# TRANSIMS Version 6.0 – *May 2014*

### SysLib

The Def\_Format method within Db\_Header was modified to return the format data as a string rather than a File\_Type in order to support the Model:Format feature. The TDF\_Matrix function was modified to access the format data as a string rather than a File\_Type. Router\_Method\_Type was added to the Static\_Services to support the Application\_Method key within the Router. Flow-Density equations were added to the volume-delay function options.

### File\_Service

Link Delay files were removed from the file options. Performance and Turn Delay files will be used in the future. The Performance file is no longer nested (turning delays) and the fields have been modified to include persons, volume (PCE), max\_volume, and entry and exit volumes as well as flow rates. Turning volumes and delays are stored in the Turn Delay file. The Turn Delay file supersedes the Turn Vol file.

### Data\_Service

Internal\_IDs and External\_IDs methods were added to the Trip\_Data and Plan\_Data classes to standardize conversion methods between internal and external record IDs. Flow\_Time and Link\_Delay data/array structures were removed. Performance and Turn\_Delay data/array structures will be used moving forward.

### Flow\_Time\_Service

Travel\_Time method was added to calculate the travel time across multiple time periods based on the time-of-day when the trip enters the link and the link travel time at that time of day. The function also optional updates the flow rates for each time period. Several methods were modified to account for the new way link performance and turning movements are managed. The travel time update method was modified to use volume (PCE) rather than flow rates and the flow-density equation was added. Two control keys were renamed to be consistent with the new structure LINK\_DELAY\_UPDATE\_RATE was changed to TIME\_UPDATE\_RATE and LINK\_DELAY\_FLOW\_FACTOR was changed to LINK\_FLOW\_FACTOR.

### Router\_Service

The Travel\_Time method from the Flow\_Time\_Service was added to the highway path building logic to more accurately account for the travel time and flow by time of day. Turn impedance units were corrected in the highway path builder. The flow and turning delay data used in the Path Builder was changed to the Performance data format. Volume delay equations and path reskimming use the new Volume data rather than the Flow data. Volumes are in PCE units and record the number of vehicle occupying a link during a given time period. If the vehicle requires multiple time periods to traverse the link, the vehicle is recorded as Volume on the link in each time period. This was necessary to permit the volume-delay equations to calculate a realistic speed during congested times of day. Plan reskimming was moved into the Path Builder to facilitate parallel processing. Path reskimming was modified to account for start time and end time schedule constraints.

### Simulator\_Service

The event output class within Sim\_Output\_Step was upgraded to encapsulate most of the selection checks and data processing. The Link Delay, Performance and Turn Volume output options were consolidated into Performance and Turn Delay files.

### Router 6.0.27

A bug was fixed when combining partitioned input plan files with convergence iterations. Additional pointer creation and deletion protection was included. APPLICATION\_METHOD, STORE\_TRIPS\_IN\_MEMORY, MAXIMUM\_RESKIM\_ITERATIONS, RESKIM\_CONVERGENCE\_CRITERIA, STORE\_PLANS\_IN\_MEMORY, TRIP\_SORT\_TYPE, and PLAN\_SORT\_TYPE keys were added. The program was split into two distinct processing methods: Dynamic User Equilibrium and Dynamic Traffic Assignment. The DUE method is iterations plan records and re-skims the paths until the plan leg times match the link flow and travel times. The DTA method finds the best fractional combination of link flows from the current iteration with the composite flows from the previous iterations that minimize total vehicle hours of travel. Trips and Plans can be stored in memory for more flexible processing and input/output sorting. The Travel\_Time method from the Flow\_Time\_Service and Router\_Service have been included. Flow-Time data was replaced with Performance and Turn Delay files. The Dynamic User Equilibrium Reskim processing was moved to the Path Builder to facilitate parallel processing and flow data aggregation. Dampening methods were added to improve the reskim convergence. Memory processing and structural improvements were made to the non-DUE options as well. The keys and files for Link Person and Link Vehicle inputs/outputs were eliminated. The updated Performance file includes the person and vehicle occupancy data.

### PathSkim 6.0.7

The software was upgraded to account for path building using internal location IDs.

### NewFormat 6.0.8

OLD\_LINK\_DELAY\_FILE and OLD\_PERFORMANCE\_FILE keys were added to convert the Link Delay and Performance files to the new Performance and Turn Delay configuration. Key originally labels using VERSION4\_ were changed to OLD\_ for consistency and uniformity.

### LinkSum 6.0.6

Forced the program two write zero records for link direction and link data files when the MINIMUM\_LINK\_FLOW key is set to zero.

### TransitAccess 6.0.1

Updated the Matrix interface.

### ModeChoice 6.0.5

Updated the Matrix interface.

### FileFormat 6.0.3

Updated the Matrix interface.

### MatrixData 6.0.4

Updated the Matrix interface.

### TourData 6.0.2

Updated the Matrix interface.

### Gravity 6.0.5

Updated the Matrix interface.

### LinkSum 6.0.7

Time units were corrected in a number of reports and summary files.