

Statewide Newsletter

By: Mike Brown, Editor

This is the first of a series of quarterly newsletters serving Florida's transportation modeling community. The purpose of this newsletter is to inform and educate FSUTMS users about new developments in modeling software and to provide a vehicle for sharing technical expertise between modeling professionals around the state.

The newsletter, published by the Systems Planning Office in Tallahassee, is being managed by Bob McCullough and Terry Corkery. The mailing list for this newsletter consists of over 200 FSUTMS users around the state as well as consultants based outside of the state directly involved in modeling activities in Florida.

Your help in providing articles and information is an important part of this effort. As planning professionals the sharing of information and expertise is one of our most important activities. If we are to address the needs of the state and our individual communities we must be willing to make the time to support professional development at all levels and to share information with our colleagues. This information exchange will help eliminate duplication along with wasted time and effort. Please help all of us in the profession by contributing articles and information whenever you can.

Upcoming Statewide Model Task Force Meeting

Monday, March 11, 1996
1:00 pm to 5:00 pm
Kissimmee Gateway Hilton Inn
7470 Highway 192 West,
Kissimmee, Florida 34747
(407) 396-4400

The Model Task Force Technical Team Tri-Chairs have scheduled a meeting to discuss several key ongoing modeling issues. As requested by the Technical Team at its October meeting, the Systems Planning Office and its consultant, have conducted research in developing base two-digit area type and facility type definitions and a speed/capacity table for statewide use. Preliminary findings will be discussed and the team will have the opportunity to provide further direction. Several presentations on Land Use Modeling will be included on the agenda to help set a future course in this increasingly important component of transportation planning. The team will be updated on the efforts to incorporate nested logit mode choice modeling into FSUTMS. Also, there will be follow-up presentations on the Enhanced Trip Generation and Transit Modeling research projects. The meeting has been set for Monday, March 11, 1996, 1:00 pm at the Kissimmee Gateway Hilton Inn, Kissimmee, Florida.

Note that the meeting is not being held at its usual location. The Kissimmee Gateway Hilton Inn is located about two miles west of I-4 (just west of the World Drive/Disney interchange) on US 192. The Technical Team meeting date and site were selected to make it easy to combine travel to the FSUTMS Special Updates Workshop being held the following day, March 12, at the same location. The Special Updates Workshop will primarily address installation and operation of the recently released FSUTMS Version 5. Contact Walt Steinvorth to register for this workshop (904) 488-4642 or SunCom 278-4642.

Model Task Force Meeting Agenda

1. Two-Digit Area Types/ Facility Types (Potential Action Item)
2. FSUTMS Nested Logit Model
3. Land Use Modeling
4. Enhanced Trip Generation Model Research Project
5. Transit Modeling Research Project
6. Travel Model Improvement Program (TMIP)
7. Future Research Activities (Potential Action Item)
8. Special Update Workshop Preview

Southeast Florida FSUTMS Users Group Meetings

The tentative schedule for the upcoming Southeast Florida FSUTMS Users Group meetings and presentations is as follows:

- Friday April 5, 1996
Standardizing the O/D Survey Process, by Reid Ewing of FIU
- Friday June 7, 1996
New Features of the SERPM4 Model, by Ken Kaltenbach & Sunil Saha of the Corradino Group
- Friday September 20, 1996
Development of ZDATA2 Model by Rob Schiffer of Post Buckley
- Friday October 18, 1996
FSUTMS Nested Logit Mode Split Model, by Zeke Willis of URS
- Friday November 8, 1996
Broward County O/D Results
Walter Keller

The meetings will be held at 2:00 P.M. in the District 4 Office at 3400 W. Commercial Boulevard, Ft. Lauderdale. For more information contact Shi-Chiang Li at (954) 777-4601.

Tampa Bay FSUTMS Users Group Meetings and Activities

The last Tampa Bay FSUTMS Users Group Meetings was held on Thursday February 29. The location and date for the next meeting has not been determined. For more information on the next meetings contact Christopher Hatton with Kimley-Horn in Tampa at (813) 620-1460.

FSUTMS Training Courses

The following is a listing training courses that are currently scheduled:

FSUTMS Version 5.0 Special Update Workshop

Date: Tuesday, March 12, 1996
9:00 A.M - 4:00 P.M

Location: Orlando-Kissimmee Gateway
Hilton Inn
7470 Highway 192, West
Kissimmee, Florida 34747

Rooms: \$61.00 per night
Telephone: (407) 396-4400

Pre-registration deadline is Monday, March 1, 1996. This workshop is open to all Districts, MPOs, Local Governments, and Consultants.

Draft Agenda:

- Overview of Version 5.0 Enhancements
- TWODIGIT Program
 - Auto Network File Conversion
 - Auto PROFILE.MAS Update
 - Standardized SPDCAP Tables
- Enhancements to FSUTMS Modules
- HPLOT Enhancements
- New Reporting Features
- HNISE Improvements
- Ongoing Enhancements
 - Windows/Extend DOS
 - FSUTMS Database Version
 - Nested Logit Model
- Version 5.0 Installation
- Special Topics as Requested

There is no cost for the workshops, however pre-registration is requested. Walt Steinorth is heading up the training program and can provide more information, (904) 488-4642, SC 278-4642. Sandy Colson will be assisting with the collection of pre-registration forms. Her number is (904) 488-4640, SC 278-4640.

Latest Version of the Model

| | |
|-------------|-----|
| FSUTMS | 5.0 |
| FSUTMS NIS | 5.0 |
| TRANPLAN | 8.0 |
| NIS | 3.2 |
| Transit NIS | 2.7 |

The latest version of the FSUTMS model is available to public agencies through Harry Gramling in the FDOT Systems Planning Office in Tallahassee. For more information contact Harry at (904) 488-4640.

Consultants or other private groups can obtain the latest version of the package by contacting Jim Fennessey at the Urban Analysis Group at (510) 838-1363, Fax (510) 838-1372.

International Experts To Offer One-Day Seminars In Florida

FDOT is interested in identifying Travel Model Improvement Program (TMIP) products that may benefit Florida and is initiating plans on how best the state could transition to the next generation of modeling procedures. To this end, FDOT is in the process of arranging one-day seminars on innovative passenger travel demand forecasting methods with specific emphasis on TMIP products. These seminars will be offered by international experts renowned in the area of travel demand forecasting and intimately involved in various TMIP efforts.

In order to provide for statewide coverage, it is planned to offer the same one-day seminar in two cities, Miami and Tampa. The seminars are tentatively scheduled for May 30 (Miami) and May 31 (Tampa). Further details regarding the location and timings of the seminars will be mailed within the next month. A distinguished panel of experts has been assembled for this purpose. The panel consists of:

Ryuichi Kitamura, Ph.D.

Dr. Kitamura is a Professor of Transportation Engineering in the School of Civil Engineering at Kyoto University in Japan. In addition, Dr. Kitamura is a Research Engineer with the Institute of Transportation Studies at the University of California in Davis and the Vice President of Resource Decision Consultants, in., a small

business that specializes in state-of-the-art transportation research and practice. Dr. Kitamura has over 20 years of experience in travel behavior research and has published widely in international journals on topics such as activity-based methods, trip chaining, and dynamic models of travel behavior. Dr. Kitamura served as the Chair of the TRB Committee on Traveler Behavior and Values from 1988 to 1995.

Eric I. Pas, Ph.D.

Dr. Pas is a Professor of Civil and Environmental Engineering at Duke University. Dr. Pas is an internationally renowned expert in research areas related to activity-based travel demand analysis, time use and travel demand, and multi-day travel behavior. He has published widely in international journals on these and various other topics. Dr. Pas served as the Chair of the TRB Committee on Passenger Travel Demand Forecasting from 1988 to 1995 and is currently the Chair of the TRB Task Force on Transportation Modeling Research Needs.

Keith Lawton

Mr. Lawton is Manager of Transportation at Portland Metro, the regional planning agency for the Portland region in Oregon. Mr. Lawton currently serves as the Chair of the TRB Committee on Passenger Travel Demand Forecasting. He has had more than 25 years of experience in transportation planning and innovative modeling practices. Over the last years, Mr. Lawton has spearheaded a major activity-based travel demand modeling effort in the Portland area. The effort involved collecting comprehensive activity and travel data and developing activity-based travel demand forecasting models that use these data. As a reputed transportation planning practitioner, Mr. Lawton will provide an assessment of the benefits that activity-based travel demand models offer in practice.

FDOT Central Office Systems Planning News

One of the most highly visible activities Central Office staff and their consultant have been working on has been preparing for the recent release of FSUTMS version 5.0. Much time has been spent over the last two years towards this accomplishment, including writing a scope of services for the new release, meeting several times with UAG, testing and debugging new features, recommending modifications, preparing a mass mailout, developing programs for installation and two-digit conversions, and preparing for the Special Update workshop on the new release.

Several other activities of statewide interest are currently underway. We have been working on producing a documentation series describing each of the FSUTMS modules, the programs used by each module, data input requirements, and model outputs. Each report also includes revised model flow charts and a section on FSUTMS enhancements which have been recommended for future consideration. Revised Draft Reports have been prepared and forwarded to FDOT Districts for EXT, GEN, HNET, and an FSUTMS Overview. Initial draft reports are currently under development and review by FDOT/Systems Planning staff for HPATH, DISTRIB, MODE, HASSIGN, HEVAL, HPLLOT, TNET, and TPATH.

Florida's Statewide Travel Forecasting Model (STFM) was validated in 1993 to represent base year 1990 traffic conditions. The STFM uses a number of FSUTMS/TRANPLAN programs in addition to several programs unique to this model. The STFM includes a computerized highway network of the entire state of Florida, socioeconomic datasets from each of Florida's 25 urbanized areas, and socioeconomic estimates for rural TAZs. Equivalency tables are used to aggregate trip estimates from the urban TAZ level to

the statewide zone level. Recently, the focus of the STFM has been compiling socioeconomic forecasts from each of Florida's MPOs, MPO long range transportation plans, and plans for the Florida Intrastate Highway System (FIHS) in order to prepare a recommended 2020 Needs Plan for state highways outside of MPO areas. The STFM now includes base year and future year socioeconomic data from all recently completed MPO Plan Updates along with E+C, 2010 FIHS, and 2020 FIHS networks.

In the multi-modal planning arena, work was completed last year on the development of HOV modeling procedures for highway-only applications, along with interim HOV procedures for use with mode choice models. We are now initiating the development of a standard FSUTMS Nested Logit mode choice model. This project will include research into state-of-the-art practices and will complete the integration of HOV procedures for mode choice models.

In addition to the above activities, FDOT/Central continues to provide FSUTMS training workshops, serves as staff to the Model Task Force, provides supplemental RS/6000 support to District offices, and most recently has begun producing this quarterly newsletter. We have recently begun efforts to standardize two-digit facility types and area types, and review linkages between regional models and the STFM. We welcome your input and suggestions on these and other future activities.

Upcoming Conferences

APA National Planning Conference, Orlando, Florida, April 13-17, contact Reene Kaiser at (312) 431-9100

GEOINFORMATICS 96, West Palm Beach, Florida, April 26-28, 1996 call Dr. Bin Li at (305) 284-4087

Florida ITE Conference, Jacksonville, Florida, November 6-8, 1996 contact Bob Hill at (904) 281-1121

FSUTMS Technical Notes

by Harry Gramling, FDOT Systems Planning
Office Tallahassee

FSUTMS Version 5 was released for distribution January 2, 1996. Forty-two DOS, eighteen OS2, and six RS6000 packages were distributed to government users by the Systems Planning Office in January. Users who have installed Version 5 have reported a few problems to this office. These problems are addressed below.

Using HNIS(E) to display DRI analysis volumes Difficulties have been reported with HNIS(E) when attempting to display DRI volumes developed using the Selected Zone process. Version 5 of HNIS(E) allows the user to selectively display volumes by individual "purpose" or to sum selected "purposes". For example, if the DRI volumes are stored as "purpose 2", the user must enter 2 when prompted followed by a 99 to terminate the purposes selected, or else all purposes will be added together. (The expression "purpose" does not indicate the traditional use of trip purpose, e.g., home based work. The term "purpose" is used to represent a component of total trips.) In Selected Zone Analysis, Purpose 1 represents the entire traffic volume, while Purpose 2 includes only the traffic volumes generated and attracted by the selected zone(s).

Plotting Networks Under DOS Plotting two-digit networks requires larger data arrays than single-digit networks require. The "cut-off" limit is approximately 10,400 links under DOS. Although larger networks can be processed under DOS, they can't be plotted. A DOS version capable of running large networks by use of extended memory management is underway and should be available Spring, 1996.

HEVAL "Abnormal Completion" Messages The HEVAL module will produce an error message stating "Abnormal Completion" if the newly required HELABELS.SYN file is not available in the working directory.

Typical conversion to the two-digit system is accomplished using the "TWO DIGIT" process which places a copy of HELABELS.SYN into the working directory. Future HEVAL updates will produce a message indicating that the HELABELS.SYN file is missing.

One of the most significant shortcomings FSUTMS users have experienced (not new to Version 5) is that the Selected Zone Analysis process could not be used on networks that include HOV analysis. Both processes use "purpose" to isolate a particular component of total trips and could not be applied simultaneously because of a limitation on the number of "purposes". The EQUILIBRIUM LOADING process is currently being rewritten to allow concurrent Selected Link Analysis and HOV Analysis. An updated EQUILB.EXE file is now under testing and the Systems Planning Office will provide a sample script file that will enable the Selected Zone Process to function concurrently with HOV analysis.

The user surveys returned with Version 5 requests indicate that all in-use plotters are either Hewlett Packard or HPGL compatible. Subsequent to Version 5, non HPGL plotters will not be supported.

The RS6000 3.2.5 operating system (AIX) will run TranPlan/FSUTMS programs until 3.2.5 becomes inadequate. FSUTMS users will be provided advance notice when it becomes necessary to move to the 4.x.x operating system. It is anticipated that all updates to Version 5, the nested-logit model and the DBC (data-base-capable) models currently under development will operate under AIX 3.2.5. When conversion to the 4.x.x operating system becomes necessary, the Urban Analysis Group will be able to supply software that will not require FORTRAN 90 to be resident on the workstation. The drawback is that this "self-supporting" package will require approximately four times as much harddisk space for program installation.

Transit plotting was activated in Version 5, however the control files and executables, as distributed, for DOS and OS2 have minor bugs. The problems have been corrected and updated files will be distributed as a general update later in the year. If you need to use transit plotting prior to the update, contact me Harry Gramling at (904) 922-0439, Suncom 292-0439 if you have any comments, questions or suggestions.

Tech Tips on HNIS(E), Version 5

HNIS can now add and remove turn prohibitors and display turn penalty locations. The network update menu includes two new items, those being: ADD TURNP and REMOV TURNP to add and remove turn prohibitors from the TCARDS file.

A much requested feature has been added. The HNIS user can now save a plot window description file for the portion of the network being displayed. The required steps include: Adjust the display until the needed window appears, activate the setup menu, click on PLOT FILE, and enter an eight character name for the output file. The plot file name must then be entered into the PROFILE.MAS under the &PLOTWIN tag.

Please note that "purpose" in the following section does not indicate a traditional trip purpose, e.g., Home based Work. The term is used internally in TranPlan to indicate a particular table in an unformatted file.

HNIS has been improved to permit the display of any purpose, or summed combination of purposes, saved during the assignment process or developed by post-processors. For example: The user wishes to display purpose 2 volumes (typically produced by the "Selected Zone" or "Selected Link" process). HNIS, when initializing, will prompt the user to enter a purpose number to display. The user will: type 2, press enter, type 99 and press enter. If no purpose is selected, all available purposes will be summed and displayed. Should be user require that

purpose 2 and purpose 3 volumes be summed for display, the sequence would be: type 2, enter; type 3, enter; type 99, enter.

Please send any questions or TIPs that you may have on Version 5 to Harry Gramlin with the Systems Planning Office in Central Office at (904) 488-4640 or by FAX at (904) 921-6361.

ZDATA2 Study By: Rob Schiffer, Post Buckley Schuh & Jernigan-Tallahassee

A consulting team headed by PBS&J is working under contract to Central Office and District 4 to research the ZDATA2 development processes. The study is seeking to improve the quality and reliability of the trip attraction data used in the modeling processes.

A literature search and evaluation of existing land use models has been conducted. A mail-back survey was conducted by the Transportation Support Group to determine which land use allocation models are mostly commonly used, the data sources for both base year and future year inputs and what the needs are of local governments in generating ZDATA2 projections. Some 50 questionnaires were sent out to MPOs around the U.S. 32 were completed and returned including 18 from Florida. The Florida MPOs responding to the survey were: Brevard, Charlottee, Hillsborough, Indian River, Lee, Martin, Jacksonville, Palm Beach, Gainesville, Pensacola, Tallahassee, Ft. Walton Beach, Panama City, Collier Marion, Pasco and St. Lucie. The following technical approaches are most commonly used:

- 20 Use a Spreadsheet Method
- 7 Use a Manual Method
- 4 Use a Delphi Approach
- 8 Use a Combination of the above
- 5 Use a Land Use Model:
 - 4 DRAM/EMPAL
 - 1 SLAM

Most MPOs currently do not use any land use allocation model to project ZDATA2 files. The reasons given were

primarily lack of technical expertise with these models and difficulty in obtaining data for input to the models.

The DRAM/EMPAL model is the most widely used software package. DRAM/EMPAL is in the process of being replaced by a new generation of land use model called "METROPOLIS" which should be available in 1997.

USF Assessment of Transit Modeling in Florida

A Draft Final Report entitled An Assessment of Transit Systems Modeling in the State of Florida, December 1995 has been prepared under the direction of the Public Transit Office in Central Office. The report was prepared by Ram M. Pendyala with the Department of Civil and Environmental Engineering, University of South Florida in Tampa.

Design Traffic Projections for PD&E Studies

The final version of the Design Traffic Handbook is now available. Copies of the handbook can be obtained from your local district planning office. Chapter 5 of the handbook describes the use of FSUTMS for developing design traffic projections for PD&E studies. Chapter 7 identifies the TURNS4 Model as the preferred methodology for projecting future year turning movements. TURNS4 is a Lotus 1-2-3 Version 5.0 for Windows template based upon the TURNFLOW and TURNS3 programs. The program and documentation can be obtained from the McTrans Center.

UNIT 5. Technical Analysis Requirements for Interchange Proposals on Limited-Access and Adjacent Facilities is still in Draft form but is expected to be finalized sometime this spring.

Time Saving Techniques for Reporting Multiple Sub-Area Assignments

By: Bill Lloyd, Wilbur Smith Associates, Orlando, Fl. (407) 896-5851

One of the more time consuming and tedious aspects of transportation modeling is the interface of assigned model volumes with spreadsheet and/or GIS programs for analysis and graphic illustration. Fortunately, the temporal aspect of this task can be improved upon over the usual manual procedure, and without the assistance of a system analyst. The following procedure is most appropriate for analysis of network sub-areas or specific corridor segments.

The following procedure requires additional labor at the front-end of a project. However, the final result will be a considerable savings in time, and a reduction in errors that occur when manually posting and reporting assignments.

First, determine the roadway segmentation for your analysis based on the existing local concurrency system, LOS spreadsheet, or other guidelines appropriate to your study. Create a spreadsheet table describing the segmentation in terms of "from" and "to" streets or landmarks. Add A-node and B-node columns to your spreadsheet. Preferable, use a spreadsheet capable of saving files in *.DBF format to facilitate software interfacing. Using the NIS editor select the links for which volumes will be reported and post A-node and B-node. There are several options, however "edit attribute" ensures the correct nodes are found for selected segments. Select only links where volume changes occur within a given segment, to avoid skewing when assigned volumes are averaged. Most of your errors will occur in this task, therefore, care must be taken to match a facility with the correct node numbers.

To avoid confusion at a later date, the HASSIGN.ALL file should be copied to your base year alternative directory

before any modifications are made. The &FSUTMS command followed by the path to the directory where the modified HASSIGN.ALL module is located, should be added to the PROFILE.MAS file. This command tells FSUTMS to defer to your analysis directory to access control files you have located there.

Using a text editor, load the HASSIGN.ALL file and move to the bottom of the file to the \$REPORT HIGHWAY LOAD command line. Below this line find the \$PARAMETERS command line and add the parameter SELECTED and NODES= followed by listing every node you have selected for your sub-area analysis, in standard TRANPLAN format, (separated by commas). It does not matter what order the node numbers follow, provided both the A-node and B-node for a given link can be found somewhere in the list.

Run the FSUTMS model stream and produce a HASSIGN.OUT report. Again using a text editor load the HASSIGN.OUT report file and find the link volume report section. In some instance a text editor capable of loading large files may be required. Delete all lines of text above and below the link volume report, and all but the first text header within the report. TRANPLAN does not repeat A-node numbers for every B-node in the report, therefore add these missing numbers. Save as a temporary file. Import the temporary file into your spreadsheet program and eliminate all columns of data except A-node, B-node and 2-way volumes. Open your roadway segment spreadsheet and copy and paste the HASSIGN.OUT spreadsheet below your table, carefully aligning the A-node and B-node columns. Finally, sorting by the node number column, match volumes to the appropriate segments. Delete excess rows without volumes and save under a new name. The segmentation spreadsheet will serve as a cross-reference key for matching subsequent model assignments to roadways. Use the NIS editor to check each link and

make adjustments as necessary to perfect the key. Once you are confident that you have correctly matched your segments and node numbers, you may quickly report volumes by roadway segment. The file can also be saved in *.DBF format and imported into a GIS package, provided the GIS network used is derived from your FSUTMS network.

East-West Multimodal Corridor Study - An Overview

By: Marie-Elsie Dowell, Parsons Brinckerhoff
Quade & Douglas, Miami (305) 261-4785

In December 1995, the citizens of Dade County had a chance to preview and comment on the East-West Multimodal Corridor Major Investment Study. This came at the end of a two-year process where several alternatives were evaluated with the goal of alleviating traffic congestion along SR 836 from the Florida Turnpike to downtown Miami and Miami Beach.

During the past two years, FDOT, PBQ&D and their sub-consultants studied and evaluated various alternatives combining highway and transit improvements. The evaluation criteria included environmental and community impacts, costs, ridership, and preliminary engineering requirements. During the evaluation process some of the alternatives were eliminated leaving one basic alternative for further study: A rail transit line from Florida Atlantic University along SR 836 to the Port of Miami via the proposed Multi Intermodal Center (MIC) located just east of Miami International Airport and Downtown Miami. Various alignments are still being considered between the MIC and the Miami Beach Convention Center.

The travel demand forecasting was done by KPMG/ Peat Marwick using a full multimodal model capable of testing a variety of highway and transit alternatives. The analysis includes the use of a nested logit mode choice model distinguishing between walk access and drive access trips and

between Metrobus, premium transit (express bus, Metrorail and Tri-Rail), and jitney modes. The model structure also includes auto occupancy sensitivity to travel times which includes use of HOV lanes by eligible vehicles. Special airport access procedures were developed in order to accurately measure the impacts of the MIC. Construction of the first phase of the project is estimated to take approximately 8 years starting in 2001.

I-95/I-595 Multimodal Master Plan

By: Jamie Cochran, Barton-Aschman
Ft. Lauderdale Office (954) 733-4220

The New Year is beginning with some of the most important and interesting aspects of the I-95/I-595 Multimodal Master Plan being highlighted. During the month of January, 1996 the eleven Tier 1 sets of improvements are being reviewed by the Intermodal Transportation Coordination Team (ITCT). The essence of the Master Plan project is to plan for 2020 needs in the I-95/I-595/South Florida Rail Corridor in a way that maximizes the intermodal connections and the multimodal potential of the study area. The ITCT group has participated in the project since its start and is expected to be a key element in successfully developing multimodal and intermodal systems in the region.

For all of you computer modeling enthusiasts, work is continuing on coding the networks for the Tier 1 sets of improvements. The results of the modeling efforts for Tier 1 are expected in March, 1996. Phase 2 of the data collection effort will also be underway during the first quarter of 1996. In April another round of presentations to MPOs, their technical committees and citizen advisory committees will be held to receive input on the results of the Tier 1 analysis. 1996 is expected to be full of interesting Master Plan activities and events. Stay tuned for more information about this far-reaching project.

Miami-Dade County Integrated Management System

By: Tom Creasey, Wilbur Smith Associates - Orlando (407) 896-5851

The Florida Department of Transportation (FDOT), District Six, is developing an Integrated Management System to support state and metropolitan planning processes in Miami and Dade County. Wilbur Smith Associates (WSA), as the Department's Districtwide ISTEAs Consultant, is assisting the Department's Multimodal Planning Office with the Integrated Management System development.

In response to former requirements (and now guidelines) of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the FDOT is developing an Integrated Management System that combines the Congestion Management System (CMS), Public Transportation Management System (PTMS), Intermodal Management System (IMS), and Traffic Monitoring System for Highways (TMS/H) into a single integrated system. Furthermore, other planning activities performed by the Planning Office such as pavement management and rail-highway grade crossing projects will be incorporated into the Integrated Management System as well.

An important early step in the system development process was to identify those agencies and transportation providers whom the system primarily would serve. Those were identified as:

- FDOT
- Metro-Dade MPO
- Metro-Dade Transit Authority
- Tri-County Commuter Rail
- Dade County Planning Department
- Local Agencies
- Airports
- Ports
- Railroads (freight and passenger)
- Greyhound
- TMA's
- Chamber of Commerce
- Private Transit Providers

These "partners" in the process are represented by a Task Force that has been assembled to provide input to the system development and facilitate the exchange of data.

It should be noted that the Congestion Management System is being developed at the direction of the MPO. The CMS then will be incorporated into the Integrated Management System. The MPO also plans to interface its other planning activities with the Integrated Management System as well.

GIS-Based Decision Support System:

The focal point of the Integrated Management System will be a centralized Decision Support System (DSS), which will be an integrated relational database connected to a geographic information system (GIS). The DSS will be the primary database and analysis tool used in meeting the management system requirements. It will be capable of performing a number of analyses and also will be used to display information in graphic and report format. This information will be used by numerous agencies and transportation providers and will support the local planning processes.

There are many potential applications that can be incorporated into the DSS.

A number of them have been developed already. A listing of these applications that have been developed or are being developed include:

- Base Roadway Network
- Roadway Characteristics
 - number of lanes,
 - median type and width,
 - shoulder width,
 - pavement surface, etc.)
- Access Control
- Functional Classification
- Level of Service
- Deficient Pavement Section Locations
- Pavement Deficiency Analysis Results
- Parking Areas
- State Highway System
- Florida Intrastate Highway System (FIHS)
- Bridge/Overpass Locations
- Railroad Grade Crossing Locations
- Speed Zones/Speed Limits
- FDOT Work Program
- Location/Attributes of Public Transportation Facilities
- Location/Attributes of Rail Facilities
- Location/Attributes of Intermodal Facilities
- Traffic Count Data
- Traffic Signal Data
- Accident Data

The Decision Support System will be configured in a client-server scheme, with the server being located and maintained in the multimodal planning office. It is planned at this time to use ArcInfo as the server-based GIS engine and ArcView2 on the servers. A tiered, pyramid-shaped access structure is proposed, as shown in Exhibit 1.

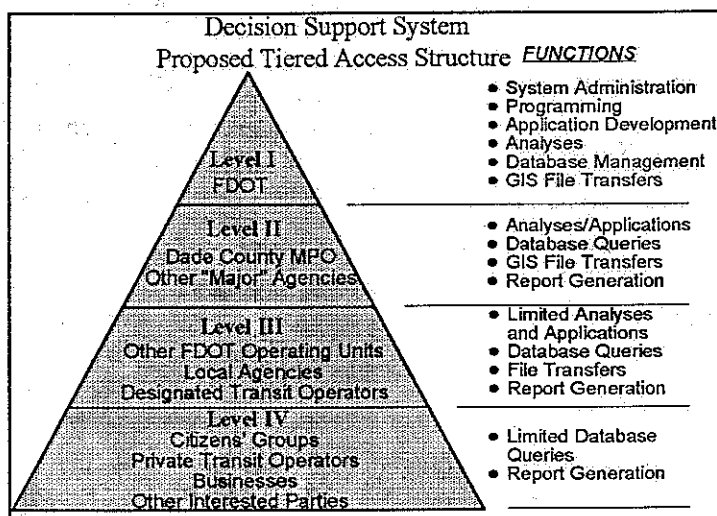


Exhibit 1: Decision Support System Tiered Access Structure

Level I, at the top, will be confined to the FDOT Multimodal Planning Office, who in turn will be solely responsible for database management, application development, programming and system administration. This is to maintain the integrity of the DSS, including its databases.

As the levels descend, it is envisioned that the number of users offered access at those particular levels will increase, but the number of available features at a given level will decrease. The intent of the tiered access structure is not to prevent access to the DSS and the Integrated Management System; its purpose is to maintain the integrity of the DSS while serving its end users in an effective and cost-efficient manner. Furthermore, the hardware and software requirements for providing access and administrative demands placed on the FDOT may be significant factors in determining what levels of access can be offered and to whom.

A number of issues affect the design of the Integrated Management System and its Decision Support System. These include, but are not limited to:

- Availability of databases and other information sources to support the Integrated Management System;
- Number and definition of standard reports produced by the system;
- Interface with transportation planning and air quality models;
- Integrating the management system with the FDOT Work Program, MPO Unified Planning Work Program, Transportation Improvement Program (TIP) and State Transportation Improvement Program (STIP);
- Use of the system to:
 - 1) justify single-occupancy-vehicle capacity improvement projects where other alternatives are not feasible;

2) evaluate the results of transportation demand management strategies; 3) evaluate the effectiveness of transportation management areas; and 4) evaluate the performance of corridor analyses for action plans;

- Development of bicycle/pedestrian and freight movement plans.
- Development of multimodal plans for rail, port and aviation facilities.
- Determining the need for inter-local agreements that allow the exchange of data.

Florida To Tie Into Federal Travel Model Improvement Program (TMIP)

by Ram Pendyala & Bob McCullough

The passage of the 1990 Clean Air Act Amendments (CAAA) and the 1991 Intermodal Surface Transportation Efficiency Act (1991) resulted in the realization that traditional four-step travel demand forecasting models can no longer meet the transportation and urban planning needs of today and tomorrow. This realization led to the initiation of the Travel Model Improvement Program (TMIP) by the U.S. Department of Transportation (DOT) in concert with the Environmental Protection Agency (EPA) and the Department of Energy (DOE). The TMIP is intended not only to implement enhancements to the current travel demand models, but also to develop new modeling procedures that accurately and reliably forecast travel for a wide range of modes, policy actions, and operational conditions. In order to ensure comprehensive coverage of all transportation planning issues and needs, the program consists of five tracks:

Track A: Outreach, that is intended to ensure wide dissemination of TMIP products.

Track B: Near Term Improvements, that will provide near-term enhancements that can be implemented within current transportation planning practice.

Track C: Long Term Improvements, that involves the development of fundamentally new approaches to forecasting travel demand, land use, and air quality.

Track D: Data Collection, that examines issues surrounding data needs to support various modeling approaches and improved data collection methods.

Track E: Land Use, that aims at providing enhanced procedures to more accurately represent relationships between transportation and land use.

Work is currently ongoing in all tracks of the TMIP. Several conferences have been conducted as part of Track A. The most recent, held in December 1995 in Daytona Beach and attended by several DOT staff, provided information regarding completed and ongoing activities in all TMIP tracks.

Within Track C of the TMIP, the Los Alamos National Laboratory (LANL) is developing the Transportation Analysis and Simulation (TRANSIMS) as a fundamentally new and integrated transportation and air quality forecasting tool. The TRANSIMS project objective is to develop a set of mutually supporting realistic simulations, models, and data bases that use advanced computational and analytical techniques to provide for integrated regional transportation and air quality analysis. Essentially, TRANSIMS provides an array of analytical tools that are embodied in four main modules. The first module is the *Household and Commercial Activity Disaggregation Module* that creates regional synthetic populations from census and other data and produces information on household activity demand using activity-based models of travel behavior. The second module is the *Intermodal Route Planner*

that uses activities and preferences from the first module to determine trip plans for each individual traveler and commodity. The third module, *Travel Microsimulation*, simulates the movement and interactions of travelers on a region's transportation network and provides detailed traffic system information. The fourth module, *Environmental Models and Simulation*, is intended to translate traveler behavior and traffic patterns into measures of air quality and energy consumption. TRANSIMS also incorporates a number of feedback loops among its modules and submodules to provide for two-way interactive relationships.

As products continue to become available through the TMIP, State DOTs and MPOs around the country have been showing a keen interest to transition to the new and improved travel demand and air quality forecasting procedures over the next several years and into the next century. The TRANSIMS project is slated for completion by 1999 with commercial user-friendly products available soon thereafter. In order to meet newer and stricter legislative mandates, it will be necessary to take advantage of these new products. In this regard, the Florida Department of Transportation (FDOT) has been closely following the activities of the TMIP to identify products that may provide benefits in the local context. In addition, FDOT is examining TRANSIMS and its interim operational capability (IOC) case studies in great detail to see how best the state could plan its own transition to the next generation of travel forecasting procedures. As a first step in this direction, FDOT, together with researchers at the Department of Civil and Environmental Engineering of the University of South Florida, is arranging to have international experts offer one-day seminars on innovative passenger travel demand forecasting methods (see related article).

Additionally as part of track A, Outreach, and Track B, Near Term Improvements, FDOT will contract

with Dr. Ram Pendyala, Department of Civil Engineering, University of South Florida to assist with training sessions to share the latest information on federal development and to obtain input on how Florida can best prepare for the TMIP.

Further information regarding the TMIP may be obtained from Dr. Gordon Shunk or Ms. Lynette Engelke at the Texas Transportation Institute (phone 817/277-5503). In addition, a web site describing various TMIP activities is now available (<http://tmip.tamu.edu>). Upcoming TMIP related conferences include a conference on Activity-Based Travel Forecasting in New Orleans (June 2-5) and a Conference on Urban Design, Telecommuting, and Travel Behavior in Williamsburg, Virginia (October 27-30).

Model Task Force Technical Team Meeting Notes

for October 24, 1995 Meeting
By: Terry Corkery - Systems Planning

Tri-chairs Jeanette Berk, Wilson Fernandez, and Joey Gordon opened the meeting held at the FDOT District 5 Orlando Urban Office. The following issues were then covered.

FSUTMS Version 5.0 New Features - Don Draughon, Central Office Systems Planning, and Rob Schiffer, Systems Planning's general consultant, gave a slide presentation on the new features which are a part of the soon-to-be-released FSUTMS version 5.0. The most prominent change is the requirement for two-digit area types and facility types in the network coding. There will be several other changes users will notice in Version 5:

- The EXT.OUT report will no longer contain the seemingly endless pages of zeros representing the internal zone portion of the output trip table.

- Modelers will be permitted to use customized attraction rates to override the standard rates "hard-coded" into GEN.EXE.
- DISTRIB.ALL control file has been renamed DISTRIB.HWY.
- MODE will now be able to use free-flow HOV skims.
- The HEPARAMS.SYN file has been eliminated and a new HELABELS.SYN input file has been added to help organize and label the more numerous area types and facility types in the HEVAL output reports.
- EMIS will calculate the EPA-allowed 80 percent credit for IM/ATP programs.
- The minimum and maximum plotting coordinates will be moved from the PROFILE.MAS to a separate input file. Several other upgrades to plotting procedures have been added, including the ability to plot transit networks.
- Users may now conserve disk space and run time by specifying selected output reports they do not wish to be produced.

Two-Digit Area Type/ Facility Type Definitions - The HNET Subcommittee led a discussion regarding adoption of a standardized definition set for two-digit area type and facility type codes. The subcommittee has been studying whether the approach developed in the Tampa Bay region is appropriate for adoption as a statewide standard. No decision on this question was recommended but the subcommittee did suggest issues which require more study. As a result, the Technical Team recommended that the Central Office proceed with developing standardized two-digit definitions and a speed/capacity table. For the Version 5 release, it was decided to include copies of Tampa Bay's coding definitions and speeds/capacities as an

example with a note stating that Tampa Bay's definitions may be used as a starting point and the Central Office, in coordination with the Model Task Force, is pursuing the development of a standardized approach.

FAU/FIU Research On Trip Generation/ Distribution Models

This discussion item focused attention on continuing efforts throughout Florida to improve the standard trip generation model. The discussion dealt specifically with the calculation of trip productions which the FSUTMS GEN model accomplishes by using a cross-classification matrix. Dwelling units are classified according to variables which differ in their rates of trip making. For example, dwelling units have been found to differ in trip generation rates according to dwelling unit type, number of persons per dwelling unit, number of automobiles available, retirement status of householders, number of workers per household, presence of children, as well as several other determinants of travel behavior. The FSUTMS GEN model calculates trip productions based on dwelling unit type (single-family versus multi-family), auto availability and household size.

The recently-developed Tampa Bay Regional Transportation Analysis (TBRTA) model employs new variables in place of the standard GEN variables. It was felt that the concentration of retirees in the Tampa Bay area necessitated classifying dwelling units in a way that would differentiate between retirement households and working households. The TBRTA cross-classification model stratifies households according to three life cycle categories: workers with children, workers without children, and with retirees. One of the primary tasks of the FAU/FIU research was to investigate to what extent the TBRTA model improved trip generation and whether the statewide standard GEN model should be modified to incorporate these new cross-classification variables.

Shi-Chiang Li from District 4, serving as project manager, introduced Reid Ewing and MaryBeth DeAnna from the FAU/FIU Joint Center for Urban and Environmental Problems. Dr. Ewing presented the research findings on household lifestyle-based trip generation models. The research tested Tampa Bay's Lifestyles model using other cities' O&D data and proposed a modified version of Tampa Bay's approach. The Tampa Bay, the modified Tampa Bay and standard GEN models were compared using the criteria simplicity, data availability and goodness-of-fit.

The FSUTMS GEN model calculates trip productions based on dwelling unit type, auto availability and household size, without regard to whether household residents are workers, retirees, or children. Lifestyle models use additional data inputs to differentiate between working versus non-working household residents. Therefore, as one might predict, the lifestyles models statistically outperform the standard model in replicating home-based work trips. The Tampa Bay approach presents a potential data collection problem because the census does not ask respondents their retirement status. Residents' age, which is used as a substitute variable for retirement status, is not always a reliable indicator. Dr. Ewing's modified Tampa Bay approach proposes to use number of workers, presence of children, and number of autos available as the cross-classification variables.

Several Technical Team members voiced concerns about the ability to gather and forecast the data proposed in the modified Tampa Bay approach. Dr. Ewing noted that a special tabulation of the Census Transportation Planning Package (CTPP) can be ordered at a very reasonable cost (less than \$4,000 total for the entire state of Florida's MPO areas). Dr. Ewing also stated that the lifestyles model data forecasting process would not differ significantly from current forecast methods which

are based on Bureau of Economic and Business Research (BEBR) projections. It was noted that BEBR also provides forecasts of household age structures by 5-year increments.

Gary Long of the University of Florida College of Engineering raised concerns about the feasibility of predicting future data for presence of children and number of workers. He feels these variables are difficult to project because they are continuously changing within each TAZ as neighborhood residents age then are replaced by younger families. Dr. Long, who helped develop the original GEN model, recounted that simplicity, data availability and ease of projection were the primary criteria which led to the selection of the variables currently used in the GEN model. He suggested that further research be conducted to correlate trip making with stable and readily available variables such as assessed value of dwelling units (available from tax assessors' offices).

Wilson Fernandez cautioned against a prevailing sentiment that the way to improve FSUTMS is to make it as simple as possible. He noted that the Metro-Dade Transit Agency (MDTA) uses the model to help make planning decisions involving intricate levels of detail. Simplified models with less input data often do not provide the accuracy necessary for Major Investment Studies (MIS) and transit planning decisions. Carmen Chronister suggested that perhaps two separate types of models should be developed in Florida: short-range forecasting models for MIS and transit planning applications which require a more complicated model structure and a simpler model structure for conventional long-range planning and budgeting applications with less specific data requirements.

Person-trips made by children is an issue in using available survey data. Some travel characteristics surveys failed to count person-trips made by children under age 15. FAU/FIU will continue work on reviewing other

survey data, researching the feasibility of modeling home-based school purpose trips, and considering trip-chaining methodologies.

Nested LOGIT Model

Progress - Jeanette Berk read the resolutions adopted by the Model Task Force last year which directed Central Office Systems Planning to modify FSUTMS enabling it to perform nested logit mode choice modeling. In response, Central Office has initiated a contract with Jim Fennessy of the Urban Analysis Group to modify the standard model structure to allow input of nested binomial mode choice equations. A separate contract is currently being developed for URS Consultants to develop standard sets of constants, coefficients and nested tree structures to implement nested logit modeling in Florida's MPO models. Gummada Murthy of the Systems Planning Office handed out copies of URS Consultants' draft scope of work.

USF Research On Enhanced

Transit Models - Ike Ubaka of the FDOT Public Transit Office discussed the transit modeling research his office is managing. The aim of the project is to assess FSUTMS as a transit planning tool and identify data needs to improve transit modeling. Mr. Ubaka announced that Dr. Ram Pendyala of the University of South Florida College of Engineering, who is conducting the research, has completed a technical memorandum assessing current transit modeling practices in Florida. The report tabulates results of a recent FSUTMS user survey and evaluates each MPO model. Mr. Ubaka stated that the report has been mailed out to Technical Team members. He said that he would address any Technical Team review comments sent to him at the Public Transit Office by November 15, 1995. Shi-Chiang Li stated that care should be taken to avoid duplication of effort between USF's research and the FAU/FIU research. This issue was determined not to be a serious problem because the two studies

emphasize different functions of modeling - long range comprehensive planning versus short term Transit Development Planning.

Support And Training For Non-Standard MPO Models -

The Orlando MPO model update uses nested logit mode choice modeling, in accordance with Federal Transit Administration (FTA) requirements. This mode choice model was developed for analyzing HOV facilities in the I-4 corridor and was developed as a customization departing from the standard model. Unfortunately, Central Office staff, who provide training and support for the standard model, are not prepared to support individually customized MPO models. Therefore, as Orlando MPO's Dennis Hooker pointed out, MPOs with customized models may experience a lag in training and support until the standard model is changed to include the newly developed customization. As discussed earlier in the meeting, progress is being made on incorporating the nested logit modeling procedures pioneered by Miami and Orlando into future releases of FSUTMS. When that happens, FSUTMS will have the ability to execute nested logit models within the standard menu structure.

Definition Of

Standardization - The Model Task Force Policy Team had requested that the Technical Team formulate a definition of the term "standardization" and set guidelines to determine to what degree customization should be allowed in the MPO models. Technical Team members were in agreement that developing an official definition of standardization would best be accomplished by the Policy Team. Furthermore, the general feeling of the group was that rules or guidelines for model development do not seem to be needed because the current system of reviewing modeling innovations within the Technical Team and its subcommittees is working very well.

The system works well because modeling procedures can be discussed in an open and cooperative atmosphere without concern for exceeding any established limits on creativity.

There was unanimous support among the members regarding adoption of a statewide uniform set of definitions and a standard base speed/capacity table to be used with the two-digit area types and facility types. Everyone agreed that it would be very unfortunate if all MPOs developed unique coding definitions for area types and facility types because MPOs would not be able to share data inputs and modelers would face severe difficulties when trying to combine adjacent MPO models to create regional models.

GIS Task Force Update -

Joey Gordon, a participant on the GIS Task Force, reported that several GIS pilot projects have been initiated to test the many GIS software and hardware products within several different applications. These pilot projects will continue for the next 18 months. Several key GIS policy decisions will be made by the GIS Executive Steering Committee during the next two months. Preliminary indications are that the selected packages will be ArcInfo for planning applications and MGE for CADD work.

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