Formats

- 🟢 HAFAS import: Up to HAFAS version 5.20.36, a comment sign had to be placed at the 59th position of a route course row in the timetable file ('FPLAN') which was shifted to the 60th position with version 5.40. In Visum, route course rows with a comment sign at the 59th position were still not interpreted correctly. This error has been fixed. **(14636)**

- ✔ Importing PuT supply from Visum: If the import of a PuT supply from Visum generates missing links and nodes, and a node with a stop point on top and a connecting link are created more than once for the same origin stop point because the origin stop point can be reached from several directions (a line route begins here and another one ends here coming from a different direction), several nodes and stop points were created so far, so that there was no connection between the new links. No other line route running through this origin stop point could then be inserted. This error has been corrected by reusing the newly inserted node and stop point from other directions. **(14536)**

## Graphical Procedures

- ✔ Flow bundle after repeated assignment: The 'Execute' button used to stay disabled if you calculated a flow bundle and then repeated the underlying assignment (PrT or PuT). As a consequence, you could not repeat the flow bundle calculation on the basis of the new assignment result with unchanged flow bundle conditions. This bug has been fixed. **(14320)**

## Graphics

- ✔ Drawing line routes: Drawing line routes no longer causes a crash if the line route uses link stop points on links with polygon length 0. **(14592)**
- ✔ Drawing polygons: Very rarely, drawing polygons used to cause a crash. This has been fixed. **(14568)**

## Junction Editor

- ✔ Adjustment of the column width: If you changed the number of the displayed node, the width of the (only) column in the junction editor used to be adjusted to the new data. The value, however, was too low. The column width is no longer adjusted. **(14553)**

## Listings

- ✔ Extended input options: The switching behavior of the extended input options via the list menu of a list is not correct, i.e. if the extended input options are switched on, they are deactivated and vice versa. This error has been fixed. The global switching via the user preferences, however, worked properly. **(14537)**
- ✔ PrT path list with indirect attributes: The access to the PrT path list is very slow if it contains indirect attributes of links. This has been fixed. Therefore, especially the export of the list to an attribute file is now considerably faster (about factor 30). **(14583)**
- ✔ Valid day list with indirect attributes: Displaying a valid day list with indirect attributes of vehicle journey sections no longer causes a crash if analysis rows are switched on. **(14617)**

## Main Window

- ✔ Behavior in case of keyboard entries: If a specific view did not support the keyboard entries 'Del' or 'Enter', i.e. the command did not trigger any action in that window, up to now, the command entry triggered the corresponding action in the main window instead. Hence, the 'Edit' dialog of the globally marked network object was opened or the object was deleted. This error has been fixed. **(13663)**

## Matrix Editor

- ✔ Allocation of a combination of matrices and vectors: The allocation of a combination of vectors and matrices to a matrix in the 'Matrices' tool window did not succeed when using a function with more than one operand. This error has been fixed. **(14598)**

## Miscellaneous

- ✔ Connection to dongle: In specific constellations, problems regarding the name resolution in the network occurred when connecting to the CodeMeter server. This error has been fixed. **(14559)**
- ✔ Licenses in terminal server environments: The restriction of the number of Visum instances used simultaneously in a session did not work correctly in terminal server environments. If several instances were started in a session, each of them used a separate license. This has been corrected, so that up to five instances can be started with one license. Instances in different sessions each use a separate license. **(14446)**

## Network comparisons

- ✔ Version comparison with attributes from the comparison network: When creating a version comparison with option 'Use attributes from comparison network', so far, empty values of numerical attributes contained in the comparison network became 0 and could not be identified as empty values any more. This error has been fixed. **(14573)**

## PuT Operating Indicators

- ✔ Number of service trips at course items: In case of couplings, indicator 'Number of service trips (AHPI)' for course items (line route items, time profile items, vehicle journey items) did not consider whether a coupling was effective, i.e. whether the coupling partner operates on the same calendar day or not. This led to low values in some cases. This error has been fixed. **(14546)**

## Schematic line diagram

- ✔ Dashed lines: For dashed line styles also, the width of a line unit is specified in raster units in the schematic line diagram. So far, such line styles did not rescale. This bug has been fixed. **(14464)**
- ✔ Labels of transfer nodes: In the schematic line diagram, only the attribute values and not the attribute names were drawn for labels of transfer nodes even if, in the text format, you specified that titles shall be displayed. The format and units were ignored as well. This error has been fixed. **(14458)**

## Timetable Editor

- ✔ Update of the timetable lines / line block selection: The line selection tree in the tool window 'Timetable lines' as well as the line block tree were not refreshed if you renamed one of the displayed objects. This error has been fixed. If you rename an object, the correct name is now displayed. However, the object is not moved to a different position of the tree right away so that the edited object can still be seen. Only if you collapse and expand the superordinate entry in the tree, the object is moved to the new position. **(14451)**

## Transfers display of regular services

- ✔ Synchronization mode: When restoring a transfers display of regular services while opening a version file, the displayed (and previously saved) synchronisation mode sometimes differed from the actually used synchronization mode. This error has been fixed. **(14576)**

## VISUM Files, Foreign Formats

- ✔ Reading network files for node geometry: If a reference object was not found in the tables of the node geometry (for example lanes, lane turns, ...) while reading a network file, the process was cancelled so far instead of skipping the affected line as in case of other objects. This also affected the SATURN import which generates node geometry objects. This error has been fixed. **(14571)**

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2015-01-21

## + New Features and Changes

### Add-Ins

- + Add-In 'Import TransCAD Network': The 'Import TransCAD Network' Add-In no longer crashes if the shape files for stops and line routes contain inconsistent routeIDs. Furthermore, the headway attribute is now read correctly and the Add-In has been accelerated slightly. **(14504)**

### Data Model

- + Line block number and line block day at vehicle journey section: At vehicle journey sections, you can now output the line block number and line block day which serve the vehicle journey section for a block version and a calendar day. **(14253)**
- + Additional attributes at valid day: Additional calculated attributes are provided at valid days:
  - for each weekday the number of occurrences on days which have this day of the week
  - the first and the last calendar day on which this day of the week occurs, each as day index or readable date (in case of an annual calendar) **(14540)**

### Demand procedures

- + Tour-based model with rubber banding: The execution of the procedure 'Tour-based model - Combined trip distribution / mode choice' with rubber banding on has been accelerated. **(12956)**

### Dialogs

- + Matrix selection dialog: The lower section of the dialog page 'Select matrix by properties' of the matrix selection dialog now displays a note if the matrix reference is too complex to be displayed as a table here. **(14445)**



## Lists

- ➕ Copying analysis rows: In lists, analysis rows (sum, average, ...) are no longer headers but regular rows with a specific background color. The values cannot be edited. You can, however, mark cells and copy them to the clipboard. **(11388)**

## Visum Files

- ➕ RBC signal groups in model transfer files: So far, when reading in model transfer files, associated pedestrian signal groups were deleted together with RBC signal groups although the deletion of pedestrian signal groups is also coded in the model transfer file. This error has been fixed. **(14513)**

## ✔ Fixed Bugs

### Data Model, Network Editor

- ✔ Visum no longer crashes if an invalid time profile is generated while inserting or rerouting a line route, because the PuT run times of the newly traversed links become too high in total. Should the occasion arise, the line route is now generated without a time profile. You can add a time profile manually later on. **(14497)**

### Dialogs

- ✔ 'Edit utility definitions' dialog of the tour-based model: In the subdialog 'Utility definition for person group/destination activity' of the parameter dialog of the 'Tour-based model - Combined trip distribution / mode choice' procedure, only parts of the formula were displayed from the second call of the dialog. This error has been fixed. **(14439)**
- ✔ Invalid paths to image files in auto texts: If you selected the [Graphics] option for an auto text (in a legend, header or footer) and entered an invalid path to the graphics file, you could not exit the dialog any more. This bug has been fixed. **(14496)**
- ✔ Matrix selection dialog: So far, when opening tab 'Select matrix by number' of the matrix selection dialog, a matrix was marked in the tree even if the matrix reference used attributes other than number, but only one matrix met the conditions at the time. When exiting the dialog, the matrix reference was only modified if a different matrix was marked explicitly in the tree. In this case, the matrix reference was changed in such a way that it only required the number as condition. Now, the program only marks a matrix automatically in the tree if the matrix reference uses the number exclusively as condition. **(14427)**
- ✔ Restricted text length in combo boxes: In several Visum dialogs, the entries in combo boxes were restricted to a length of 20 characters. This error has been fixed. **(14549)**

### Filters

- ✔ OD pair filter on PuT paths: The evaluation of the OD pair filter with conditions on PuT paths no longer causes a crash if implausible path legs exist in paths which stem from passenger surveys. **(14517)**

### Foreign Formats

- ✔ Length data in railML import: If no stop point can be allocated to an OCP of the railML data in the target network (because there is no matching stop point or multiple matching ones), this OCP is omitted in the items of a vehicle journey. If this OCP provides information on the To length in the context of a specific vehicle journey (OcpTT item), it is allocated to the previous route point. However, if the previous line route item was not a route point, this length was lost, i.e. the vehicle journey was too short in total. This error has been fixed. **(14494)**

### Listings

- ✔ Fares in PuT path leg list: The fares shown in the 'PuT path legs' list were not updated when changing the general procedure settings (especially the settings regarding revenue distribution). **(14530)**
- ✔ Grouping and analysis rows: In specific cases, opening a list with activated grouping and analysis rows led to a crash. This has been fixed. **(14498)**

### Main Window

- ✔ Hidden floating dialogs: If you change the position of the network editor, e.g. by pulling it out or docking it after a floating dialog of the network editor was open, the network editor hides the associated floating dialog when shifting the focus to another view (for example lists) and back. This concerns all floating dialogs of the network editor, thus
  - dialogs to select line routes, system routes, and PrT paths
  - dialogs to insert line routes and paths
  - dialog to create stop points
  - dialogs to edit the shape of links / screenlines
  - dialog to edit the shape of faces
  - link sequence from shortest path search
  - dialog to edit the shape of line routes, system routes, and PrT paths. **(14515)**

## Matrix Editor

- ✔ Calculating with extremely small numbers: In the matrix editor, you can now run arithmetic operations with matrices that contain so-called denormalized numbers (decimal numbers in a range smaller than  $10^{-309}$ ). So far, such matrices could be generated in procedures, however, they could not be processed in the matrix editor. This bug has been fixed. **(14478)**

## PrT Assignment

- ✔ Analysis time intervals and blocking back model: If you calculated a PrT assignment with blocking back model, then checked/unchecked option 'Analysis time intervals - Use for calculation results: PrT' after the assignment and finally saved a version file, this file could not be read in Visum any more. This error has been fixed. **(14523)**

## PuT Passenger Survey

- ✔ Plausibilization with open path leg list: A crash no longer occurs if the PuT path leg list is open while executing the 'Plausibilization of survey data' procedure. **(14479)**

## Scenario Management, VISUM Files

- ✔ Treatment of turns in model transfer files: If you deleted a node and later on inserted it again with the same number, nodes and turns were rated as 'modified' in the model transfer file when comparing old and new states while the affected links were listed as 'deleted' and 'inserted'. In the course of this, all attributes of the links were listed while only modified attributes of the nodes and turns were listed. When applying the model transfer file however, deleting and reinserting the links leads to the deletion and reinsertion of the turns as well. Their attributes are thus lost. For this reason they will now also be listed as 'deleted' and 'inserted' in the model transfer file. **(14499)**

## Timetable Editor

- ✔ Editing vehicle journeys: If a tabular timetable is open and a vehicle journey is edited in the 'Edit vehicle journey(s)' dialog, in the tabular timetable behind, the data of all vehicle journeys disappear as soon as you edit line, line route, direction, or time profile of the vehicle journey. This bug has been fixed. **(14484)**

## VISUM Files

- ✔ Writing model transfer files via COM: The setting for saving floating-point numbers in text files with maximum precision did not take effect in case of model transfer files if they were saved via COM. This error has been fixed. **(14505)**

14.00-08 [92767]

2014-12-11

## + New Features and Changes

### Add-Ins

- + Add-in 'Import DIVAGeo': The 'Import DIVAGeo' add-in now generates significantly fewer nodes than before. On the one hand, nodes with the same coordinates that are used in different line routes are merged into one node. On the other hand, intermediate points that are close to each other are thinned out. Both measures not only avoid problems regarding the license size, but also ease a subsequent import into a transport model with the 'PuT supply from Visum' import. **(13968)**
- + OMX import for matrices: Matrices can be imported in OMX format with the new 'OMX import' add-in (<https://sites.google.com/site/openmodeldata/>). This add-in can also be executed during a procedure sequence. **(14003)**

## COM

- + Graphic parameters of the schematic line diagram: You can now open or save the graphic parameters file of the schematic line diagram via COM using new methods at ISchematicLineDiagram (OpenGraphicparameters and SaveGraphicparameters). **(14477)**

## Data Model, PuT Assignment

- + Penalties for PuT-Aux transport systems: For ticket types, you can now specify penalties per transport system for transport systems of the type PuT-Aux. **(14424)**

## Dialogs

- + Editing the calendar without the calendar module: If the add-on 'Calendar / valid days' did not exist or was not active, so far, you could not edit the calendar settings in the dialog 'Network settings'. As a result, you could not prepare version files for the import of PuT supply from Visum into a target network without a calendar. However, this add-on should prohibit the existence of valid days (apart from 'daily') only. This error has thus been corrected. **(14432)**
- + Predefined conditions in matrix selection: The dialog page 'Select matrix by properties' of the 'Select matrix' dialog now displays conditions on the matrix predefined by the program in a readable form above the input field. **(1171)**

## Foreign Formats

- + Export of matrices in OMX format: The new add-in 'OMX export' facilitates the export of matrices in OMX format (see <https://sites.google.com/site/openmodeldata/>). This add-in can also be executed during a procedure sequence. **(14004)**

## Formulas

- + Simple matrix references: If the possibilities of the matrix references are not used at all, the simplified style 'Matrix(n)' instead 'Matrix([NO] = n)' is now formed to improve the readability if a specific matrix is selected in the tree of the 'Select matrix' dialog. **(14195)**

## Lists

- + 'Stop points - arrivals/departures' list: The 'Stop points - arrivals/departures' list can now display arrivals and departures for all stop points at the same time. **(14483)**

## Main Window

- + Link to Add-In Marketplace: You can now access the Add-In marketplace for PTV Vision products via an entry in the Scripts menu. **(14064)**

## PuT Assignment

- + Acceleration of matrix references: The use of matrix references instead of fixed matrices led to a performance loss which was now compensated by acceleration measures. **(1115)**
- + Timetable-based skim calculation with MPA: The procedure step 'Aggregating skim matrices' within the scope of the timetable-based skim calculation with MPA has been accelerated considerably. **(13734)**

## Timetable Editor

- + Changing the order in the tabular timetable: The tabular timetable now offers extended possibilities to sort vehicle journeys. You can now sort all vehicle journeys chronologically via the menu and, moreover, you can sort vehicle journeys via the shortcut menu of a stop of the stop sequence by the departure time at this stop. In the process, vehicle journeys which do not pass this stop are now sorted correctly. By default, the tabular timetable is still sorted by the attribute 'Departure'. **(14018)**
- + Fewer dialogs when opening the timetable: When opening a timetable editor, the line selection and stop sequence is now always replaced if a matching marking (lines, line routes, links, stops, edges of the schematic line diagram) exists yet none of the two timetable is open. If the marking shall be disregarded and the previously existing line selection and stop sequence shall be displayed with the timetable, you can restore the previous state of the line selection and stop sequence using 'Undo'. **(14420)**

## ✓ Fixed Bugs

## Add-Ins

- ✔ Add-In 'Import Google Transit Feed': Vehicle journeys were shifted in time when using the Add-In 'Import Google Transit Feed' for an import. This error has been corrected. **(14389)**
- ✔ Add-Ins change COM export property: Several Add-Ins ('Set Matrix Diagonal', 'Balance Matrix (Furness)', 'Calculate Matrix', 'Generate PuT Zone Connectors', 'Load Matrix From Excel', 'Matrix Convolution', 'POI --> FareZone', 'Split P&R-Matrices', 'Zone Catchment Areas') changed the global COM property 'ExportAllNumbersAsDoubles' when editing their parameters. Subsequent COM calls providing numerical data then returned different results than before. This error has been corrected. **(14437)**
- ✔ Empty values in add-in 'Calculate Matrix': So far, the add-in 'Calculate Matrix' could not be run if one of the operands in the add-in contained empty values. Such empty values in matrices arise, for example, if a filter on OD pairs is set. **(14376)**

## COM

- ✔ Additive reading of a network from the procedure sequence: Reading a network file additively while executing the procedure 'Run script' could lead to a crash when subsequently editing procedure steps which referred to network objects (for example transport systems, demand segments, or demand strata). Such subsequent changes are no longer possible, i.e. changes saved in the network file which involve changes to the current procedure sequence, will not be saved. **(14380)**
- ✔ INet.AddLineRoute: The AddLineRoute method at INet should turn all stop points which are open for the transport system line in the course of the line route into route points. However, so far, any line route items located only at nodes were also turned into route points. This bug has been fixed. **(14435)**

## Data Model

- ✔ Creating a route point in a coupled section: Activating the route point property of a line route item no longer causes a crash if a coupled section exists on this line route item in one of the time profiles. **(14453)**
- ✔ Loss time 1 / 2 at links: In the past, PuT transport systems were considered for the attributes 'Mean loss time 1 PrT', 'Mean loss time 2 PrT', 'Total loss time 1 PrT' and 'Total loss time 2 PrT'. This error has been corrected. **(14469)**

## Demand Procedures

- ✔ Messages issued during 'Tour-based model - Combined trip distribution / mode choice' with rubber banding: When executing the 'Tour-based model - Combined trip distribution / mode choice' procedure, less messages are issued for OD pairs and activity transitions with a utility  $\leq 0$  to avoid log files with a critical size. **(14388)**

## Dialogs

- ✔ Auto-texts in graphic parameters and legend: The names of the auto-texts which can be used for the labeling of headers and footers in the graphic parameters and the legend were displayed in German even though English was selected as language. This bug has been fixed. **(14450)**
- ✔ HBEFA data warning: When starting PTV Visum, a warning on missing or incomplete HBEFA data ("No or incomplete installation of HBEFA data ...") was also issued if the license contained the add-on module HBEFA but the add-on was switched off. This error has been fixed. **(14401)**

## Dialogs, PuT Line Blocking

- ✔ Turning empty trips into vehicle journeys: So far, you could not turn an empty trip based on a system route into a vehicle journey. This bug has been fixed. **(14382)**

## Filters

- ✔ Filter on vehicle journey items: Reading a filter file that contains a filter condition on vehicle journey items no longer leads to a crash, if no vehicle journey items exist in the network (and thus no volumes on vehicle journey level and not user-defined attributes on vehicle journey items). **(14482)**

## Foreign Formats

- ✔ U-turns in HAFAS import: When importing HAFAS, line routes using a U-turn were not imported if the option 'Close the U-turns and open any other (main) turn for the transport systems of the adjacent links' was set in the user preferences under Network -> Turns and main turns. This error has been corrected. **(14392)**

## Formulas

- ✔ Messages regarding incorrect formulas: If a formula is compiled for display which is syntactically incorrect, no message is issued during the compilation any more. Messages of that kind are obstructive when merely displaying formulas. Messages regarding an incorrect syntax will still be issued when editing the formula. **(14372)**

## Graphical Procedures

- ✔ Shortest path search PuT: An existing shortest path search did not respond reliably to modifications of relevant attributes, for example lengths of used line route items. This bug has been fixed. **(14456)**

## Junction Editor

- ✔ Vissim previewer: The Vissim previewer has been updated. Stopping a simulation in Vissim in particular no longer leads to a crash if the network contains RBC-controlled nodes. **(13873)**

## Listings

- ✔ 'PuT paths' list with flow bundle paths: A crash no longer occurs if a 'PuT paths' list is open, which only displays flow bundle paths, when executing procedures. **(14476)**
- ✔ Analysis rows in the 'Transfers and walk times in stop' list: A crash no longer occurs if you activate the analysis rows (sum etc.) in the 'Transfers and walk times in stop' list. **(14475)**

## Main Window

- ✔ Search dialog, search in attribute: If you open the extended search under "More details" in the tool window "Find", you can select a specific attribute for the search in the drop-down list "Search in attribute". In this list, you could not select entries using arrow keys. This bug has been fixed. **(14442)**
- ✔ Switching windows with Ctrl + Tab: You can now switch between the individual views of a Visum instance via the key combination Ctrl + Tab. **(14136)**
- ✔ Tool window 'Marking': The program no longer crashes if the tool window 'Marking' is open and visible and at least two links are selected in a synchronized link list. **(14409)**

## Network Editor

- ✔ Editing POI categories: In the past, the Multi-edit special function 'Edit category' for POIs did not consider the option 'Only active ones'. This error has been fixed. **(14318)**

## Network comparisons

- ✔ Network merge mode and filters: Generating a comparison network in the network merge mode used to be slow if a filter with comparatively long evaluation times (e.g. the OD pair filter) was active in one of the version files compared. **(14419)**

## Procedure Sequence

- ✔ Check before saving procedure parameter files: So far, the parameters were checked before saving a procedure parameters file (binary or xml) and the file was not saved in case of errors. This check for example verifies the existence of specified transport systems, demand segments, or even computation nodes. In case of the latter, it even checks the current availability. However, this check is useless before saving to file and is thus dropped. Now, it is only carried out before the execution of the procedures. **(14474)**
- ✔ Output of lots of messages: If a procedure generated lots of messages, the respective cell in the procedure sequence was displayed empty. In order to see the messages, you had to move the mouse over the cell. This bug has been fixed. **(14411)**

## PuT Assignment

- ✔ Headway-based assignment with circle lines and 'optimal strategies': The headway-based assignment no longer crashes when choosing the passenger information 'None ('optimal strategies')' if the network contains ring lines. **(14414)**
- ✔ Unstable results of headway-based assignment with PuT-Aux: If the network contained several transport systems of the type PuT-Aux, the headway-based assignment could produce unstable results. This error has been fixed. **(14431)**

## PuT Assignment, Graphical Procedures

- ✔ Passengers following a circle line transition were neither counted as passenger transfers nor 'Through' passengers at the stop point or stop so far, i.e. they did not appear at all in the volume of the stop. According to the flow bundle, they were transfers and not 'Through' passengers. Both errors were corrected. **(14236 🚩)**

## Schematic Line Diagram

- ✔ Rerouting line routes: A crash no longer occurs if you reroute the end of a line route while a schematic line diagram is open whose vehicle selection is specified on the basis of lines and directions. **(14433)**
- ✔ Updating run and dwell times: The displayed arrival and departure times were not updated in the schematic line diagram when changing the run and/or dwell times of a time profile. This error has been fixed. **(14421)**
- ✔ Keeping grouped edges: Changes to the underlying vehicle journeys of an edge are less likely to cause the separation of grouped edges in answer to the modification of the data model. Even if you deselect vehicle journeys in the vehicle journey selection and later select them again, the groupings are now retained. **(14417)**
- ✔ Response to changes to name attributes: Changes to the attributes of From-Time profile item names and To-Time profile item names of vehicle journey sections were rejected if a schematic line diagram was open which displayed the affected vehicle journeys. This bug has been fixed. **(14457)**

## Subnetwork Generator

- ✔ Forbidden special characters: So far, generating the subnetwork failed when texts contained special characters that are not allowed (semicolon in particular). This error has been corrected, i.e. a subnetwork can be generated. However, it will also contain texts with forbidden special characters. **(14399)**

## VISUM Files

- ✔ Rows of tabs in network files: Rows in network files consisting of tabs only were not ignored reliably. This bug has been fixed. **(14454)**

## ❗ Breaking Changes

### PuT Assignment, Graphical Procedures

- ❗ Passengers following a circle line transition were neither counted as passenger transfers nor 'Through' passengers at the stop point or stop so far, i.e. they did not appear at all in the volume of the stop. According to the flow bundle, they were transfers and not 'Through' passengers. Both errors were corrected. Naturally, this changes the volumes at stops and stop points and the results of flow bundle evaluations. **(14236)** ✔

14.00-07 [91829]

2014-11-11

## + New Features and Changes

### COM

- + Use of metric / imperial units: You can now switch between imperial and metric units using the new attribute 'UNIT' at INetwork. **(14296)**

### Dialogs

- + Dialog 'Generate version comparison': The type of version comparison selected in the dialog 'Generate version comparison' is now saved as default during the current Visum session. **(14285)**

### Foreign Formats

- + 'PuT supply from Visum' import: The import of PuT supply from Visum is now faster when bundling route courses in the target network. Moreover, another error has been fixed which could lead to unintended loops in the target network when bundling route courses. **(13928)**
- + OpenStreetMap import: So far, OSM ways were not imported if they contained adjacent nodes which were at the same time nodes on a different way, because this led to parallel links in Visum. This conflict is now solved by the insertion of an intermediate node (in the process step ProcessProblemWays). **(14182)**

### Formulas, Demand Procedures

- + Matrix formulas: The evaluation of formulas on matrices has been accelerated considerably for numerous special cases. As a result, the procedure 'Combination of matrices and vectors' and the different demand procedures, 'Tour-based model - combined distribution/mode choice' in particular, are now faster. **(13746)**



## Installation

- ⊕ The manual as well as the online help have been updated. **(14385)**

## Lists, Dialogs, Procedure Sequence

- ⊕ Alignment of the label of embedded buttons: So far, the label of embedded buttons in lists and list-like grids used to be centered. Now the label is always left-aligned if it cannot be set explicitly, or else it is aligned as specified for the respective column of the list. The labels of the procedure sequence in particular are now left-aligned, as well as the labels in the parameter dialogs of the different demand procedures (4-step, Tour-based model, Viseva), so that users can read the beginning of the text. In lists, the alignment can be set explicitly (if option 'Extended input options' has been activated). **(14250)**

## Network Comparisons

- ⊕ Version comparison with relative paths: If you explicitly enter a relative path when comparing versions (in the input field or via COM), it is now saved as relative path in the version file. The path is only dissolved as relative path when it is needed, i.e. when reading in the version file. In the process, the project directory for version files is evaluated first, afterwards the path of the currently loaded version file is searched. For files specified with absolute paths (for example in the file selection dialog) which, however, are located in the same directory as the currently loaded version file, a relative path is already saved to the version file and converted into an absolute path based on the then current path of the open version file when reading in this version file. This logic persists. **(14322 🚫)**

## Timetable Editor

- ⊕ Display of tool windows 'Timetable lines' and 'Line block selection': So far, the tool window 'Timetable lines' was always shown or displayed in the foreground if one of the two timetables got the focus. The same applies to the 'Line block selection' window and the Line block editor. Now these tool windows are displayed only once when opening a timetable or the line block editor. **(13915)**

## ✔ Fixed Bugs

### Add-Ins

- ✔ Add-In 'Buffers Around PuT Lines': If the network contained time profile items which were not located at a stop point, running the 'Buffers Around PuT Lines' add-in produced an error. This error has been fixed. **(14308)**

### COM

- ✔ Lists of activity pairs, activities, or person groups: When opening a list of activity pairs, activities, or person groups, the 'Demand models' list was opened instead. This bug has been fixed. **(14369)**
- ✔ Setting values at IMatrix: So far, the methods (Init, Open, SetDiagonal, SetValue, SetValueDouble, SetValueFloat, SetValueRaw) which set values at IMatrix (not attributes of the matrix object) could not be undone. Moreover, possibly necessary new evaluations were not started reliably, e.g. of filters (OD filter). This error has been fixed. **(14357)**

### Data Model

- ✔ Deleting a mode, a demand stratum, or a demand segment: A crash no longer occurs when deleting a mode, a demand stratum, or a demand segment. **(14373)**
- ✔ Deleting many lines: The multi-deletion of many lines has been accelerated. **(14291)**

### Dialogs

- ✔ Home trips for tour-based demand models: For a demand model of the type tour-based, you can edit the home trips of the zones on the 'Demand strata' tab of the 'Demand models' dialog. Even though the 'Set number of home trips' dialog displayed values of the zone attribute 'Home trips', changes were saved to the attribute 'Productions'. This error has been fixed. **(14324)**
- ✔ Localized matrix references: Matrix references are localized in more places than before, i.e. the operators and attribute names included are displayed in the set language instead of with the attribute ID (identical to the English short name). **(14347)**
- ✔ Subnetwork generator: In the 'Parameters subnetwork generator' dialog, the active status of the control elements were not refreshed correctly when reading in a parameters file, so that certain entries were not possible. This error has been fixed. **(14351)**

## Foreign Formats

- ✔ HAFAS import: If the HAFAS data stock is not include a stop which is used by a vehicle journey, this vehicle journey is still imported and the stop omitted. However, if this affected the first stop of a vehicle journey (and hence a time profile), the departure time at the first time profile item was not 0:00h. This could lead to an undefined behavior. The departure times of such time profile items could, for example, not be edited. This bug has been fixed. **(13578)**

## Formulas

- ✔ Formula matrices: When making changes to network objects, it is generally necessary to re-evaluate formula matrices as they may potentially depend on any network objects. Not only the value has to be re-evaluated, but also matrix references, because they can have a new meaning after changes to matrix attributes. This re-evaluation was missing up to now and has now been added. Consequently, OD pair filters set on formula matrix values are also evaluated anew. **(13573)**
- ✔ Initializing a formula matrix: The initialization of a formula matrix could trigger a crash when subsequently editing matrices. This bug has been fixed. **(14370)**
- ✔ Sum of a formula matrix: The value of the attribute 'Sum' of a formula matrix was not refreshed if matrices used in the formula were changed by the execution of a procedure. This error has been fixed. **(14307)**

## Graphics

- ✔ Scale of the network window: The scale was incorrect when using a projection. This applied to the numerical scale which is shown in the status bar, as well as to the graphical scale in the legend. This error has been fixed. **(12565)**

## Listings

- ✔ Pasting from the clipboard: So far, in a list, you could paste a table with data for another network object from the clipboard without receiving a warning. This error has been fixed. **(11027)**
- ✔ PrT paths list: Editing the origin zone filer in the PrT paths list no longer causes a crash if the list is set to a path set and not to a demand segment. **(14289)**

## Main Window

- ✔ Aggregation in the quick view: When editing the aggregation function of an attribute at multiple objects directly via the shortcut menu of the quick view, the display of this attribute was not refreshed. This bug has been fixed. **(14225)**

## Network Editor

- ✔ Editing the shape of line routes: If a line route contains shortened vehicle journeys which pass the section to be edited, these vehicle journeys have to be shortened to a stop on the unchanged section of the line route. If profile points existed at a stop on the associated time profile, however without boarding/alighting, the vehicle journeys were still shortened to this profile point, which resulted in an error message. Consequently, the course of the line route could not be changed. This error has been fixed by shortening the vehicle journeys to the nearest profile point with boarding/alighting. **(14267)**
- ✔ Network window loses focus: In different situations, the network editor lost the focus even though work had been done with this window only. In all of these situations, for example, you could not zoom with the mouse wheel any more but had to click into the network to do so. This bug has been fixed. **(14309)**

## Other Procedures

- ✔ Convert paths: In the 'Convert paths' procedure, the volume of the AP was used instead of the volume of the selected analysis time interval, if the source was a dynamically assigned PrT demand segment. This error has been fixed. **(14355)**
- ✔ Time-of-day choice: The 'Time-of-day choice' procedure was considerably slower in Visum 14 than in earlier versions. It has thus been accelerated. Furthermore, the progress is now indicated during the execution and you can cancel the procedure. **(14361)**

## PuT Assignment

- ✔ Headway-based assignment and user-defined attributes: If a network contained the definition of a user-defined attribute at PuT paths and you executed a headway-based assignment and saved the result as a version file, the resulting version file could not be opened again. This bug has been fixed. The defective saved version files can also be opened again. **(14350)**

## Scenario Management

- ✔ Multi-Insert operations: Several operations that insert a lot of objects with numerical IDs were very slow when editing a modification or the base version. They have been accelerated. However, modifications of a concerned scenario by a different user are now restricted during such operations. The following operations are concerned:
  - Converting polygonal objects
  - Multi-edit special function Generate stops / stop areas / stop points (on nodes)
  - Disaggregating line routes
  - Deleting nodes with connection of the links
  - Aggregating POIs/zones/territories
  - Aggregating the zones of a main zone
  - Generating zones
  - Import of the PuT supply from Visum
  - Import of shapefiles **(14248)**

## Schematic line diagram

- ✔ Separating all bundled edges: Separating all edges in a schematic line diagram could lead to a crash if bundled inner edges existed. This error has been fixed. **(14346)**

## Timetable Editor

- ✔ Inserting vehicle journeys into a graphical timetable: If a graphical timetable is open, all displayed vehicle journeys disappeared as soon as the 'Create vehicle journey' button is pressed. Not until you close the 'Create vehicle journey(s)' dialog, the vehicle journeys are displayed again. This error has been fixed. **(14286)**
- ✔ Reading the layout of timetable lines: Visum no longer crashes when reading in a layout file in the tool window timetable lines in certain circumstances. **(14287)**
- ✔ The deletion of multiple vehicle journeys in the tabular timetable no longer causes a crash. **(14310)**

## Timetable Editor, Schematic line diagram

- ✔ If a version file contained a tabular timetable, a line block editor, or a schematic line diagram in a tab group together with another view (e.g. the network editor), and the respective view was in the background, the display detail/the position of the separation between the different views was not restored correctly when restoring the window configuration. This error has been fixed. **(13994)**

## VISUM Files

- ✔ Version number network file / demand file: The version number has been incremented in the file types network file (\*.net), demand file (\*.dmd), and attribute file (\*.att) to facilitate the reading of those files in external programs. This was necessary because of the introduction of matrix references as some attributes changed their value type as a result. Visum can read in files with previous version numbers as well as those with new ones. **(14235)**

## ❗ Breaking Changes

### Network Comparisons

- ❗ Version comparison with relative paths: If you explicitly enter a relative path when comparing versions (in the input field or via COM), it is now saved as relative path in the version file. The path is only dissolved as relative path when it is needed, i.e. when reading in the version file. In the process, the project directory for version files is evaluated first, afterwards the path of the currently loaded version file is searched. For files specified with absolute paths (for example in the file selection dialog) which, however, are located in the same directory as the currently loaded version file, a relative path is already saved to the version file and converted into an absolute path based on the then current path of the open version file when reading in this version file. This logic persists. If you enter a relative path, then save the version file with the version comparison to it and later read it with different project directory settings, the second version file is sought in a different location than previously. Furthermore, version comparisons which are generated in this way cannot be read in with older Visum versions. **(14322)** [+](#)

14.00-06 [91230]

2014-10-16

## + New Features and Changes

### Network Editor

- ⊕ Generating connectors: When generating connectors, the t0 values are now always calculated for all transport systems based on the distance and the set speed, and not just for the PrT or PuT transport system. You no longer have to allocate this value manually when subsequently opening connectors for further transport systems. **(14231)**

## PuT assignment

- ⊕ Headway-based assignment with fares: The headway-based assignment with fares is a lot faster if the fare per path leg depends on the time profile only, and not on the boarding location. This condition for example applies if the fares contain boarding and transfer fares for fare systems only. In cases affected by the acceleration, the calculation results change once. **(13624 🚫)**

## ✔ Fixed Bugs

### COM

- ✔ ScriptMuuli functions: A crash no longer occurs when closing Visum after calling specific functions of ScriptMuuli from a COM script. **(14292)**

### Data Model

- ✔ Insert time profile item: If there is a shortened vehicle journey using a time profile, but not the complete time profile's range, it was not possible to insert a time profile item ('Profile Point' property) on a line route item having the 'IsRoutePoint' property within the part of the time profile not used by the vehicle journey. This bug has been fixed. **(14305)**

### Dialogs

- ✔ Finding matrices: Searching for matrices via the search dialog no longer causes a crash if the (in this case useless) synchronisation is active and a matrix is marked in the list of search results. **(14226)**

### Foreign Formats

- ✔ HAFAS import: If vehicle journeys cannot be imported because the valid days specified for their sections are not imported, a warning is now issued indicating this cause. **(14256)**

### Network Editor

- ✔ Converting polygonal objects: The conversion of polygonal network objects, in particular those with complex polygons, has been accelerated. **(14244)**
- ✔ Editing the shape of a line route: So far, an autozoom on the selected object (node / stop point) was not possible in combination with the function 'Select storage location' (which can be called via the context menu of a line route item). This error has been fixed. **(14274)**
- ✔ Floating dialog PrT paths: The floating dialog for PrT paths only displayed those paths which started with the lowest number at the zone. This error has been fixed. **(14232)**
- ✔ Tree display of POI categories: If a POI category existed in the network whose number is smaller than the number of the parent category, so far, those categories were displayed falsely in the category selection tree. This error has been fixed. **(14255)**

### Network comparisons

- ✔ Signal controls in model transfer files: If you edited the stages of a signal control via a model transfer file, the application of this model transfer file could fail because temporarily inconsistent green times could occur. This error has been fixed. **(14260)**

### PuT Operating Indicators

- ✔ Cancelling procedure 'PuT Operating Indicators': Visum does not crash anymore if you cancel the procedure 'PuT Operating Indicators' during an operational performance calculation. **(14283)**

### PuT assignment

- ✔ Walk links in the timetable-based assignment: If the option 'Delete connections that lie entirely within the departure/arrival extension' was activated, so far, pure walk links with a duration of 0s were deleted in the preselection. This error has been fixed. **(14271)**

## Schematic line diagram

- ✔ Attributes 'Headway time' and 'Maximum headway' at nodes with no alighting/boarding: If an edge is located at a transfer node at which alighting and boarding is not permitted for the displayed vehicle journeys, the determination of the values for the attributes 'Headway time' (directed/undirected) and 'Maximum headway' (directed/undirected) fails, because only departure times with alighting/boarding are included in the determination of the headway. The calculation has been changed in such a way that interpolated times now enter the calculation of the headway. **(14265)**
- ✔ Connecting all transfer nodes: The program does not crash any more if the option 'Connect the edges of a vehicle journey to all stops of the line route' or '...all stops with route points of the line route' has been selected in the layout of a schematic line diagram, and the timetable editor is opened in the context of a marked edge of which the time profile of one of the vehicle journeys displayed by the edge has no profile point at one of the adjacent transfer nodes. **(14261)**
- ✔ Open layout file: When opening a layout file in the schematic line diagram, Visum bundled edges that were not bundled when saving this layout. This error has been fixed. **(14273)**
- ✔ Separating edges: Visum no longer crashes when separating all edges. **(14270)**

## Timetable Editor

- ✔ Search in the tabular timetable: Searching vehicle journeys in the tabular timetable no longer leads to a crash if more than one vehicle journeys are marked and the network editor synchronization with auto zoom or move view is active. **(14237)**

## VISUM Files

- ✔ Standard value for user-defined attributes: The standard value for user-defined attributes of the type 'Bool' was not read in correctly from network files and model transfer files. This error has been fixed. **(14242)**

## VISUM Files, Network Comparisons

- ✔ Node geometry in model transfer file: If a model transfer file described the opening of an entry link of a split node leg, an invalid geometry could result when applying this model transfer file. This also affected the scenario management. This error has been fixed. The correction affects both the generation as well as the application of the model transfer file, which now contains more information on legs and lane turns. **(14269)**

## ❗ Breaking Changes

### PuT assignment

- ❗ Headway-based assignment with fares: The headway-based assignment with fares is a lot faster if the fare per path leg depends on the time profile only, and not on the boarding location. This condition for example applies if the fares contain boarding and transfer fares for fare systems only. In cases affected by the acceleration, the calculation results change once. **(13624 +)**

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2014-10-07

## + New Features and Changes

### Dialogs

- + License confirmation for OpenStreetMap background maps: The knowledge of the license terms for OpenStreetMap background maps have to be confirmed less often than before (only once per Visum session). **(13270)**
- + Preview of the background map in the graphic parameters dialog: The preview of the background map in the graphic parameters dialog now runs in the background. You can thus specify settings in the dialog before the preview is refreshed. **(12690)**

### Filters

- + Complement in filter dialog: For all group filters (OD pairs of zones, PrT paths, stops, lines), you can now display and edit the state of the complement option on the level of the overall filter condition for a network object type. So far, this option only existed in the data model (and thus via COM or in the XLM filter file). The effect is the same. **(11883)**

## Junction editor

- ⊕ Vissim node preview: The preview has been updated to version PTV Vissim 7. **(14035)**


## Listings

- ⊕ List 'Fare systems': A new list for fare systems has been added. You can edit the values of user-defined attributes of fare systems in this list. For technical reasons, this list is not restored when saving a version file in Visum 14. **(14202)**

## Miscellaneous

- ⊕ User setting 'Load map services automatically when opening version files and graphic parameter files': This setting in the user preferences used to affect static background maps only. It has now been renamed 'Permit loading of background maps from the internet'. If this option is not active, neither live background maps nor static background maps are displayed in the network editor. In the graphic parameters dialog, no preview will then be available on the page 'Background map'. Any internet access to background maps will be switched off. **(13815)**

## PuT Passenger Survey



- ⊕ Acceleration of plausibilization and direct assignment: The 'Plausibilization of survey data' procedure is now up to 15% faster and the 'Direct assignment' procedure up to 90% faster. In rare cases (where there are multiple line routes of the same line which have vehicle journeys matching the input data, i.e. such which run at the same time between the same stops), results may change once. **(14210)** 

## Timetable Editor



- ⊕ Exporting the tabular timetable to the clipboard: You can now export the entire tabular timetable to the clipboard (again). **(14102)**
- ⊕ Single-row and double-row display in the tabular timetable: Even if some marked stops are not displayed in two rows, in the context menu of the tabular timetable, you can now switch to a single-row display of marked stops and vice versa. **(14175)**
- ⊕ Sorting in the tabular timetable: So far, when editing the departure time of a displayed vehicle journey, Visum used to re-sort the display in the tabular timetable according to the standard sequence, thus destroying an existing sorting. This error has been fixed. A reorganization (and thus sorting) of the display cannot be avoided when inserting or deleting vehicle journeys. **(14166)**

## Fixed Bugs




### Add-Ins

-  Import Google Transit Feed: So far, reading in ANSI-coded files with the 'Import Google Transit Feed' add-in failed. This error has been fixed. **(14179)**
-  VisumPy.helpers: The functions GetMatrix and GetODMatrix from the VisumPy library now deliver the same return values as in the versions of the library delivered with Visum 13. **(14204)**

### Data Model

-  Moving vehicle journeys to a different time: In the past, the departure of a vehicle journey could be > 48:00:00 based on different approaches, for example when moving vehicle journeys to a different time in the tabular or graphical timetable. This error has been fixed. **(14201)**
-  Transport system of lines: So far, it was basically possible to allocate a transport system of the type PrT or PuT-Walk to a line; it was only prevented in the dialog. The error has been fixed. **(14170)**

### Dialogs

-  'HAFAS import' dialog: You can copy and paste on the 'Transport systems' page of the HAFAS import parameters dialog. Pasted values were not saved, however, but only displayed in the dialog. This error has been fixed. **(14169)**
-  Classification in graphic parameter dialogs: The display of the cells is now refreshed correctly when entering or inserting copied colors on page 'Active OD pairs > Display' of the graphic parameters dialog of the matrix editor, in all classification grids of the graphic parameters dialog of the tabular timetable, and on page 'Header data > Background' of the line block editor. **(13999)**
-  Shifting vehicle journeys: If you the shifted vehicle journeys of the selected time profile using the icon 'Change times of the current time profile's vehicle journeys' in the 'Items and time profiles' tab of the 'Edit line route' dialog, some vehicle journeys were not shifted sometimes. This error has been fixed. **(14183)**



## Foreign Formats

- ✔ 'PuT supply from Visum' import: If an ID search was switched on and the option 'Only use ID references for existing stop points, do not perform geographical search' was selected, the program did not search geographically if no existing stop point could be found as candidate. In addition, the program handled cases incorrectly where the same stop point in the target network was found as candidate for two successive line route items. Both errors have been fixed.  
Candidates found in a geographical search while option 'Only use ID references for existing stop points, do not perform geographical search' has been selected and not via ID references will be issued in a warning. **(14141)**
- ✔ Key overflow during import of 'PuT supply from Visum': The PuT supply from Visum import no longer crashes if an overflow occurs for an object with a numerical key in the target network (number is higher than approx. 2.1 billion). This happens if the number in the source network plus the set offset is higher than the maximum permissible value. The import still does not work in this case. You have to use the conflict avoidance option 'Compress with offset' for an import. **(14039)**

## Graphical Procedures

- ✔ Filters and shortest path search: So far, the active filters were evaluated anew with each change to a shortest path search (for example the selection of the origin or destination zone or of an intermediate node), because saving the route index to any attribute can affect each filter condition. This evaluation of the filters is now only carried out if the route index is actually saved. **(14222)**
- ✔ Shift network and flow bundle: In the 'Flow bundle' mode, you could not switch to the 'Shift network' mode by means of the space bar but only by means of the middle mouse button or the toolbar icon. This error has been fixed. **(14207)**

## Graphics

- ✔ Zooming background maps: Zooming out far (map of the earth visible several times) while the background map was switched on resulted in poor visual effects. This error has been fixed. **(13868)**

## Line blocking

- ✔ Negative minimum layover times and circle lines: When creating open blocks and activating option 'Always permit the transition between the sections of a vehicle journey' while negative minimum layover times (i.e. limited timetable changes) are permitted during line blocking and the vehicle journeys to be planned contain vehicle journeys on ring lines, entirely inefficient blocks are generated, which contain only one vehicle journey each on the ring line. This error has been fixed. **(14196)**

## Main Window

- ✔ Empty windows in case of missing licenses: If you read in a version file which contained windows to be restored for which no current license existed (e.g. schematic line diagram, transfers display of regular services, signal time-space diagram), empty window were displayed when activating the options 'Apply from version file, otherwise retain' or 'Apply from version file, otherwise reset' for the window configuration. This error has been fixed. **(13664)**

## Miscellaneous

- ✔ Memory consumption in networks with a lot of time series items: Visum 14 consumed a lot more memory than Visum 13 when loading networks with a lot of time series items. This error has been fixed. **(14184)**

## Network Editor

- ✔ Aggregating and disaggregating line routes: If you aggregated and disaggregated line routes, the values of user-defined attributes were lost at affected vehicle journey items. This error has been fixed. **(14227)**
- ✔ Deleting enclaves: The Multi-edit special function 'Delete enclaves' for polygonal objects deleted no more than one enclave per call instead of all enclaves of the polygon. This error has been fixed. **(13894)**
- ✔ Editing the shape of line routes: If a line route has an 'antenna', i.e. for example a course A-B-C-B-D, and you fix the base point of the antenna which the line route traverses twice (B in the example) and then drag the end point (C) to this base point, a loop of the antenna remains via the link closest to B. This error has been fixed. **(14187)**
- ✔ Editing the shape of line routes: Visum does not crash any more if the line route of a ring line is edited in such a way that the end point and the start point no longer coincide, and if a block item exists for a vehicle journey section of one of its vehicle journeys. Nor does undoing an action which results in the deletion of a block item due to rerouting a line route cause a crash any more. **(14197)**
- ✔ Moving objects in the legend: If you reached the margin while shifting objects in the legend (backgrounds, texts, and polygons), so far, you could only move the objects away from the margin yet not along the margin. This error has been fixed. **(13206)**

- ✔ Multi-delete of POIs: Multi-deleting a large number of POIs (e.g. all POIs of a category) took too long; it has been accelerated considerably. **(14185)**
- ✔ Rerouting coupled line routes: If you edit the shape of a line route which has at least one coupled time profile and one of the newly used links has a link run time  $t_{PuTSys}$  of 0s for the transport system, the edit mode can only be terminated when deactivating the 'Retain coupling' option. It is not possible to retain the coupling which implies a rerouting of the line route of the coupled time profiles. This error has been fixed. **(14163)**

## Network comparisons

- ✔ Attributes not calculated in model transfer files: If an attribute is not calculated in the target network, it is excluded when generating the model transfer file, i.e. the difference is not saved if it is calculated in the source network. So far, such attributes were not mentioned in a warning either. A warning has now been added. **(14215)**
- ✔ Version file with shortest path search: Visum no longer crashes when additively reading in a version file with shortest path search (i.e. in the context of model transfer files or version comparisons). **(14199)**

## Procedure Sequence

- ✔ Setting procedures active/inactive: Activating and inactivating procedure steps in the procedure sequence took too long, especially if the sequence contained demand procedures with a lot of demand strata. This error has been fixed. **(14223)**

## Timetable Editor

- ✔ Editing the column width in the tabular timetable: Editing the column width in the stop sequence grid of the tabular timetable no longer causes a crash if the set of displayed vehicle journeys is empty. **(14216)**
- ✔ Including missing time profiles in the basic selection: The context menu function 'Include missing time profiles in basic line selection' in the line selection tree of the toolbar window 'Timetable lines' used to include the new siblings not only in the basic selection but also in the visible selection. This error has been corrected. **(14206)**
- ✔ Legend in graphical timetable: The 'Legend parameters' dialog for the legend of the graphical timetable can now be called via the 'Timetable (graphical)' menu or the context menu. **(14164)**
- ✔ Reading graphic parameters saved with Visum 13: When reading in timetable editor graphic parameters or version files saved with Visum 13, so far, the foreground and the background color of the tableau was not used for the tabular timetable if no classified display had been specified. This error has been fixed. **(14148)**
- ✔ Stop sequence after shifting a stop point: If you shifted a node stop point, traversed by a line route, in the network editor in such a way that it turned into a link stop point, the program generated an invalid stop sequence. This could lead to a crash. This error has been fixed. **(14229)**
- ✔ Zooming in the graphical timetable: A crash no longer occurs when zooming in the graphical timetable. This crash only occurred in case of specific computer configurations. **(14135)**

## VISUM Files

- ✔ Reading PrT paths from a network file: Only mandatory attributes and no values of other attributes were read (e.g. In selection, user-defined attributes) when reading PrT path items from a network file. This error has been fixed. **(14167)**
- ✔ Saving a version and closing the program: If you confirm 'Save version?' when closing Visum, the version file is not saved but Visum closes anyway. The saved data are lost. The error has been fixed. **(14203)**
- ✔ Saving a version with matrix swap file: More detailed error messages are now issued if an error occurs while saving a version file with an associated matrix swap file (for example insufficient memory). Above all, the currently loaded network is kept in the memory so that it can be saved in another location. **(12099)**
- ✔ Version files with EVA weighting matrices: Reading version files saved with Visum 13 or earlier which contained EVA weighing matrices was unnecessarily slow. It has thus been accelerated. **(14191)**

## ! Breaking Changes

### PuT Passenger Survey

- ! Acceleration of plausibilization and direct assignment: The 'Plausibilization of survey data' procedure is now up to 15% faster and the 'Direct assignment' procedure up to 90% faster. In rare cases (where there are multiple line routes of the same line which have vehicle journeys matching the input data, i.e. such which run at the same time between the same stops), results may change once. **(14210 +)**

## + New Features and Changes

### Dialogs

- + Classification according to type number and the like: When setting a new attribute of the type 'type number', 'operator', 'valid day', 'vehicle combination', 'vehicle unit', 'parameter set' and 'fare system' on the classification pages of the graphic parameters dialog, you can now specify if you want to create a new class for each existing value. **(14046)**

### Miscellaneous

- + Modified mode: When executing a procedure sequence with 'Save version file' as last procedure, the network was no longer classified as modified any more (i.e. no asterisk after the file name in the title bar, no prompt to save the version file when closing the network). **(13656)**

### Timetable Editor

- + Access to the filter dialog: In both timetables (tabular/graphical), you can now access the filter dialog of the line filter again with a right-click on the filter icon in the tool bar of the timetable. **(14146)**

## ✓ Fixed Bugs

### Data Model

- ✓ Access to list of all matrices: Listing all matrices no longer triggers a crash if external matrices exist, for example when adding procedure 'Edit matrix' and subsequently selecting the reference object. **(14154)**

### Dialogs

- ✓ Inserting bars in graphic parameters: Visum does not crash anymore if you try to insert a bar anywhere but in the last position which uses auto scaling and displays an attribute which is also displayed by another bar. **(14132)**

### Filters

- ✓ Infinite loop caused by filter on node topology attributes: If a version file contained a filter with a condition that used attributes which enforced the existence of node topologies for nodes (for example 'Number legs'), an infinite loop occurred when opening the version file. This error has been fixed. **(14031)**

### Formulas

- ✓ Rounding of floating-point number target attributes: When reading in version files or procedure parameter files from Visum version 12.5 or older which contain the procedure step 'Edit attribute' and for which the 'Round' option has been activated despite a target attribute of the type floating-point (this will have no effect in Visum 12.5 or older), the round operator is falsely included in the formula so that the execution of the procedure generates different values than in Visum 12.5. This error has been fixed. **(14144)**

### Graphics

- ✓ Dashed boundary of polygonal objects of the type point: If you specified a dashed boundary for a polygonal object of the type point and later on a continuous display, the (continuous) lines were joined incorrectly. This error has been fixed. **(14119)**
- ✓ Legend and line bars: Drawing the legend no longer causes a crash after rearranging network objects in the graphic parameters for the filling of line bars. **(14165)**
- ✓ Slow image buildup: Even if the display of turn volumes was deactivated in the graphic parameters, the program used to calculate the minimum and the maximum of the turn attributes used in bars if the automatic scaling was switched on for these bars. This slowed the drawing of the network window down. This error has been fixed. **(14120)**

### Main window

- ✓ Crash due to undocked window: Reading a version file with the user preference 'Window configuration: Apply from version file, otherwise reset.' no longer causes a crash if the focus lies on a previously undocked window (e.g. a list). **(14116)**

### Network Editor

- ✔ Removing profile points after re-routing: Profile points could no longer be deleted after re-routing a line route. The error message 'Vehicle journey does not traverse time profile item' was issued instead. This error has been fixed. **(14108)**

## Other Procedures

- ✔ Intersect: Executing the 'Intersect' procedure or intersecting within the framework of Multi-edit in the network editor no longer causes a crash if the source attribute of the source object has an empty value. **(14151)**

## PuT assignment

- ✔ Editing of fares: If you edit the fares of a ticket type by changing the number of fare points for an entry, the fares of existing PuT paths are not updated. Even after a new assignment, the values are now refreshed. This does not apply when editing the fare for a number of fare points. This error has been fixed. **(14054)**
- ✔ Slowdown of assignment with matrix time series: So far, the timetable-based assignment was 2-4 times slower in Visum 14 than the same assignment in Visum 13 when using matrix time series with a large number of matrices or very refined time series intervals. **(14143)**
- ✔ Timetable-based assignment with shortest path search: In connection with shortened vehicle journeys, in particular cases, the shortest path variant of the timetable-based assignment could generate invalid connections, namely such that used shortened vehicle journeys beyond their own extend. This could lead to a crash in the impedance calculation of the assignment or when accessing such invalid paths later on. **(14014)**

## Schematic line diagram

- ✔ Deleting labeling forms: If you deleted labeling forms in the graphic parameters of the schematic line diagram and subsequently selected a new labeling form for the display of an edge, the display did not always use the settings of this labeling form but the default labeling form. This error has been fixed. **(14150)**

## Timetable Editor

- ✔ Displaying user-defined attributes: If you displayed user-defined attributes of vehicle journey items, calling the tabular timetable could cause a crash after terminating and restarting Visum. This error has been fixed. **(14134)**
- ✔ Hidden starts/ends of vehicle journeys: The arrows for hidden starts/ends of vehicle journeys now also point in the right direction if they start at segments which are wrapped beyond the time axis. **(14113)**
- ✔ Hiding stops without stop events: If the 'Hide stops without stop event' option of a stop sequence was active, the set of displayed members of the stop sequence was not refreshed when changing the visible selection in the line selection. This error has been fixed. **(14101)**

## VISUM Files

- ✔ Reading of matrix time series: Matrix time series with a lot of entries are now read in much faster from the demand file (\*.dmd). **(14155)**
- ✔ Time series of matrix numbers within demand files: Demand files (\*.dmd) containing time series of matrix number which were created using Visum 13 or earlier versions lost all the matrix numbers when reading with Visum 14. This bug has been fixed. **(14172)**

14.00-03 [90172]

2014-08-21

## + New Features and Changes

### COM

- + Executing procedures: A procedure sequence started from a VBS script file via Procedures.Execute is no longer cancelled if it contains Python scripts or Add-ins which use wxPython. **(13638)**

### Demand Procedures

- + Tour-based model distribution/mode choice: For demand strata with no home trips, the calculation is terminated early in order to save computation time. **(13988)**

### Foreign Formats

- + OpenStreetMap import: The importer now also reads faces if their edges are not listed in the right order in the source file. **(14028)**

## PrT Assignment

- ⊕ Blocking back calculation: The blocking back calculation on the basis of LUCE assignments has been accelerated and now has the same computation time as on the basis of other assignment variants. **(14088)**
- ⊕ LUCE: For the internal calculation, nodes are now only "exploded" where absolutely necessary. This reduces the computation time of the procedure, in some networks by half. **(14078 🚫)**

## Timetable Editor

- ⊕ By default, the layout of the tabular timetable now contains editable attributes for dimension, vehicle combination, operator and valid day. These attributes are displayed in drop-down lists which contain both number and code or name. **(14075)**
- ⊕ Separation of the tables in the tabular timetable: The visual separation of the three different tables in the tabular timetable has been softened by placing the toggles 'Show vehicle journey sections' (for the table in the middle) and 'Vehicle journeys/Vehicle journey sections' (for the lower table) in the tool bar of the tabular timetable. In return, the row headers in the vehicle section table are displayed slightly darker. **(13910)**
- ⊕ User-defined attributes for vehicle journey items: In the stop sequence, you can now also edit user-defined attributes for vehicle journey items. **(6238)**

## Visum Files

- ⊕ Graphic parameters file: A new XML-based file format (\*.gpax) is now available besides the familiar \*.gpa file. It can be opened or saved directly in the graphic parameters dialog and up to now contains exactly the graphic settings provided in this dialog. Specific graphic network objects (for example backgrounds) and parameters of graphic tools (e.g. flow bundle, isochrones etc.) are not included. However, there will be an XML format for those tools at a later point in time. **(9709)**

## ✓ Fixed Bugs

### Add-Ins

- ✓ Add-In 'Import Google Transit Feed': When using Add-In 'Import Google Transit Feed', a warning is now issued if no license exists for a calendar. All vehicle journeys are imported as daily in this case. **(14053)**
- ✓ Matrix Convolution: The procedure is now faster if one of the input matrices is constantly = 0. **(13951)**
- ✓ Run VBA: This Add-in can now also handle relative paths in the input attributes. **(14083)**

### COM

- ✓ Access to matrix values: The IMatrix.SetValuesDouble method now also accepts the return values of IMatrix.GetValuesDouble as argument when called from VBA. **(14033)**
- ✓ Editing filter conditions: If a filter condition referred to an attribute with a subattribute, a false error message was issued when accessing the attributes LOWERBOUND, UPPERBOUND or FILTEROPERATOR at the IFilterCondition object via AttValue, stating that the filter attribute was not found. This error has been fixed. **(14066)**
- ✓ IExportANMPara: Invalid attribute IDs are now rejected with an error message. **(12161)**
- ✓ Setting the text sizing factor: A change of the text sizing factor via INetworkBaseGPA::SetTextSizingFactorForScreen now takes immediate effect in the graphic display. **(14073)**
- ✓ Timetable editor: COM methods for reading the tabular timetable now always deliver length attributes contained in the table in the specified unit (e.g. km or mi), and not automatically in meters. **(14007)**

### Data Model

- ✓ Block items at modified vehicle journey sections: If you extended or shortened a vehicle journey section via the dialog, block items defined on this section were not adjusted. This error has been fixed. **(13749)**
- ✓ User-defined attributes: By mistake, the names of user-defined attributes were translated on the user interface when Visum accessed them via relations. This error has been fixed. **(14093)**

### Demand Procedures

- ✓ Creating a procedure sequence for a demand model: If you created a procedure sequence for a demand model in the Demand models dialog using the 'Create procedure sequence' button, incorrect formulas were generated in the procedure steps of the group 'Matrix aggregation'. These steps could not be executed. The error has been fixed. **(14063)**
- ✓ Kalibri: Since "matrix references" are flexible in Visum 14 and no longer permanently allocated in the data model, the Kalibri option "Save the calculated matrix as distribution matrix of the demand stratum" has become redundant. It has been removed from the surface. **(14107)**



## Dialogs

- ✔ Classification by enumeration type: No more crash when selecting an attribute which is an enumeration type with named values as classification attribute in the graphic parameters dialog. **(14137)**
- ✔ Copying values to the clipboard: When copying length attributes from a dialog table (e.g. for user-defined attributes) to the clipboard, it now contains the original values from the view and no longer the lengths converted into meters. **(14103)**
- ✔ Line route dialog: Warnings issued while using the line route dialog are no longer displayed in a separate floating dialog but, as usual, in a dialog that has to be confirmed in order to continue working. **(13600)**
- ✔ Modal dialogs and progress dialogs: In several situations, a process is started with a progress dialog out of a modal dialog (e.g. additive reading of network files, multi-editing links / deleting collinear points, import of PuT supply from Visum). In all of these cases, the dialog became non-modal afterwards, i.e. other actions could, for example, be triggered via the menu while the dialog was open before the initially started process ended. This led to possible malfunctions or even a crash. This error has been fixed. **(11557)**

## Foreign Formats

- ✔ Import PuT supply from Visum: In the parameters dialog for the import of the PuT supply from Visum, the program used to display the attribute selection of the target network for both networks when selecting attributes for the comparison attribute of stop points. This error has been corrected, i.e. the attribute selection of the source network is displayed for the stop points in the source network, so that even user-defined attributes, which are defined only in the source network, can be used as comparison attributes. **(13976)**
- ✔ Import of PuT supply from Visum: The parameters detour factor and supplement are now considered correctly during the import. A warning is issued if the specified attributes do not exist in the source network. **(13927)**
- ✔ Shapefile export: Texts are now cut off at 255 characters when exporting string attributes in order to fulfill the format specifications and to ensure the error-free import of such files. **(14112)**

## Formulas

- ✔ Crash caused by deep nesting: Formula attributes with particularly deep nesting (about 25 brackets) could trigger a crash. This error has been fixed. **(14080)**
- ✔ IF function: Inside the IF function, only the expression that applies according to the IF condition is now evaluated. Depending on the complexity of the contained expressions, this can save a lot of computation time. **(14117)**

## Graphics

- ✔ Background maps: If no internet connection exists while starting Visum, yet later on a connection exists, Bing maps are automatically available again from this point in time. **(13619)**
- ✔ Background maps: On some computers, the display of background maps (Bing maps or similar) used to fail because of the proxy authentication. This error has been fixed. **(14100)**
- ✔ Boundaries of polygons: The boundaries of polygons (e.g. for zones or territories) are now displayed as in Visum 13, without disruptive "jags". **(14110)**
- ✔ Line bar display: The visibility of the label of a line bar no longer depends on the standard bar parameters of the same bar. **(14071)**

## Listings

- ✔ Node list: The calculation of analysis rows no longer leads to a crash if node geometries are generated as a result. **(14044)**

## Network Editor

- ✔ Editing the shape of links and polygons: The dialogs which are used to edit the shape of links and polygons now also open inside the Visum main window if Visum runs on the second screen. **(12224)**
- ✔ Tabular editing of line route: If you edited a new line route only tabularly and the run times of the used system routes matched the PuT run times of the used links, you could not exit the floating dialog with OK and had to cancel the action. This error has been fixed. **(14036)**
- ✔ Undo: In the "Insert" mode for links and screenlines, you can use the Undo functionality again via the shortcut Ctrl+Z. **(14074)**

## Network comparisons

- ✔ Network merge mode: On some computer, the program used to crash at the beginning of the network merge mode. This error has been fixed. **(14089)**



- ✔ Version comparisons: The project directory specified for version files now applies to files used in version comparisons. Relative paths can thus also be used. **(14076)**

## Other Procedures

- ✔ "Edit attribute" procedure: \*.ver or \*.par files created with Visum 12.5 in which the "Edit attribute" procedure set a length attribute to a constant (e.g. "2 km") were not imported correctly into Visum 13 or 14. The constant was set to the internal meter value in this case. This conversion error has been fixed. **(14111)**

## PuT Assignment

- ✔ Parameter 'Consider connections with DeltaT > 0, if connections with DeltaT = 0 exists': If the parameter 'Consider connections with DeltaT > 0, if connections with DeltaT = 0 exists' is deactivated and if there are no connections with DeltaT = 0 for some given time interval, every connection was assigned the volume  $10^{(-n)}$ , where n is the number of decimal places defined as 'Precision of computation' by the general procedure settings. If volume data is not rounded at all, no connection would be assigned any volume in that case. This bug has been fixed. **(14138)**

## Schematic Line Diagram

- ✔ Shifting centered labels: Shifting centered labels no longer leads to a crash. **(14106)**

## ❗ Breaking Changes

### PrT Assignment

- ❗ LUCE: For the internal calculation, nodes are now only "exploded" where absolutely necessary. This reduces the computation time of the procedure, in some networks by half. This change can lead to different assignment results in the context of the accuracy of convergence. **(14078 +)**

14.00-02 [89482]

2014-08-01

## + New Features and Changes

### Add-Ins

- + Add-In 'Import Google Transit Supply': So far, all stop points were opened for all transport systems when importing data using the Add-In 'Import Google Transit Supply'. Now they are opened only for those transport systems that are actually required. **(13939)**
- + Add-In 'Import Google Transit Supply': The 'Import Google Transit Supply' Add-In has been accelerated significantly. **(11681)**
- + Add-In 'Import Google Transit Supply': So far, the 'Import Google Transit Supply' Add-In did not handle umlauts in identifiers correctly. This error has been fixed. **(14002)**

### COM

- + Access to 'Read filter': You can now access the parameters of the 'Read filter' procedure in COM. For this purpose, the new COM object IReadFilterPara has been introduced, which can be reached from IOperation via the access method ReadFilterParameters ([out, retval] IReadFilterPara \*\* readFilterParameters). **(14020)**
- + Access to mode choice matrices: In COM, you can now access the mode choice matrices of the 'Mode choice' (4-step) procedure. For this purpose, the COM object IModeChoiceDStratModePara has been introduced, which can be reached from IModeChoiceDStratPara via the access mode ModeChoiceDStratModeParameters ([in] VARIANT Mode, [out, retval] IModeChoiceDStratModePara \*\* dStratModeParameters). **(13956)**
- + Getting or setting single matrix values: The new methods GetValue / SetValue and GetRow / SetRow to get and set single matrix values or entire rows have been implemented at the object IMatrix. **(13977)**
- + Reading filters: You can now read the current filter conditions. To do so, you can iterate over the currently defined filter conditions at each I...filter object and read them via AttValue at the new ICondition objects. Brackets are now placed afterwards around the existing filter conditions and not inserted as terms in brackets. **(12499 🚫)**

### Foreign Formats

- + Reading a database or shapefile additively: The 'Read additively' option is now activated by default when reading a database or shapefile, if the current network is not empty, analogous to reading network files. **(13973)**

## Schematic line diagram

- ⊕ Vehicle journey selection on the basis of line routes: In the schematic line diagram, apart from selecting vehicle journeys, you can now also specify combinations of lines and directions for the displayed supply. The line diagram is then based on all vehicle journeys, which belong to a selected line and direction. In particular vehicle journeys, which have been newly created, do not have to be selected explicitly to be displayed in the schematic line diagram. **(13816)**

## Timetable Editor

- ⊕ Functionalities of the context menu in line selection: The line selection tree of the tool window Timetable lines provides additional context menu functionalities:
  - Copy line route (on line routes)
  - Create opposite direction (on line routes)
  - Remove line routes without allocations to stop sequence (applies to the selected partial tree)
  - Remove line routes with less than two allocations to stop sequence (applies to the selected partial tree)
  - Include missing time profiles in basic line selection (applies to the selected partial tree)
  - Remove from basic line selection (applies to the selected partial tree) **(14012)**
- ⊕ Header rows in the tabular timetable: In the lower section of the tabular timetable, the header rows visible in the 'Vehicle journeys' view were simplified. In particular, the view no longer jumps when switching between the 'Vehicle journeys' view and the 'Vehicle journey sections' view. **(13913)**
- ⊕ Tabular timetable: The 'Vehicle journey sections' view in the lower section of the tabular timetable now displays the arrival and departure times of the vehicle journey in addition to the spatial expansion of the vehicle journey section. **(13907)**

## ✓ Fixed Bugs

### Add-Ins

- ✓ Add-In 'Matrix Convolution': A version file saved with Visum 12 or earlier versions which contained parameters for the 'Matrix Convolution' Add-In could not be run with Visum 12.5 or later versions. This error has been fixed. **(13981)**

### COM

- ✓ Adding and removing procedures: Using 'Undo' and 'Redo' or removing a procedure interactively from the procedure sequence no longer causes a crash, if a procedure step has been inserted or deleted previously via COM (methods 'AddOperation' or 'RemoveOperation'). **(13982)**
- ✓ Messages during start of program as COM server: When starting Visum as COM server, modal message windows could pop up and prevent the start of the program. This error has been fixed. Messages from this phase can be found in the usual places, e.g. the log file or the message file. **(13992)**
- ✓ Modifying block items: So far, the status of the block was not adjusted properly when editing block items via COM (e.g. by setting attribute values using AttValue). This error has been fixed. **(13297)**
- ✓ Setting filter conditions: If you specified a string which contained multiple numerical values separated by a comma as value for an attribute with an enumeration type when setting a filter condition via 'AddCondition', first, the program would convert the value into a number and then round it, instead of interpreting each number separately as a variant of the enumeration type. Example: If value "3,6" has been specified for an attribute of type 'Control type', this value was interpreted as 4 according to the variant 'NODECONTROLALLWAYSTOP' and not as 'NODECONTROLPRIORULESSTOP' or 'NODECONTROLPRIORULESYIELD'. This error has been fixed. **(12252)**

### Data Model

- ✓ Depot reference at block: If a block existed in the network with an explicit reference to a depot (i.e. a stop point has been entered for attribute Depot number) and you deleted this stop point, the version file could not be saved any more. This error has been fixed. **(14025)**
- ✓ Multi-deleting couplings: Multi-deleting large numbers of couplings has been accelerated. **(14016)**
- ✓ Relative position of stop points: Changing the relative position of a stop point (e.g. in the list or using COM) no longer leads to a crash, if the stop point is located on a node. In this case, the relative position is not relevant anyway. **(13969)**

### Dialogs

- ✓ Formula dialog: The highlighting of errors in color works again in the different dialogs for formulas. **(13840)**
- ✓ Matrix reference in dialog 'OD demand data': On the 'Demand segments' tab of the 'OD demand data' dialog, selecting a matrix by properties for a demand segment while using the 'DSegSet' attribute no longer causes a crash. The value of this attribute of a matrix results from the use for one or more demand segments, which are specified in this dialog. This led to a recursive definition. This recursion is now intercepted. **(13863)**

- ✔ Object selection in the graphic parameters dialog: In the graphic parameters dialog, controls no longer overlap on the object selection page of the different bars, if the 'Draw bars only on selected <object name>' option is selected and the dialog is resized. **(13862)**

## Filters

- ✔ Filter for OD pairs on PuT paths: Visum no longer crashes when evaluating the filter for OD pairs with filter conditions on PuT paths which have fares. **(13997)**

## Foreign Formats

- ✔ Import of PuT supply from Visum: A crash does not occur any more during the import of PuT supply from Visum, if the target network is empty (no nodes and/or no links). Furthermore, nodes, links, and stop points are created only once in the target network, if line routes of different transport systems require the creation of new infrastructure. Instead, the newly created stop points and links are opened for the additional transport systems. **(13933)**
- ✔ Import of PuT supply from Visum: When importing PuT supply from Visum, for stop points imported into the target network, you can copy the stop point number of the source network into a user-defined attribute in the target network. If multiple stop points were created in the target network for the same stop point of the source network, so far, the number of the source stop point was not used for all new target stop points. This error has been corrected. **(13961)**
- ✔ Import of the PuT supply from Visum: Editing a stop no longer leads to a crash if it was created during the import of a PuT supply from Visum. **(13930)**

## Formulas

- ✔ Editing text attributes: Editing a string value target attribute (e.g. 'Name' at links) or a multi-enum target attribute (e.g. 'TSysSet' at links) with the 'Edit attribute' procedure or Multi-edit in the network editor no longer causes a crash, if the used formula is empty. **(14005)**

## Graphics

- ✔ Drawing bars: Visum does not crash any more when drawing the network if bars are drawn for an attribute which requires data of the node geometries. **(13052)**
- ✔ Scrolling in empty network: The scroll bars did not work correctly in an empty network with just a background map. This error has been fixed. **(13574)**
- ✔ Turn volumes of main nodes: Turn volumes of main nodes are now also displayed if a turn attribute, which does not exist for main turns, is selected for an inactive bar. So far, the attributes of all bars, even the inactive ones, had to exist for main turns, too. Moreover, the dialog now displays a message if this requirement for attributes is not met. **(13810)**

## Listings

- ✔ Saving attribute files from the PuT path list: Saving an attribute file from the PuT path list or PuT path leg list no longer causes a crash when using more than one core. **(13970)**

## Main Window

- ✔ 'Graphics tools' window and tabular timetable: The program no longer crashes when opening the tabular timetable while the 'Graphics tools (Flow bundle, isochrones, ...)' window is open. **(13964)**

## Matrix Editor

- ✔ Data loss when saving a version file: An open matrix histogram lost its reference matrix when saving the version file. The data were empty and the window title changed to 'Matrix histogram ()'. This error has been fixed. **(13604)**

## PrT Assignment

- ✔ Tribut assignment with VOT per OD pair: The program could crash or deliver wrong assignment results when defining the value of time (VOT) per OD pair in one of the two Tribut assignments. This error has been fixed. **(14006)**

## Procedure Sequence

- ✔ Saving procedure parameters: If you opened a procedure parameters file in the procedure sequence window, saved this file under a different name and then saved the procedure parameters once more, Visum suggested the name of the originally opened procedure parameters file and not the one of the most recently saved file. This error has been fixed. **(13346)**

## PuT Assignment

- ✔ PuT path lists with fares: The program does not crash any more when displaying PuT path lists (PuT paths, PuT path legs), if fares are displayed as attributes and analysis rows are inserted. **(14013)**

## PuT Line Blocking

- ✔ Forced chainings during marginal hours: Forced chainings of vehicle journey sections starting after 24h were not regarded correctly in the line blocking calculation. This error has been fixed. **(13991)**

## Schematic line diagram, Timetable Editor

- ✔ Calculating the stop sequence based on marked edges: Time profiles of marked edges were not always inserted in consistent direction into the line selection, when opening the timetable editor in the schematic line diagram based on the undirected edges marked and adjusting the line selection and the stop sequence. When calculating the stop sequence, this led to the display of line routes in forward direction instead of reverse direction when inserting additional stops. This error has been fixed. **(13955)**

## Timetable Editor

- ✔ Line selection in the 'Timetable lines' tool window: The 'Line selection' dialog opens much faster when opened in the 'Timetable lines' tool window. **(13918)**

## ❗ Breaking Changes

### COM

- ❗ Reading filters: You can now read the current filter conditions. To do so, you can iterate over the currently defined filter conditions at each I...filter object and read them via AttValue at the new ICondition objects. Brackets are now placed around the existing filter conditions afterwards and not inserted as terms in brackets with the method 'AddBracketedCondition'. Scripts, which used the 'AddBracketedCondition' so far, need to be adjusted. **(12499 +)**

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## + New Features and Changes

### Add-Ins

- + Add-In 'Create Regular Timetable': The 'Create Regular Timetable' Add-In, which can be used to create an exclusive regular timetable for PuT lines, has been accelerated. **(13889)**

### Data Model

- + Attributes for number and name: Additional attributes have been created for the objects vehicle journey and vehicle journey section, which display both the number and the code or name of the object (in case of time profile items number and code of the stop point where the time profile item is located) for reference objects (operator, valid day, vehicle combination, From time profile item and To time profile item). These attributes can be used in the tabular timetable to display both values in the same, editable cell. They have been added to the default attribute selection of the tabular timetable as well as to that of the vehicle journeys and vehicle journey sections list. **(13929 ❗)**

### Dialogs

- + Procedure parameters dialog 'EVA distribution/mode choice': You can now group and sort the parameters dialog of the procedure 'EVA distribution/mode choice' by column. Moreover, the program provides better support of copy and paste for the matrix reference. **(13847)**

### Graphical Procedures

- + Display of modified flow bundle terms: The values of a flow bundle term, e.g. the choice of demand segments or of the demand (in case of public transport) are now selected in a list. This way, the differences between the current settings and the settings valid during the last calculation of the flow bundle are now all highlighted in color. **(13748)**

### Lists

- ⊕ Opening PuT path lists: Opening the lists 'PuT path', 'PuT path legs', and 'PuT OD pairs' in large networks has been accelerated. **(13711)**

## Other Procedures

- ⊕ 'Intersect' procedure: The 'Intersect' procedure as well as the correspondent Multi-edit functionality are now faster when intersecting source objects that have polygons. **(13893)**

## Schematic line diagram

- ⊕ Bundle edges by regular service patterns: Edges are now bundled more often when bundling edges by regular service patterns. More precisely, edges are now also bundled, if one of the edges contains not only vehicle journeys of a service trip pattern but also vehicle journeys that do not belong to any service trip pattern (thus 'outliers'), however not if the contained vehicle journeys belong to different service trip patterns. Moreover, when calculating the service trip patterns, you can now select whether you want to maximize the frequency or the temporal dimensions of the service trip patterns, analogous to the procedure 'Calculate service trip patterns'. **(13945)**

## Timetable Editor

- ⊕ Allocations of line routes to stop sequence items: Existing allocations of line routes to items of the stop sequence are now copied when copying line routes (in the context of the operations 'Copy line route', 'Shift vehicle journeys to a different line', 'Edit vehicle journey items' and 'Disaggregate line routes'). Consequently, the new line route is allocated to the same stops as the original. **(13860)**
- ⊕ Graphical timetable: In the graphical timetable, you can now also edit vehicle journey sections using the context-sensitive menu of a marked vehicle journey. **(13905)**
- ⊕ Marking in the tabular timetable: The logic of the marking in the tabular timetable has been simplified. Now, either vehicle journeys or vehicle journey sections are marked. When marking a vehicle journey section, the column header of the corresponding vehicle journey is highlighted and included in the global marking (and thus displayed in the network editor and the quick view), if synchronisation has been activated. Double-clicking cells which cannot be edited opens the respective Edit dialog of the vehicle journey or vehicle journey section, the 'Del' button deletes it. **(13904)**
- ⊕ Opening both timetable views: In the context of lines, line routes, when marking links, stops or stop points in the network editor, and in the schematic line diagram, you can now open both timetables (graphical and tabular) at once. Queries regarding the adjustment of the stop sequence will only be issued once in this case. **(13914)**
- ⊕ Vehicle journey sections in the tabular timetable: In the tabular timetable, the context-sensitive menu of the vehicle journey sections now also provides entries, if multiple vehicle journey sections are marked. **(13909)**

## ✓ Fixed Bugs

### Add-Ins

- ✓ Add-in 'Matrix Convolution': Running the 'Matrix Convolution' add-in used to produce an error message when using the 'Use via zone given in matrix' option. This error has been fixed. **(13888)**

### COM

- ✓ 'Run script' procedure: If the python script code is contained directly in the procedure parameters rather than in a script file during a procedure step 'Run script', the 'import VisumPy.helpers' directive fails when running the procedure. This error has been fixed. **(13940)**
- ✓ Clear the stop sequence: The information whether the stop sequence is reversed or not survives a call to the ClearStopSequence(False) method on an object of type ILineSelectionAndStopSequence. This error has been fixed. **(13971)**
- ✓ Methods with a return value of type VARIANT\_BOOL: Most of the COM methods and properties that have a return value or output parameter of the type 'VARIANT\_BOOL' falsely return value 1 instead of VARIANT\_TRUE (-1). This regards:
  - \* Active for objects
  - \* AttState for containers
  - \* IsColumnEditable for lists
  - \* IsSortable for lists
  - \* IAddInParameter::ok
  - \* IAddNetRead::NumericOffsetUseCompression
  - \* IAddNetRead::OfferAlphaPrefix
  - \* IAddNetRead::OfferNumericOffset
  - \* IAddNetRead::UseAlphaPrefix
  - \* IAddNetRead::UseNumericOffset
  - \* IAttribute::Editable
  - \* IAttribute::Scaled

- \* IBackground::Draw
- \* IBackground::Transparent
- \* IBlock::Check
- \* IBlockVersion::CheckBlocks
- \* IBlockVersion::CheckCoverage
- \* ICategoryFilter::Complement
- \* ICategoryFilter::IncludeSubCategories
- \* ICategoryFilter::UseFilter
- \* IConditions::UseFilter
- \* IConnectors::ExistsByKey
- \* IDirectedFilter::Complement
- \* IDirectedFilter::Undirected
- \* IDirectedFilter::UseFilter
- \* IFlowBundle::ConditionDefined
- \* IGetNearestLinkResult::Success
- \* IGetNearestNodeResult::Success
- \* IGraphic::StopDrawing
- \* IGraphicalTimetable::ShowOnlyActiveVehJourneys
- \* IGroupElementFilter::UseFilter
- \* IGroupElementFilter::UseSelection
- \* IImportShapefilePara::CreateUserDefinedAttributes
- \* IImportShapefilePara::SetAttributeAllocationsByIDs
- \* IIterator::Active
- \* IIterator::Valid
- \* ILineGroupFilter::UseFilterForLineRouteItems
- \* ILineGroupFilter::UseFilterForLineRoutes
- \* ILineGroupFilter::UseFilterForLines
- \* ILineGroupFilter::UseFilterForTimeProfileItems
- \* ILineGroupFilter::UseFilterForTimeProfiles
- \* ILineGroupFilter::UseFilterForVehJourneyItems
- \* ILineGroupFilter::UseFilterForVehJourneySections
- \* ILineGroupFilter::UseFilterForVehJourneys
- \* ILineRouteItemList::SectionViewMode
- \* ILineSelectionAndStopSequence::HideUnservedStops
- \* ILineSelectionAndStopSequence::StopSequenceIsEditable
- \* ILinks::LinkExistsByKey
- \* IMainTurns::MainTurnExistsByKey
- \* IMarking::Changed
- \* IMarking::IncludePOISubCategories
- \* INet::AllCouplingsConsistent
- \* INet::AllLinksUniqueOnLineRoutes
- \* INet::GetNearestLink
- \* INet::GetNearestLinkCacheActive
- \* INet::GetNearestNode
- \* INetObjGroupGPA::Draw
- \* INodes::NodeExistsByKey
- \* IODPairFilter::Complement
- \* IODPairFilter::FilterNetworkVolumes
- \* IODPairFilter::UseFilter
- \* IOperationExecutor::IsExecuting
- \* IOperationExecutor::ProcedureFlowFinished
- \* IPathGroupFilter::UseFilterForPathItems
- \* IPathGroupFilter::UseFilterForPathSets
- \* IPathGroupFilter::UseFilterForPaths
- \* IProcedures::AssignmentCalculated
- \* IProcedures::IsExecuting
- \* IProcedures::OperationCalculated
- \* IPropagationLinkInfos::PropagationLinkInfoExistsByKey
- \* ISingleFilter::Complement
- \* ISingleFilter::UseFilter
- \* IStopGroupFilter::UseFilterForStopAreas
- \* IStopGroupFilter::UseFilterForStopPoints
- \* IStopGroupFilter::UseFilterForStops
- \* ISysRouteItemList::SectionViewMode
- \* ITabularTimetable::ShowOnlyActiveVehJourneys
- \* ITabularTimetable::ShowVehicleJourneySectionCourse
- \* ITimeProfileItemList::SectionViewMode



- \* ITurns::TurnExistsByKey
- \* IUserPreferences::AdoptFileName
- \* IUserPreferences::SaveUserPreferencesToRegistryOnClose
- \* IVehJourneyItemList::SectionViewMode
- \* IVisum::AcceptIncomingDuringOutgoingCalls
- \* IVisum::Embedded
- \* IVisum::ExportAllNumbersAsDoubles
- \* IVisum::GetModule
- \* IVisum::IsJunctionEditorRunning
- \* IWorkbench::IsBlockDisplayRunning
- \* IWorkbench::IsGraphicalTimetableRunning
- \* IWorkbench::IsJunctionEditorRunning
- \* IWorkbench::IsTabularTimetableRunning

This error has been corrected. The standard method AttValue is not affected. **(13949 🚫)**

## Dialogs

- ✔ Edit line route dialog: Specific error messages, e.g. one stating that the assignment result will be discarded, were issued twice, when making changes in the 'Edit line route' dialog. This error has been fixed. **(13900)**
- ✔ Finding network objects in the network merge mode: An error message used to be issued when opening the attribute selection in the network object search while in network merge mode. This error has been fixed. **(13790)**
- ✔ Finding network objects: The network object search did not find matching network objects if the matching data were contained in attributes with subattributes. This error has been fixed. **(13890)**
- ✔ Matrix selection by property: On the 'Select matrix by properties' tab in the matrix selection dialog, you can now mark rows by clicking the respective headers. **(13866)**
- ✔ Operand selection in the Matrix editor: In the dialog 'Select the operand for ... on the total matrix' that allows you to select an operand for multiplication, addition, etc., in the Matrix editor, the decimal separator selected under User Preferences was not activated. In addition, the error message regarding wrong entries was displayed twice. Both errors have been fixed. **(13771)**
- ✔ Parameters dialog of the 'EVA weighting' procedure: In the procedure parameters dialog of the 'EVA weighting' procedure, switching the 'Generalized cost' option causes a change of the control element for the specification of these costs. However, this only happened when activating the option, not when deactivating it. This error has been fixed. **(13941)**
- ✔ Procedure parameters 'Tour-based model - combined distribution/mode choice': In the procedure parameters dialog of the 'Tour-based model - combined distribution/mode choice' procedure, the unjustified error message 'Assignment operator ':'=' expected' used to be issued when closing the subdialog for the utility function in the Mode choice tab and modified values were not saved. This error has been fixed. **(13855)**

## Foreign Formats

- ✔ Import of OpenStreetMap, SATURN and VDV452: Cancelling the reading process of the network file in the progress dialog while importing the formats OpenStreetMap, SATURN and VDV452 no longer causes a crash. **(13932)**
- ✔ OpenStreetMap import, VDV452 import: The import of OpenStreetMap data and VDV452 data is now successful even if the string of a name contains a dollar sign ('\$'). During the import, it will be replaced by the paragraph sign (§). **(13861)**
- ✔ VDV452 export of blocks: When exporting blocks into the VDV452 format, to avoid gaps in the blocks, inactive vehicle journey sections are now exported as empty trips, if the 'Export only active vehicle journey sections' option is activated. **(13880)**
- ✔ VDV452 export: During a VDV452 export, only numerical attributes can now be selected from the Visum data model for the VDV key columns (the export failed when selecting strings). In return, the block ID is no longer saved in the block attribute 'code' during the VDV452 import, but in a numerical user-defined attribute, so that it can be reused from there during the export. **(13883)**

## Graphical Procedures

- ✔ Modification of flow bundle conditions: When comparing the flow bundle conditions with the conditions used during the last execution, PrT conditions could be falsely compared with PuT conditions resulting in an incorrect display of deviating conditions. This error has been fixed. **(13872)**

## Graphics

- ✔ Legend for line bars: For line bars of main lines, so far, the legend used to display the graphic parameters for transport systems if the order of the objects had been changed. Nothing was displayed for transport systems in this case. The error has been fixed. **(13884)**

## Installation

- ✔ /SILENT setup: When running multiple automated installations (option /SILENT) on the same computer, the second setup used to delete the start menu entry of the first installation. This error has been fixed. **(13281)**

## Listings

- ✔ Analysis rows in the PrT path list: Visum no longer crashes when you activate an analysis row (sum, minimum, maximum, average) in the PrT path list or the PrT path leg list. **(13965)**

## Main Window

- ✔ Quick view: When changing the network object type of the marking, the quick view displayed the data of the new network object (in the layout specified for this network object type). However, the name of the network object type in the title bar was not updated. This error has been fixed. **(13908)**

## Miscellaneous

- ✔ Log files: When for the Visum log files 'Protocol.txt' and 'Messages.txt', you specified different paths than the default ones, using the cfg file during program start, these two files were not created. This error has been fixed. **(11643)**
- ✔ Matrix swap file: Visum did not start, if the directory specified for the matrix swap file was not writable or did not exist. Subsequently, the directory could not be edited either, unless the respective entries were deleted in the registry. This error has been fixed. The program now attempts to use the default path. If the matrix swap file cannot be created here, the program starts without the matrix swap file. **(13770)**
- ✔ User settings for log file: So far, the program used to ignore the settings for the log file on how to behave during the start of Visum and used the setting specified for the message file for both files instead. This error has been fixed. **(13942)**

## Network Editor

- ✔ Multi-deleting nodes (with two legs): Memory consumption went up when deleting multiple nodes with two legs using the option that connects the links in case of a great number of nodes to be deleted despite using the 'Clear Undo stack to save RAM' option. This error has been fixed. At the same time, the run time has been accelerated and misleading messages regarding the positioning of stop points are suppressed if stop points are not involved. **(13851)**

## Other Procedures

- ✔ 'Intersect' procedure: The progress indicator of the 'Intersect' procedure has been improved. **(13856)**

## PrT Assignment

- ✔ Closures of connectors: In case a connector was not permitted for a PrT transport system, this closure was ignored if the 't\_cur' attribute was not part of the volume delay function for connectors. This error occurred since ID 13204 (contained in Visum 13.00-12 and Visum 14.00-00) and has now been fixed. **(13899 🚫)**
- ✔ ICA calculation for signalized nodes: The ICA calculation for signalized nodes could result in false allocations of the volume to the individual lanes in case of lane allocations with shared lanes. This error has been fixed. **(13820 🚫)**
- ✔ Multiple assignments with MPA and blocking back calculations: Visum no longer crashes when successively calculating multiple PrT assignments for different demand segments in a procedure sequence while both MPA and the blocking back calculation are active. **(13885)**

## PuT Assignment

- ✔ Reading a connection file: Reading a connection file (\*.con) which did not contain any connections led to an infinite loop. This error has been fixed. **(13896)**

## PuT Line Blocking

- ✔ Line blocking with vehicle interchange: The program no longer crashes during line blocking with vehicle interchange, if the 'Same operator for next vehicle journey' option is selected for succeeding vehicle journeys, yet there are vehicle journeys with and without operators. **(13919)**

## Timetable Editor

- ✔ Scrolling in the tabular timetable: The program no longer crashes when scrolling in the tabular timetable if not all of the vehicle journey sections fit the screen. **(13917)**

## Timetable Editor, Network Editor

- ✔ Deleting multiple lines: When deleting multiple lines, stop sequences could still contain references to the deleted lines. Subsequent operations, particularly saving a version file or the layout file of the timetable lines, then led to a crash. This error has been fixed. **(13898)**

## VISUM Files

- ✔ References to sig files: If a version file contains signal controls with external controls (VISSIG) but no VISSIG license exists, the program no longer issues messages when reading the version file. The signal control then acts like a signal group based internal fixed time control and uses the green times provided by the Visum data model. Then, however, it is not possible to switch between different signal programs. The reference to the \*.sig file is yet maintained. **(13783)**

## ❗ Breaking Changes


### COM

- ❗ Methods with a return value of type VARIANT\_BOOL: Most of the COM methods and properties that have a return value or output parameter of the type 'VARIANT\_BOOL' falsely return value 1 instead of VARIANT\_TRUE (-1). This regards:
  - \* Active for objects
  - \* AttState for containers
  - \* IsColumnEditable for lists
  - \* IsSortable for lists
  - \* IAddInParameter::ok
  - \* IAddNetRead::NumericOffsetUseCompression
  - \* IAddNetRead::OfferAlphaPrefix
  - \* IAddNetRead::OfferNumericOffset
  - \* IAddNetRead::UseAlphaPrefix
  - \* IAddNetRead::UseNumericOffset
  - \* IAttribute::Editable
  - \* IAttribute::Scaled
  - \* IBackground::Draw
  - \* IBackground::Transparent
  - \* IBlock::Check
  - \* IBlockVersion::CheckBlocks
  - \* IBlockVersion::CheckCoverage
  - \* ICategoryFilter::Complement
  - \* ICategoryFilter::IncludeSubCategories
  - \* ICategoryFilter::UseFilter
  - \* IConditions::UseFilter
  - \* IConnectors::ExistsByKey
  - \* IDirectedFilter::Complement
  - \* IDirectedFilter::Undirected
  - \* IDirectedFilter::UseFilter
  - \* IFlowBundle::ConditionDefined
  - \* IGetNearestLinkResult::Success
  - \* IGetNearestNodeResult::Success
  - \* IGraphic::StopDrawing
  - \* IGraphicalTimetable::ShowOnlyActiveVehJourneys
  - \* IGroupElementFilter::UseFilter
  - \* IGroupElementFilter::UseSelection
  - \* IImportShapefilePara::CreateUserDefinedAttributes
  - \* IImportShapefilePara::SetAttributeAllocationsByIDs
  - \* IIterator::Active
  - \* IIterator::Valid
  - \* ILineGroupFilter::UseFilterForLineRouteItems
  - \* ILineGroupFilter::UseFilterForLineRoutes
  - \* ILineGroupFilter::UseFilterForLines
  - \* ILineGroupFilter::UseFilterForTimeProfileItems
  - \* ILineGroupFilter::UseFilterForTimeProfiles
  - \* ILineGroupFilter::UseFilterForVehJourneyItems
  - \* ILineGroupFilter::UseFilterForVehJourneySections
  - \* ILineGroupFilter::UseFilterForVehJourneys
  - \* ILineRouteItemList::SectionViewMode
  - \* ILineSelectionAndStopSequence::HideUnservicedStops
  - \* ILineSelectionAndStopSequence::StopSequenceIsEditable
  - \* ILinks::LinkExistsByKey



- \* IMainTurns::MainTurnExistsByKey
- \* IMarking::Changed
- \* IMarking::IncludePOISubCategories
- \* INet::AllCouplingsConsistent
- \* INet::AllLinksUniqueOnLineRoutes
- \* INet::GetNearestLink
- \* INet::GetNearestLinkCacheActive
- \* INet::GetNearestNode
- \* INetObjGroupGPA::Draw
- \* INodes::NodeExistsByKey
- \* IODPairFilter::Complement
- \* IODPairFilter::FilterNetworkVolumes
- \* IODPairFilter::UseFilter
- \* IOperationExecutor::IsExecuting
- \* IOperationExecutor::ProcedureFlowFinished
- \* IPathGroupFilter::UseFilterForPathItems
- \* IPathGroupFilter::UseFilterForPathSets
- \* IPathGroupFilter::UseFilterForPaths
- \* IProcedures::AssignmentCalculated
- \* IProcedures::IsExecuting
- \* IProcedures::OperationCalculated
- \* IPropagationLinkInfos::PropagationLinkInfoExistsByKey
- \* ISingleFilter::Complement
- \* ISingleFilter::UseFilter
- \* IStopGroupFilter::UseFilterForStopAreas
- \* IStopGroupFilter::UseFilterForStopPoints
- \* IStopGroupFilter::UseFilterForStops
- \* ISysRouteItemList::SectionViewMode
- \* ITabularTimetable::ShowOnlyActiveVehJourneys
- \* ITabularTimetable::ShowVehicleJourneySectionCourse
- \* ITimeProfileItemList::SectionViewMode
- \* ITurns::TurnExistsByKey
- \* IUserPreferences::AdoptFileName
- \* IUserPreferences::SaveUserPreferencesToRegistryOnClose
- \* IVehJourneyItemList::SectionViewMode
- \* IVisum::AcceptIncomingDuringOutgoingCalls
- \* IVisum::Embedded
- \* IVisum::ExportAllNumbersAsDoubles
- \* IVisum::GetModule
- \* IVisum::IsJunctionEditorRunning
- \* IWorkbench::IsBlockDisplayRunning
- \* IWorkbench::IsGraphicalTimetableRunning
- \* IWorkbench::IsJunctionEditorRunning
- \* IWorkbench::IsTabularTimetableRunning

This error has been corrected. The standard method AttValue is not affected. (13949 )

## Data Model

- ❗ Attributes for number and name: Additional attributes have been created for the objects vehicle journey and vehicle journey section, which display both the number and the code or name of the object (in case of time profile items number and code of the stop point where the time profile item is located) for reference objects (operator, valid day, vehicle combination, From time profile item and To time profile item). These attributes can be used in the tabular timetable to display both values in the same, editable cell. They have been added to the default attribute selection of the tabular timetable as well as to that of the vehicle journeys and vehicle journey sections list. (13929 )

## PrT Assignment

- ❗ Closures of connectors: In case a connector was not permitted for a PrT transport system, this closure was ignored if the 't\_cur' attribute was not part of the volume delay function for connectors. This error occurred since ID 13204 (contained in Visum 13.00-12 and Visum 14.00-00) and has now been fixed. As a result, assignment results of the affected transport systems change in the networks concerned. (13899 )
- ❗ ICA calculation for signalized nodes: The ICA calculation for signalized nodes could result in false allocations of the volume to the individual lanes in case of lane allocations with shared lanes. This error has been fixed. This leads to different assignment results of assignments with ICA. (13820 )

## + New Features and Changes








### ANM

- + ANM export: The number of decimal places for coordinates can now be set in the ANM export parameters. By default the maximum number of decimal places are written to the .anm file. **(13557)**
- + Settings for other objects in the ANM export: Optionally, it is possible to select user-defined attributes for the saturation flow rates of links and turns and the SC coordination group. If selected, the values will be saved in the ANM file. **(11654)**
- + Upward compatibility of ANM files: ANM files can now also be opened in older release versions of Visum. The upward compatibility applies to release version from Visum 14 onwards. **(11863)**

### Add-Ins

- + Buffers Around PuT Lines: Add-In 'Buffers Around PuT Lines' now has the option to create buffers only based on stop points with active time profile items. **(11682)**
- + Import of DIVAGeo network files: A new Add-In for the import of DIVAGeo network files is available. **(13291)**

### COM

- + Access to Scenario management: The COM interface has been extended to enable access to the scenario management. It allows access to the most important objects and functions within the scenario management. **(4926)**
- + Add main zone matrices: Main zone matrices can now be added via the COM interface. **(12434)**
- + Convenience functionality for formulas: New COM functionality is offered to facilitate the creation of correct strings for formulas. **(12532)**
- + Export to VDV452 through COM: The export of Public Transport data to the VDV452 format can now be initiated through the COM function `Visum.ExportVDV452Data`. **(12831)**
- + Extension of shortest path search for PuT: The extension periods can now be accessed via the COM interface. **(13429)** 
- + Filtering in Path lists: The enumeration `routeFilter_filterFromZoneFilter` of `routeFilterT` is now always active, i.e. is also effective in combination with other members of `routeFilterT` enumeration. If no origin zone is given, the origin zone filter does not take effect. **(13710)** 
- + JPG-Export by coordinates: Via COM screenshots cannot only be created as a whole view, but also as an image section by defining coordinates. **(12658)**
- + MapMatcher default algorithm: The default matching algorithm of the MapMatcher has been changed from 'Incremental' to 'Global'. **(13150)** 
- + MapMatcher: The IMapMatcher-object now gets initialized on creation and does no longer require an explicit call of the `Initialize()`-method. The method has therefore been removed. All changes to nodes and links of the network are now automatically reflected in the mapmatching process. **(12177)** 
- + MapMatcher: The evaluation of detours of an edge has been modified. The value used for the evaluation is calculated using the formula  $(\text{TypicalCostPer1000Meters} / 1000) * (\text{direct distance of the match points}) / (\text{cost of the edge})$ . For that reason the method 'EstimateTypicalCostPer1000Meters' of the IMapMatchingParameters has been added. **(13750)** 
- + Net parameters: An `AskAttribute` method for net parameters has been added. **(10511)**
- + Refactoring and Speedup of `GetNearestLink` / `GetNearestNode`: The methods `Visum.Net.GetNearestLink` and `Visum.Net.GetNearestNode` have been moved from `Visum.Net` to the IMapMatcher-object. `GetNearestNode` now operates much faster when called frequently, and `GetNearestLinks` can now optionally consider both directions of links to also match oneway roads independent from the direction of traffic. Both methods have been refactored and now return the results as output objects with properties providing the details, instead of using multiple output arguments which were difficult to handle by scripting languages. The old methods will be removed in one of the next releases. **(3636)** 
- + SVG-Export by coordinates: SVG files can be exported via COM for a section by defining parameters for coordinates. **(13035)**
- + Schematic line diagram: A new COM class for the schematic line diagram is available. **(13519)**
- + Time-varying attributes: Time-varying attributes can now be accessed via COM. **(7025)**
- + Timetable editor: The COM interface for the timetable editor has been changed as a consequence of the redesign. **(13151)** 

### Data Model

- + Additional relations and userdefined attributes: For matrices additional relations to other network objects are provided. These include especially network objects of the demand model. Also, there are new relations for demand strata to person groups and activity pairs. For network objects such as person group, activity and activity pair userdefined attributes can be defined. **(13097)**



- + Attribute passenger kilometers: The attribute passenger kilometers (or passenger miles) is also calculated for the network object vehicle journey item. **(13566)**
- + Demand description: The demand description (.dmd) can contain matrices which are defined by properties instead of their numbers. **(13099)**
- + More time-varying attributes: Time-varying attributes can also be defined for demand segments. **(13428)**
- + New attribute for block element: A new input attribute 'Used system route name' for block elements has been added. This attribute can be used to allocate system routes for empty trips. **(13292)**
- + Node geometry: The leg attribute 'ICA inscribed circle diameter' has been renamed in 'Roundabout inscribed circle diameter' and is now also used for the ANM Export of the roundabout geometry. **(12843)**
- + Result matrices of demand calculations: For the standard 4-step model and the EVA demand model the result matrices for trip distribution and mode choice are now defined in the corresponding procedures of the demand calculation. **(13098)**
- + Specific transfer walk times: Specific walk times can now be defined for pairs of the combination line and direction. Specific walk times of this type overwrite specific walk times of transport systems (if defined) and walk times between stop areas. **(12651 !)**
- + Time varying attributes: User-defined attributes can now also be defined for time-varying attributes. This can be done in the .net file or via the COM interface. **(13316)**
- + Turns, ICA: You can no longer edit the attributes 'ICA final capacity', 'ICA final saturation flow rate', and 'ICA final volume'. **(13109)**
- + Aggregation function 'Compare': A new aggregation function 'Compare' is available for indirect attributes. If all related objects share the same value for an attribute, the function returns this value. If the values are not all equal, '\*' is returned. **(13195)**
- + Create matrices: The dialog 'Create matrices' has been modified. Besides the option to define a fixed number of matrices with pre-defined properties also matrix references can now be used to create matrices. External matrices can now be created via the menu 'Edit + Matrix editor + Generate external matrices...' or via the context menu of the tool window Matrices. **(13106)**
- + Formular matrices as demand matrices: Formular matrices can now be assigned as demand matrices for demand segments. Thereby, they can e.g. be used as demand matrices in assignments. **(12709)**
- + Matrix references: Matrices can either be defined using their unique matrix number or their properties. Properties are combinations of attribute values which identify one or several matrices. The second option is now available in various dialogs of the program. **(11314)**

## Demand procedures

- + Estimate gravitation parameters: If the option 'Preset class limits and shares' is used, it can be defined to which interval the class limits belong. **(11903 !)**
- + Load model templates: Using VISEM model template files (\*.vhd) is no longer supported. **(13133)**
- + Matrix references: In the procedures of demand calculation matrix references via properties can now be used to define input and output matrices of the procedures. **(13103)**
- + Tour-based model: Formulas can now be used for the definition of the utility functions. **(13683)**
- + Visem Rubberbanding: This function helps to shape trip chains that are directed to a defined main activity. For a main activity workplace the destination choice of an assumed prior Activity shopping considers the location of the workplace. The chosen shopping location is now on the way to the workplace, the trip chains become much more realistic. **(10593)**

## Dialogs

- + Classified display: Editing class limits has been improved. In particular, it is now possible to define all class limits for the user-defined distribution of class limits. **(12585)**
- + Edit line route: Under the Tab 'Item and time profile' it is additionally possible to restrict the visible rows to all profile points. **(11019)**
- + Export/Import: Several export and import dialogs (e.g.. ANM, HAFAS, railML) have been improved to clarify the functionality of the buttons. **(12558)**
- + Graphic parameters of POI categories: The context menu entries 'Edit graphic parameters for POI category...' and 'Apply the POI category's graphic parameters to the sub-categories' are only enabled when a POI category is selected. **(11839)**
- + Miscellaneous dialogs: The operating mode of scroll bars has been corrected in several dialogs. **(13283)**
- + Open networks: The option 'Read network file additionally' is now by default switched on. **(12447)**
- + Operators in formulas: The button for inserting operators in formulas has been improved. **(13354)**
- + Parameterdialog of timetable-based assignment: The tab 'Skim matrices' has been shifted to the left. **(13531)**
- + Presetting for alias name: When a new alias is created, the name of the attribute is entered as a presetting. This applies both for entry via attribute selection dialog and menu. **(10884)**



- + User preferences: The COM server registration has been removed from the user preferences and can now be found under menu 'Help' -> 'Register as COM Server'. The options to reset dialog positions, grid settings and the window configuration has also been removed from the user preferences. These options are now under menu 'View' -> 'User interface'. **(12534)**

## Filter

- + The option 'undirected' is now also available in filters for turns and main turns. **(13807)**

## Foreign formats

- + General import of PuT supply data: PuT supply data can be transferred from one Visum version to another version for example to map line route courses to the road network. This import of PuT data replaces the Add-In 'Import Transit Supply' but contains extended functionality to update the existing PuT supply with new data from another Visumversion without losing information of the existing supply. **(11441)**
- + HAFAS Import: Additional information (category, fare group, supplement, code of local transit, output control) are shown under Tab 'Transport systems'. **(10396)**
- + In the VDV452 Export it is optional possible to also consider line blocks of a selected block version for a selected calendar day. **(12774)**
- + OpenStreetMap import: The OpenStreetMap import can now automatically clip the data to a specific region defined by geographic coordinates. This allows to directly use input files for countries or states as provided by services like www.geofabrik.de. You can specify whether objects which are only partially contained in the clipping region are preserved in the import. **(12086)**
- + The VDV452 Import also considers line blocks if they are present in the original file that is imported. **(12773)**

## Formulas

- + Calculation of several matrices: The procedure Combination of matrices and vectors allows several matrices to be calculated in one procedure. Result matrices and optionally inputs are selected by properties. The calculation iterates over one or more of these properties, e.g. the demand strata and modes of a demand model, and produces the corresponding outputs. **(13102)**
- + Matrix formulas: Matrix formulas have been extended by functions such as sum, minimum, maximum, average and product. These functions are applied to elements of the matrices. **(13100)**
- + New function If-Then-Else: A new function for formulas has been added which allows expressions of the form If-Then-Else to be defined. **(13390)**

## Graphical procedures

- + Flow bundle calculation: Changes of the settings compared to the last execution of the calculation are now highlighted in the flow bundle dialog. Additionally, it is possible to reset the settings to those used in the last execution of the calculation. **(12657)**
- + Flow bundle dialog: The flow bundle conditions can be changed afterwards by selecting another network object. **(11802)**

## Graphics

- + Calculation of Min/Max values for bars: The calculation of minimum and maximum values for the display of bars does not delay the display of the graphic parameter dialog. **(12618)**
- + Editing the graphic parameters of the matrix editor: The workflow for editing graphic parameters of the classified display has been improved. **(11852)**
- + Options for displaying polygone boundaries: Line width and line style for polygone boundaries (e.g. of zones, territories, POIs) are now user-defined. **(9487)**
- + Settings for screenshots: Settings for resolution and quality for screenshots are saved during a Visum session. **(13147)**

## Installation

- + .NET-Framework: The installation now contains the .NET-Framework 4.5 instead of 4.0 if it is not already installed on the system. **(13525)**
- + CodeMeter Runtime: The CodeMeter Runtime shipped with Visum has been updated to version 5.10c. **(12880)**
- + Visum Engine: A new license variant of Visum is available, which can only be used as calculation node in combination with the add-on module Distributed Computing. **(12301)**

## Junction editor

- + Vissim node preview: The preview has been updated to version PTV Vissim 6. **(13707)**

## Listings

- + Access from PuT OD-pairs to PuT path: In list for PuT OD pairs the object PuT path can be accessed with indirect attribute. **(12664)**
- + Calculation of analysis rows: The calculation of analysis rows has been sped up. **(11805)**
- + Export of OD pair and path lists: The export of OD pair lists as well as the path lists have been sped up. **(12663)**
- + List (PuT transfer objects): Additional options for the evaluation of boarding and alighting passengers are included. For passengers transferring the From time profile and To time profile can optionally selected separately. **(12670)**
- + New aggregate function: For attributes of type Instant of time a new aggregate function headway is available. If the points in time correspond to a headway pattern similar to the procedure 'Calculate service trip pattern' then the headways are returned as strings. **(13686)**
- + New lists for demand objects and filter for matrices: Lists for person groups, activities, and activity pairs have been added. A filter condition for matrices can be defined directly in the matrix list. The filter applies to the corresponding matrix list only. **(13107)**
- + Opening the PuT path list and the list of PuT relations has been sped up. **(13795)**
- + Path lists: When opening path lists by default an origin zone filter is applied. **(12666)**

## Main Window

- + Tool bar Functions: The button 'About' has been removed from the tool bar 'Functions'. **(12001)**
- + View Messages: The content of the message view can now be copied. **(13277)**

## Miscellaneous

- + Number of callable instances of Visum: The number of Visum instances, that can be started on one machine has been limited to five. **(13720)**
- + User preferences: The default option for the matrix swap file has been changed. The option 'Activate swap file' is now switched off. **(13224)**

## Network Editor

- + Cancellation during inserting new partial faces: When inserting new partial faces for objects with surfaces, cancellation via the Esc-button returns to the mode 'Edit shape'. **(13051)**
- + Creating PuT stops on nodes: Stops/Stop areas/Stop points can be created on all (active) nodes via multi-edit function. Optionally transfer times can be set from a node attribute. **(12661)**
- + Edit shape of line routes and PrT paths: The new spatial course is shown when editing the shape of line routes and PrT paths interactively. **(10171)**
- + Network check 'Lines without fare system': A new option for Network checks enables to identify PT lines without fare systems. **(12665)**
- + Right-click logic in network editor: When an object is right-clicked, it opens not any longer the context menu of the object selected previously, but selection switches to the new object and opens directly its context menu. **(12510)**
- + Splitting links according to length: Links can be split with explicit entry of split position. **(12659)**
- + Tool for distance measurement in network editor: Distances in the network view can be measured by drawing up a line polygon. The polygon can include an unlimited number of intermediate points that can be snapped to point objects. **(5702)**
- + Undo for altering allocated stop for stop areas: When the alteration of an allocated stop for a stop area is undone, the transfer walk time for that stop area is restored as well. **(1806)**

## Network comparisons

- + Enhancement of model transfer files: The model transfer file includes additional tables of network objects and their attributes which were compared when generating the model transfer file. This information can optionally be displayed in the view of a model transfer file. **(9540)**

## Network editor

- + Aggregation of line routes and time profiles: The default settings for the aggregation of line routes and time profiles have been adjusted. **(13648)**
- + Edit shape of courses: When editing the shape of line routes or paths the direction of the first and last link, respectively, is now highlighted. Additionally, it is possible to directly select a node or stop point for the course via the context menu. **(12186)**
- + Marking of vehicle journeys: Vehicle journeys can now be marked in the network editor, lists etc. and synchronization of this marking across windows (e.g. with the timetable editor) is possible. This also allows to have a quick view window for vehicle journey attributes. **(13201)**

- + Network objects with surfaces: Objects like zones, main zones, territories or POIs with surfaces can be converted from one network object to another. **(8796)**
- + Renumbering: Network objects can be renumbered starting with numbers from 1. **(11975)**
- + Selection of POIs: The selection tool for POIs can now optionally only select POIs of a specific POI category or its sub-categories. The selectable POI category is defined through an arrow-button on the POI-button in the network object toolwindow. **(11161)**
- + Split link: When splitting a link, the preview now shows its new course. **(9932)**

## Other procedures

- + Blocking back model: The 2nd phase (relief of congestion) of the blocking back calculation has been removed. **(12363)**
- + Blocking back model: The option 'during assignment' for the blocking back calculation has been removed. **(12362)**
- + Go to procedure: The number of minimum iterations can now be defined. In addition, the logical operator for the maximum number of iterations has been adjusted to '<' in the dialog. This is now in line with the internally used criterion for this comparison. **(11976)**
- + Intersect: The procedure has been multi-threaded. **(8846)**
- + Set run and dwell times: Optionally the travel times of turns and main turns can be taken into account when updating the run times for public transport. **(11264)**

## PrT Assignment

- + General procedure settings: The parameter 'Maximum tCur' for roundabouts has been added. **(12725)**
- + General settings for the ICA calculation: The setting 'tCur update' has been removed, because only the option 'Before and during assignment' is maintained. This option has been adjusted as follows: If the assignment uses the current assignment result as initial solution, the update of tCur is based on the results of the existing assignment, otherwise the assignment result is initialised for the corresponding demand segment and then tCur is updated. **(13326 🚫)**
- + ICA calculation for roundabouts (HCM): If for a leg a bypass is defined, the attribute 'Bypass Control' on the source leg is used to determine whether the bypass is yielding or non-yielding. The lane capacity will be set to 100000, the delay will be 0 if the attribute value for 'Bypass Control' is 'Without' or 'Target lane'. The values are calculated using Equations 21-6 and 21-7 of the HCM if the value is 'Yield right of way' or 'Stop'. **(13757 🚫)**
- + ICA calculation for roundabouts (HCM): The value A will be calculated according to Chapter 33 of the HCM2010 if and only if the overwrite flag for follow-up time is set. For this Equation 21-22 will be used. Otherwise the value A will be determined according to the first part of Chapter 21 of the HCM2010. This means that the defaults from Page 33-3 for follow-up time will never be used for A. **(13756 🚫)**
- + ICA, Kimber: The turn capacity for turns of roundabouts which are calculated using the Kimber method is now set to the approach capacity. **(13540 🚫)**

## Procedure sequence

- + Computation nodes: The management of computation nodes is organized in a separate view which can be found under View - Computation nodes. **(13171)**
- + Parallel calculation of procedures: It is possible to run individual procedures respectively groups of procedures in parallel if they are independent from each other. This is possible both on different computers and in several processes on the same computer. As an example, assignments for highway and PT normally can be calculated in parallel, as long as there are no interdependencies, such as travel times. **(11437)**


## PuT Assignment

- + Calculate PuT skim matrices: It is now possible to calculate skim matrices for several analysis time intervals within the assignment period from one PuT assignment (headway-based and timetable based). **(8344)**
- + Extended transfer wait time: In the timetable-based assignment there is an additional option which prevents overwriting of the extended transfer wait time with special walk times at stops. **(12668)**
- + Improved cancellation behavior: Cancellation of PuT assignment is much quicker now, the user receives immediate response. **(11477)**
- + Stop area skims: Most of the PuT skims available can now be computed as skim matrices based on stop areas using the procedure 'Calculate stop area skim matrix'. **(10357)**
- + Timetable-based Assignment: Dominance for equivalent connections can optionally be deactivated. **(12842)**
- + Timetable-based assignment: The timetable-based PuT assignment can now also assign demand with arrival time based time series. For this definition a new attribute 'Time reference' has been added to the demand description. A time duration for the pre-assignment period can be defined in the parameters of the assignment. **(12632)**

## PuT Operating Indicators

- + Projection of user-defined attributes: In addition to attributes of vehicle sections, also userdefined attributes of vehicle journey items can now be extrapolated within the line hierarchy and for territories. **(12652)**
- + Spatial PuT Analysis: A new procedure for the spatial analysis of public transport data has been implemented. This allows numerical attributes of vehicle journey items to be apportioned to vehicle sections. Using the new list 'Line route item-PuT-detail' several evaluations of combinations of attributes of the line route items and attributes of vehicle sections are possible. **(12653)**

## Scenario Management

- + Calculation of scenario indicators: Scenario indicators can now be calculated later and independent of the calculation of the scenarios. **(11105)**
- + Multi-user mode: Several users can work at a project at the same time if a project data base managed with SQL Server is used. Objects of the project are locked, if they are edited or used for the calculation by one user. Then they cannot be accessed by another user. **(12456)**
- + Surfaces will not be normalized automatically when loading modifications. **(13819** 
- + The file extension .vpdbx is now automatically linked to Visum, i.e. double click on a .vpdbx file opens Visum. **(13543)**


## Scenariomanagement

- + Project settings: It is possible to additionally save attributes with default values in the modifications. **(13688)**

## Schematic line diagram

- + Centered label: The label is now also suppressed if the value of a numeric attribute (directed and undirected) is zero. **(13714)**
- + Graphic display of headway and line: The settings for the classified display of edge courses have been simplified. The settings can now be defined in one dialog for all classes. **(12662)**
- + Interspace between transfer node and labels: For labeling of edge courses the inserted gap value for specified classes is used (new attribute DistFromTransferNode). **(12669)**
- + Marking: The marking of edges and slots in the schematic line diagram is now synchronized with the underlying vehicle journey (instead of the line routes as before) **(13197)**
- + New attributes for edge courses: The maximum headway (directed and undirected) determines the maximum duration between two successive departures of vehicle journeys on the edge course. **(13689)**
- + The conventional left-hand traffic display can be generated because of the possibility to define the distance between departure and arrival labels on the one hand and the distance between these labels and the transfer node on the other hand (see 12669). **(12944)**

## Timetable Editor

- + Deletion of vehicle journey in timetable editor: The dialog only contains the options 'Yes' and 'No'. **(11963)**
- + Editing of individual vehicle journeys: The run and dwell times and the course of one or several vehicle journeys can now be edited independent of their line route course and time profile. If required, the vehicle journeys are relocated to automatically generated copies of the time profiles and line routes. **(12667)**
- + Recalculation of the sequence of stop events: The calculation of the sequence of stop events can now be cancelled. **(12226)**
- + Compute service trip patterns: The calculation of service trip patterns now directly alters the attribute 'Service trip pattern number' of the vehicle journey, instead of only affecting the timetable editor. The display mode "Regular service" is therefore now realized as a grouping of the vehicle journeys based on this attribute. **(13199)**
- + Line blocking view: The line blocking view is now a separate window which can bedocked independently of the timetable editor. **(13590)**
- + Opening an infrastructure view from the schematic line diagram: Based on a marking of edges in the schematic line diagram, the graphical timetable can now be opened in a view suited for analysing the infrastructure (links) used by the vehicle journey covered by these edges. **(11447)**
- + Shift vehicle journeys to a different line: When shifting vehicle journeys to a different line it is possible to aggregate line routes if the target line contains line routes that are compatible to the line route of the shifted vehicle journey. **(12660** 
- + Stop sequence: The stop sequence consisting of stops or stop points can now be defined by the user. **(12939)**
- + The former Timetable editor has been divided into three separate views 'Timetable (tabular)', 'Timetable (graphical)' and 'Line block editor'. These views can be used independently. New tool windows for selecting and editing objects have been introduced. Furthermore, the functionality to synchronize different views has been extended to the views of the timetable editor. **(12941)**
- + The timetable editor has been completely redesigned. **(12825)**
- + User preferences: The settings for the font in the tabular timetable and the orientation of the grafical timetable are now adapted on a separate page in the user preferences. **(13196)**

## VISUM Files

- ➕ Export of floating point numbers: In the network settings the default of the option for the export of floating point numbers in network, demand and model transfer files has been set to 'Always output with maximum precision'. This option does not anymore affect files in XML Format. In XML files parameters are always written with maximum precision. **(13571 ⚠)**
- ➕ Procedure 'Calculate service trip patterns': The procedure parameters can now be loaded/saved to/from XML-files. A new COM-interface is provided for manipulating these parameters. **(3872)**
- ➕ Valid Days: The attribute "System-generated" of valid days is no longer a mandatory attribute. Old files (e.g. \*.net-files) with this attribute can still be opened with Visum. Files written with PTV Visum 14 will no longer include this attribute. **(13436)**
- ➕ Automatic reloading of external matrices: Matrices are always read from the version file, i.e. matrix values are not replaced by reloading external matrices automatically. This also applies to version files which are saved with VISUM 10.0 and older. **(13213 ⚠)**
- ➕ Reading demand files: When reading external matrices messages of the same cause can now be skipped. **(13562)**
- ➕ Vistro Import: The import of vistro files has been improved. When importing vistro files with information about trip generation and trip distribution a procedure sequence is generated which automatically generates paths from assignment results. The required demand matrices for removed and added demand are also generated during the import. **(13580)**

## ⚠ Breaking Changes

### Add-Ins

- ⚠ VisumPy: Redundant (internal) functions for matrix access have been deleted. Please adapt your scripts if necessary. **(13607)**

### COM

- ⚠ Extension of shortest path search for PuT: The extension periods can now be accessed via the COM interface. The default value for the extension periods is 86400 and therefore differs from the previous value which depended on the analysis period. **(13429 ➕)**
- ⚠ Filtering in Path lists: The enumeration routeFilter\_filterFromZoneFilter of routeFilterT is now always active, i.e. is also effective in combination with other members of routeFilterT enumeration. If no origin zone is given, the origin zone filter does not take effect. **(13710 ➕)**
- ⚠ MapMatcher: The IMapMatcher-object now gets initialized on creation and does no longer require an explicit call of the Initialize()-method. The method has therefore been removed. All changes to nodes and links of the network are now automatically reflected in the mapmatching process. **(12177 ➕)**
- ⚠ MapMatcher: The default matching algorithm of the MapMatcher has been changed from 'Incremental' to 'Global'. You can reproduce the old behaviour by setting the attribute 'Algorithm' of the IMapMatchinParameter-object to '0'. **(13150 ➕)**
- ⚠ MapMatcher: The evaluation of detours of an edge has been modified. The value used for the evaluation is calculated using the formula  $(\text{TypicalCostPer1000Meters} / 1000) * (\text{direct distance of the match points}) / (\text{cost of the edge})$ . For that reason the method 'EstimateTypicalCostPer1000Meters' of the IMapMatchingParameters has been added. **(13750 ➕)**
- ⚠ Refactoring and Speedup of GetNearestLink / GetNearestNode: The methods Visum.Net.GetNearestLink and Visum.Net.GetNearestNode have been moved from Visum.Net to the IMapMatcher-object. Both methods have been refactored and now return the results as output objects with properties providing the details, instead of using multiple output arguments which were difficult to handle by scripting languages. The old methods will be removed in one of the next releases and should no longer be used. **(3636 ➕)**
- ⚠ The obsolete COM object IPuTOplndAdditionalAttrPara has been removed. **(13246)**
- ⚠ Timetable editor: The COM interface for the timetable editor has been changed as a consequence of the redesign. Some of the methods have been removed, others have a different function. **(13151 ➕)**

### Data Model

- ⚠ Read additionally POI to X tables: When reading POI to X tables the new number of the POI is now taken into account. **(12999)**
- ⚠ Specific transfer walk times: Specific walk times can now be defined for pairs of the combination line and direction. The change has direct effects in lists and when saving network files (\*.net) with active objects only. **(12651 ➕)**
- ⚠ Network settings - turn types: Turn types are only set according to the settings for turn types when new turns are created. This is the case if links are added or split. Turn types of other turns at the affected node are not changed. Also, changes to other network objects, e.g. attributes of links, do not trigger an automatic recalculation of the typ. **(12408)**



## Demand procedures

- ❗ Estimate gravitation parameters: If the option 'Preset class limits and shares' is used, it can be defined to which interval the class limits belong. If the option 'From interval file' is used, the settings for the interval type will be ignored. In contrast to the previous interpretation interval limit for .att files are now interpreted as [a,b]. (11903 +)

## Graphical procedures

- ❗ PrT shortest path search: It could occur that the results of the shortest path search were implausible, if the length had been used as search criterion. This error has been fixed. (12478)

## Network Editor

- ❗ Right-click logic in network editor: When an object is right-clicked, it opens not any longer the context menu of the object selected previously, but the selection switches to the new object and opens directly its context menu. (12510 +)
- ❗ Aggregation of line routes and time profiles: The default settings for the aggregation of line routes and time profiles have been adjusted. Notably, the default value for the 'Minimal route course share' has been set to 50%. (13648 +)

## PrT Assignment

- ❗ Equilibrium assignment: It could happen that some of the route impedances are not updated if the network balancing process had been terminated by the maximum number of iterations. This error has been fixed. (13214)
- ❗ General settings for the ICA calculation: The setting 'tCur update' has been removed. For the options 'Manually' and 'After assignment' workarounds can be applied. The option 'During assignment' is removed without substitution. The option 'Before and during assignment' has been adjusted as follows: If the assignment uses the current assignment result as initial solution, the update of tCur is based on the results of the existing assignment, otherwise the assignment result is initialised for the corresponding demand segments and then tCur is updated. The option does not apply in Assignment with ICA and dynamic assignments. (13326 +)
- ❗ ICA calculation for roundabouts (HCM): If for a leg a bypass is defined, the attribute 'Bypass Control' on the source leg is used to determine whether the bypass is yielding or non-yielding. The lane capacity will be set to 100000, the delay will be 0 if the attribute value for 'Bypass Control' is 'Without' or 'Target lane'. The values are calculated using Equations 21-6 and 21-7 of the HCM if the value is 'Yield right of way' or 'Stop'. The definition of lanes and lane turns will have no effect on the ICA calculation. (13757 +)
- ❗ ICA calculation for roundabouts (HCM): The dependency of the values A and B in the roundabout calculation has been changed. The value A will be calculated according to Chapter 33 of the HCM2010 if and only if the overwrite flag for follow-up time is set. For this Equation 21-22 is used. Otherwise the value A is determined according to the first part of Chapter 21 of the HCM2010. The calculation method for B has not been changed directly. If the overwrite flag for critical headway is set, B is using the follow-up headway as defined in Chapter 33 (unless the overwrite flag is set for follow-up headway as well). (13756 +)
- ❗ ICA, Kimber: The turn capacity for turns of roundabouts which are calculated using the Kimber method is set to the approach capacity. The previous calculation used the turn volumes of an approach to calculate a weighted capacity value. (13540 +)

## PuT Assignment

- ❗ Timetable-based assignment: Some instabilities in the results were possible, if the network contained identical vehicle journeys (same time profile and same departure time). This error has been fixed. (13047)

## Scenario management

- ❗ Surfaces will not be normalized automatically when loading modifications. (13819 +)

## TFlowFuzzy

- ❗ Classes and shares for the distribution: If the option 'From interval file' is used, the settings for the interval type will now be ignored and the interpretation of the class limits depend on the file type, i.e. for .cod files limits are interpreted as [a,b] and for .att files as ]a,b]. (13725)

## Timetable editor

- ❗ Shift vehicle journeys to a different line: When shifting vehicle journeys to a different line it is possible to aggregate line routes if the target line contains line routes that are compatible to the line route of the shifted vehicle journey. The COM method IVehicleJourney.ChangeLineOfVehicleJourney includes an additional parameter which allows the aggregation with the first possible line route of the target line. (12660 +)



## VISUM Files

- ❗ Export of floating point numbers: In the network settings the default of the option for the export of floating point numbers in network, demand and model transfer files has been set to 'Always output with maximum precision'. This option does not anymore affect files in XML Format. In XML files parameters are always written with maximum precision to avoid unintentional data loss. **(13571 +)**
- ❗ Automatic reloading of external matrices: Matrices are always read from the version file, i.e. matrix values are not replaced by reloading external matrices automatically. This also applies to version files which are saved with VISUM 10.0 and older. **(13213 +)**
- ❗ Defaultvalue for numerical UDA: If the attribute 'Defaultvalue' is missing in the table User-defined attributes of a .net file, the values remain empty when reading this .net file. **(13801)**