

## **TRANSIMS Version 4.0**

***September 1, 2007 Release***

Change Log edited: 9/1/2007

### **SysLib**

Page\_Lines and Page\_Width methods were added to Report Service.

A bug was fixed in network service methods `Network_File_True` and `Network_Option_True` which set the flag to false rather than true.

A pointer to a `Time_Range` class was added to `TTime_Array` and `Connect_Time_Array` classes to provide an alternative to using the virtual method `Time_Period` in `Demand_Service` to control time period summarized for link delay files. The `Time_Period` method was added to set the pointer and the `Period` and `Periods` methods was modified to use it.

A new data class called `Lookup_Table` was created to generalize the demand data added by `TTime_Data`, `Connect_Time`, and `Boundary_Data` classes. These classes were modified to inherit from `Lookup_Table`.

A new data processing option was added to `Demand_Service` to capture all of the data fields within a Version 4.0 Link Delay file. The option is called `PERFORMANCE` and is an alternative to `LINK_DELAY`. The `Performance_Data` class inherits from `Dir_Data` and `Lookup_Table` and replaces `TTime_Data` when this option is specified by the programmer.

A new key and method was added to the `Output Summary` class to include passenger car equivalent values in the volume-related statistics (`OUTPUT_SUMMARY_PCE_FLAG`). If coordinates are not provided, the coordinate flag was initialized to false to avoid output bugs.

Time step, time range, and link data file classes were modified to include time label logic that strips colons and “..” values from 24 hour clock strings to facilitate ArcGIS join applications.

The `Link Data File` class was modified to utilize the new label-based time range headers and a `Zero_Fields` method was added. A similar class called `Link Direction File` as added to perform similar functionality in a file format that separates  $A \rightarrow B$  and  $B \rightarrow A$  data into separate records.

The `Time_Diff_Output` class was added to the output directory to encapsulate logic for time difference distribution and summary reports.

### **PlanCompare 4.0.17**

The `TRAVEL_TIME_CHANGE_DISTRIBUTION` report was renamed to `TOTAL_DIFFERENCE_DISTRIBUTION` for consistency with `EventSum` and the `TIME_DIFFERENCE_DISTRIBUTION` report was added. These reports are constrained to one page as in `EventSum`. The `TIME_OF_DAY_FORMAT`, `SUMMARY_TIME_PERIODS`, and `SUMMARY_TIME_INCREMENT` keys were added to implement time period aggregation and

time of day controls for the distribution reports, the distribution file, and the difference file output. Travel time summary statistics were added to the printout.

TIME\_PERIOD\_SUMMARY report was added to report travel time difference statistics for summary time periods. A NEW\_TRIP\_TIME\_FILE was added to report the trip start and end time differences. **A potential error caused by huge time differences was trapped and fixed.**

Integer overflow errors were corrected in the travel time summary data. The processing was adjusted to print the overall travel time summary statistics for all applications. A flag was added to the comparison logic to avoid 100% selections caused by comparing plans with access legs to plans without access legs. The time period summary report was modified to include the absolute difference and percentage rather than the minimum and maximum differences. The time difference report logic was replaced with the new Time\_Diff\_Output interface.

#### **EventSum 4.0.4**

Difference selection keys were added along with an output household list: PERCENT\_TIME\_DIFFERENCE, MINIMUM\_TIME\_DIFFERENCE, MAXIMUM\_TIME\_DIFFERENCE, SELECTION\_PERCENTAGE, MAXIMUM\_PERCENT\_SELECTED, and NEW\_HOUSEHOLD\_LIST. The time distribution reports were separated into TOTAL\_DIFFERENCE\_DISTRIBUTION and TIME\_DIFFERENCE\_DISTRIBUTIONS for additional flexibility. The length of distribution reports was adjusted to fit on one page. The NEW\_TIME\_DIFFERENCE\_FILE was renamed to NEW\_DISTRIBUTION\_FILE for consistency with PlanCompare. Plan file updates based on the event time differences were added: PLAN\_FILE / FORMAT and NEW\_PLAN\_FILE / FORMAT. Data initialization and deleting were added. Travel time summary statistics were added to the printout. Bugs were fixed in outputting a new household list based on the selection criteria. The field names in the distribution file now use the time label construct. The TIME\_PERIOD\_SUMMARY report was added. The time difference report logic was replaced with the new Time\_Diff\_Output interface.

#### **ArcDelay 4.0.8**

The output file names were changed to include the time range to avoid conflicts generated by runs with similar period end times. The links are also sorted to facilitate joining. The program was modified to use the new PERFORMANCE interface. ADD\_LINK\_DIRECTION\_INDEX key was added to facilitate data joins. A new output type called ARCVIEW\_TRAFFIC\_IMAGE was added to the processing options. This option simulates vehicle snapshot types of images using average values from the link delay file. Support keys include TRAFFIC\_IMAGE\_ATTRIBUTE, DRAW\_VEHICLE\_SHAPES, VEHICLE\_TYPE\_FILE, VEHICLE\_TYPE\_DISTRIBUTION, RANDOM\_NUMBER\_SEED, NET\_POCKET\_LANE\_TABLE, and NET\_LANE\_USE\_TABLE. The image attribute options include VOLUME, DENSITY, MAX\_DENSITY, QUEUE, MAX\_QUEUE, and CYCLE\_FAILURE. The traffic image processing was expanded to generate ArcView files for multiple attributes ARCVIEW\_TRAFFIC\_IMAGE\_\* and TRAFFIC\_IMAGE\_ATTRIBUTE\_\* keys were added..

### **ArcDiff 4.0.1**

New program to merge and calculate difference fields for two ArcDelay shape files. The key interface was expanded to include multiple groups of files.

### **LinkSum 4.0.17**

New keys and files were added to summarize link vehicle miles and hours of travel by zone and zone group: NEW\_ZONE\_TRAVEL\_FILE / FORMAT, NEW\_GROUP\_TRAVEL\_FILE / FORMAT, and ZONE\_EQUIVALENCE\_FILE. A bug was fixed in aggregating turning movements by custom time periods. The total lane mile calculation was corrected in the travel summary report. The link delay file processing was changed to the new performance data class. A new file group interface was added for link data files. The keys include NEW\_LINK\_DATA\_FILE\_\*, NEW\_LINK\_DATA\_FORMAT\_\*, and NEW\_LINK\_DATA\_FIELD\_\*. The field key specified the data field summarized in the corresponding file. The options include VOLUME, TRAVEL\_TIME, VC\_RATIO, TIME\_RATIO, SPEED, DELAY, DENSITY, MAX\_DENSITY, QUEUE, MAX\_QUEUE, CYCLE\_FAILURE, VEH\_METERS and VEH\_SECONDS. The output link data files use the new time label headers. A new file group interface was added for link direction files. The keys include NEW\_LINK\_DIRECTION\_FILE\_\*, NEW\_LINK\_DIRECTION\_FORMAT\_\*, NEW\_LINK\_DIRECTION\_FIELD\_\*, and NEW\_LINK\_DIRECTION\_INDEX\_\*. The same field options as above apply to this output file type.

### **PlanSelect 4.0.17**

SELECT\_SUBAREA\_POLYGON was added to the plan selection options. SELECT\_VEHICLE\_TYPES was added to the plan selection options. A vehicle file is read to support this option. SELECT\_TIME\_RATIOS was added to select plans based on links with high travel time ratios. A report called SUBAREA\_INTERNAL\_EXTERNAL was added to list the number of internal-external trips passing through the subarea polygon.

### **TransitNet 4.0.3**

A bug was fixed in the record numbering for activity locations, parking lots, and process links when the input files has gaps in the numbering sequence.

### **Microsimulator 4.0.32**

Additional NULL pointer protection was added to the reserve lane changing procedure. The vehicle record within a travel plan that never made it out of the parking lot within the specified time limit was reset to permit the vehicle to be used for other trips and avoid vehicle queue processing problems. The traveler plan class was modified to include the trip number from the plan file in order to output the correct trip number to the event file. Calculations were added to the output summary file processing to include passenger car equivalent values in the volume-related statistics. The updated output summary class addresses a bug that caused no data records to be written to the link delay file. Included additional logic to detect and report schedule and vehicle conflicts on a series of trips by a household member or shared vehicle use between household members.

### **SmoothPlans 4.0.3**

An error message and program termination was included when the maximum time shift is less than the time increment. The lane connectivity file and turning movement delays were added to the travel time estimation procedure. The new link summary file was modified to output the external link number, direction flag, and the time period in user specified time units. The TIME\_OF\_DAY\_FORMAT key was added to control the time units. The TIME\_CHANGE\_SUMMARY report was added to summarize the change in plan start times.

### **SubareaPlans 4.0.19**

A correction was added to the way time periods and travel time estimates are made. The trip number was incremented for paths with multiple travel segments within the subarea.

### **ArcPlan 4.0.12**

A repeating increment code (\*) was added to the contour time and distance key interfaces to simplify the entry of fixed increments of time or distance in addition to specific increment values (i.e., 60, 120, 180, 240, \*120 → 60, 120, 180, 240, 360, 480, ...).

### **AdjustPlans 4.0.7**

The PROHIBIT\_DELETIONS key was added to prohibit the program from deleting travel plans.

### **ConvertTrips 4.0.12**

The output data keys were upgraded to the current system convention (NEW\_\*). Logic was added to copy existing trip, household, population, and vehicle files to the new output files and then add newly generated trips at the end of these files. This enables incremental program applications and growth factoring. The TRIP\_SCALING\_FACTOR\_\* key was added to each trip table group to apply a global scaling factor to the input trip totals before these trips are modified by the trip adjustment factor matrix.

### **PlanSum 4.0.29**

Buffer protection was added for long stop group labels in the stop group summary report. A new report called TRANSIT\_PASSENGER\_SUMMARY was added to generate transit passenger miles, passenger hours, and number of transfers by time period based on the transit vehicle path and the network travel times. A bug was fixed in the link delay memory allocation when certain combinations or reports and output files were specified.

### **ArcSnapshot 4.0.4**

The output file names now use the time label concept and draw the vehicle length based on the vehicle type file.

### **Router 4.0.26**

Fixed a bug that caused multi-leg activities to generate the wrong start times following a walk trip.

### **Documentation**

PlanCompare, PlanSelect, and LinkSum Quick Response documents were updated.

ConvertTrips documentation was updated.