

Last modified: 2014-07-14

14.00-01 [88975]

2014-07-14

## + 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)**

### Listings

- + 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

- ✔ 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)**

### COM Interface

- ✔ '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)**



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
- \* ILineRouteItem::SectionViewMode
- \* ILineSelectionAndStopSequence::HideUnservedStops
- \* ILineSelectionAndStopSequence::StopSequencesEditable
- \* 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
- \* ISysRouteItem::SectionViewMode
- \* ITabularTimetable::ShowOnlyActiveVehJourneys
- \* ITabularTimetable::ShowVehicleJourneySectionCourse
- \* ITimeProfileItem::SectionViewMode
- \* ITurns::TurnExistsByKey
- \* IUserPreferences::AdoptFileName
- \* IUserPreferences::SaveUserPreferencesToRegistryOnClose
- \* IVehJourneyItem::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 ('u\$;'). **(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

- ✔ 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)**
- ✔ 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)**

## 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 Interface



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
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- \* 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
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- \* IVisum::AcceptIncomingDuringOutgoingCalls
- \* IVisum::Embedded
- \* IVisum::ExportAllNumbersAsDoubles
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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)**

14.00-00 [88329]

2014-06-12

## + New Features and Changes

### 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)**

### 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)**

### 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 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)**
- ⊕ 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)**
- ⊕ 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)**
- ⊕ Schematic line diagram: A new COM class for the schematic line diagram is available. **(13519)**
- ⊕ SVG-Export by coordinates: SVG files can be exported via COM for a section by defining parameters for coordinates. **(13035)**
- ⊕ 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

- ⊕ 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 matricesu'...' 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)**
- ⊕ 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)**

### 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](http://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)**
- + 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 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 it's 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)**
- + 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)**

### 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)**

### 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)**

### 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 u'';Bypass Controlu''; 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)**

### 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**

- + 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)**
- + Calculation of scenario indicators: Scenario indicators can now be calculated later and independent of the calculation of the scenarios. **(11105)**

### **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**

- + 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)**
- + 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 journey are relocated to automatically generated copies of the time profiles and line routes. **(12667)**
- + Line blocking view: The line blocking view is now a separate window which can be locked 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 graphical timetable are now adapted on a separate page in the user preferences. **(13196)**
- ⊕ Deletion of vehicle journey in timetable editor: The dialog only contains the options 'Yes' and 'No'. **(11963)**
- ⊕ Recalculation of the sequence of stop events: The calculation of the sequence of stop events can now be cancelled. **(12226)**

### VISUM files

- ⊕ 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)**
- ⊕ 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)**

### ! Breaking Changes

#### Add-Ins

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

#### COM

- ! 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)**

#### 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 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)**
- ❗ 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)**
- ❗ The obsolete COM object IPuTOpIndAdditionalAttrPara 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

- ❗ 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)**
- ❗ 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)**

### 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

- ❗ 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)**
- ❗ 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)**

### PrT assignment

- ❗ 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 weighed capacity value. **(13540)**
- ❗ 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 u";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)**

### 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

- ❗ 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)**
- ❗ 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)**