



U.S. Department
of Transportation

Urban Mass
Transportation
Administration

μ^{tps} microcomputers
in transportation

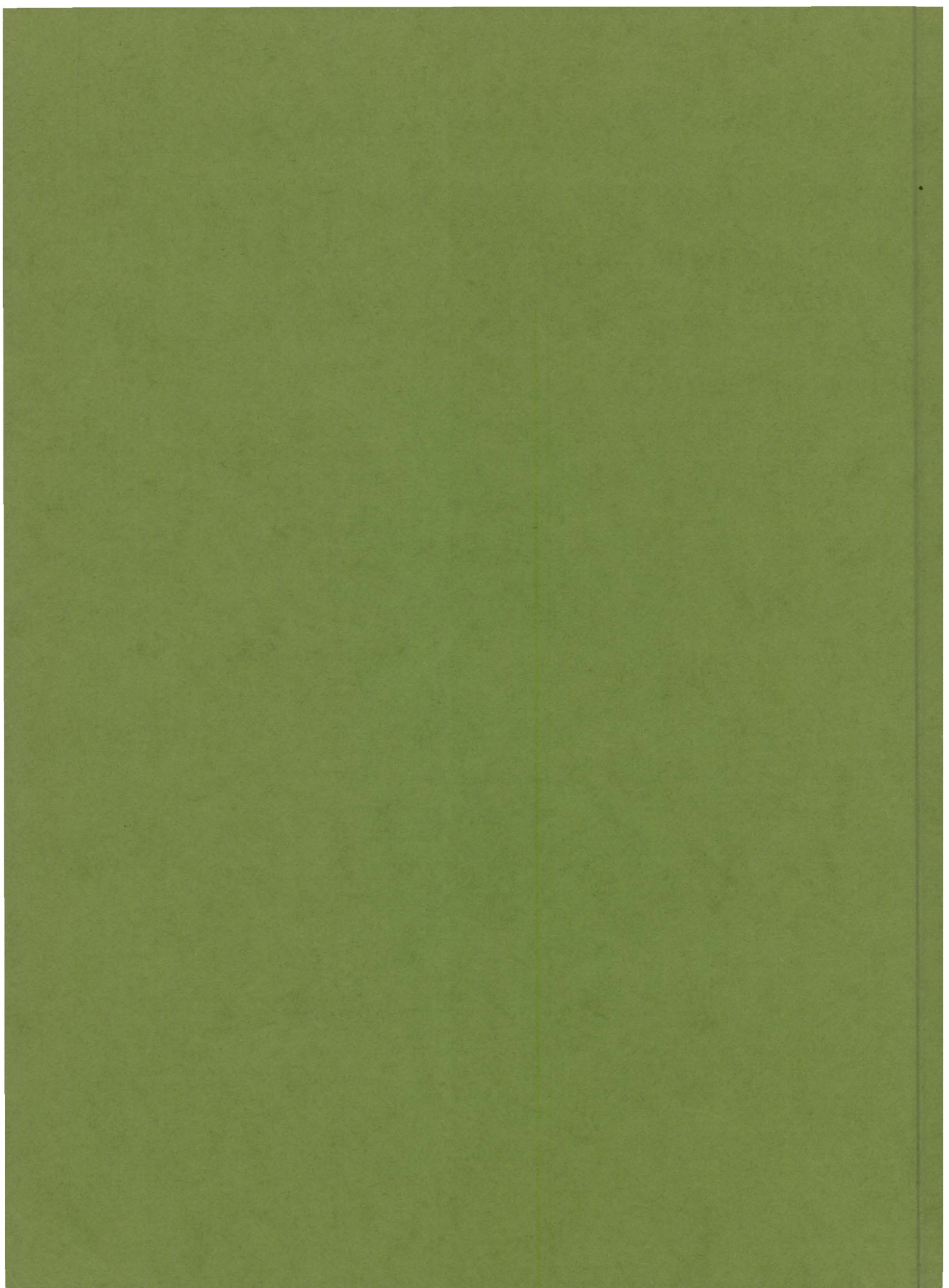
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Software and Source Book

February 1985



UMTA Technical Assistance Program



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16. Abstract The Urban Mass Transportation Administration (UMTA) and the Federal Highway Administration (FHWA) of the U.S. Department of Transportation provide training and technical assistance in the new and rapidly changing area of transportation application of microcomputers. These two agencies maintain up-to-date microcomputer references for transit and paratransit operators, transportation planners, and traffic engineers. This document contains information pertaining to: 1) Microcomputer references and training and; 2) descriptions of software in the areas of transit operations, transportation planning, traffic engineering, and paratransit planning and operations.			
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PREFACE

This publication contains microcomputer software descriptions and sources of information of interest to transit and paratransit operators, transportation planners, and traffic engineers. Information from previous issues of this publication has been updated and expanded in this document.

The first part of this document contains general information on microcomputer courses, publications, references, and user groups. The next five sections contain descriptions of software in five major functional areas. Software developed by both private contractors and public agencies is listed. Software which is under development is identified by the label "In Development" to the right-hand side of the heading information. At the end is an index of software descriptions by organization and by title of the software.

The information provided here is the best available to UMTA and FHWA at the time of publication. Should you have updates, corrections, or additions to what is contained here, please contact Ron Jensen-Fisher, the editor, at the following address:

Urban Mass Transportation Administration
Methods Division (URT-41)
Washington, DC 20590
(202) 426-9271

Descriptions of new transportation software are particularly welcome.

Additional copies of this report can be obtained by sending a self-addressed gummed label to:

Microcomputer Reports
Price, Williams & Associates, Inc.
8484 Georgia Avenue, Suite 400
Silver Spring, MD 20910

We want to thank all those who contributed software descriptions and other entries for this publication. We are particularly grateful to Price, Williams & Associates for the word processing and final organization of this document.

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**MICROCOMPUTER INFORMATION
AND TRAINING**

Microcomputer User Groups

One of the best ways to learn about microcomputers is to join a local user group. User groups are usually formed for a particular machine, and meet monthly. Through the groups you can meet more experienced users who can help you with hardware and software selection, programming considerations and a myriad of other things. Some user groups can obtain discounts on hardware and software purchases. They are also a good source of public domain software. Some groups become so big that they have subgroups, called special interest groups, which concentrate on a particular aspect of microcomputing, like communications, database management, spreadsheets, etc.

Four federally-sponsored national user groups have been formed for transportation professionals. They are Microcomputers in Transportation Planning (MTP), composed of those interested in transportation planning; Safety and Traffic Engineering Applications for Microcomputers (STEAM), oriented to highway safety and traffic engineering; Microcomputer Applications in Highway Projects (MAHP), serving those in small towns, rural county and statewide highway agencies; and the Transit Industry Microcomputer Exchange (TIME), serving those interested in transit operations.

If you want to become a member of one of the first three user groups listed above, contact:

(User group name from above)
DOT/Transportation Systems Center
DTS-63
Kendall Square
Cambridge, MA 02142
(617) 494-2247

If you are interested in joining the user group for transit operations, contact:

TIME Support Center
Rensselaer Polytechnic Institute
Civil Engineering Department
Troy, NY 12180-3590
(518) 266-6227

National Conference on Microcomputers in Urban Transportation

The National Conference on Microcomputers in Urban Transportation will feature presentations, panel discussions and exhibits on microcomputer activities which are presently in use or being considered in the urban transportation environment. The focus is on applications which will provide insights to others addressing similar problems in urban transportation.

The conference has sessions in six major areas:

- 1) Microcomputer Implementation/Management Issues
- 2) General Urban Transportation Applications
- 3) Traffic Engineering
- 4) Public Transportation
- 5) Urban Transportation Planning
- 6) Transportation System Construction, Design and Maintenance

Some sessions have been structured to cover general subjects of widespread transferability across the entire urban transportation community (such as budgeting, personnel management, system procurement and installation), as well as applications of transferability to more limited segments of the industry, such as traffic engineering, public transport, transportation planning, transportation design and construction. Concurrent with the presentation sessions, individuals and organizations will be demonstrating their projects and services in an exhibit area located adjacent to the presentation rooms.

The conference is being held June 19-21 in San Diego. Cosponsors include:

- American Association of State Highway and Transportation Officials
- American Institute of Certified Planners
- American Public Transit Association
- American Road and Transportation Builders Association
- American Society of Civil Engineers
- American Society for Engineering Education
- Federal Highway Administration
- Institute of Transportation Engineers
- International Road Federation
- Transportation Research Board
- Transportation Research Forum
- Urban Mass Transportation Administration

For further information, contact:

National Conference on
Microcomputers in Urban Transportation
c/o Elizabeth Yee
ASCE
345 East 47th Street
New York, NY 10017-2398
(212) 705-7544

Transportation Bulletin Boards

Two new electronic "bulletin boards" oriented to transportation professionals have come into operation recently. One is called 'INFOTAP', and is operated by the Institute of Transportation Studies at the University of California at Berkeley. It is designed for use by transportation and public works professionals. The other is called the 'Milwaukee Shuttle', and is operated by the University of Wisconsin. It is geared to the needs of transit professionals.

INFOTAP acts as a mechanism for fostering information exchange and improved professional practice among transportation and public works professionals. INFOTAP relies upon the use of relatively unsophisticated microcomputers and terminals operated by technical personnel who are NOT necessarily highly computer-oriented, yet at the same time offers a wide range of information to its users.

Simply by dialing the INFOTAP phone number (415-642-7088) while connected to a microcomputer or terminal and communications modem, the professional is automatically connected with INFOTAP and given access to its full resources. For those calling from within California, the phone number is (800) 822-0025.

The resources available are extensive. Of central interest to many is the software library, which permits free copying of software for a range of applications, including transportation, public works, and general uses. Currently there are over 300 files listed in the INFOTAP software library which are available to the user. The user is free to copy, or "download", those programs to his microcomputer for day-to-day use.

Another important INFOTAP resource is its message/electronic mail system. Use of this system allows the professional to direct personal messages to another user or group of users, making the message public or private depending upon his or her wishes. The messaging system provides a needed means for the professional to distribute information or requests for information among his peers without significant money or time expense. At the same time, to the extent that the majority of the messages passed through the system are public, it allows the professional to keep tabs on current issues and events which are of relevance. Similarly, the message system allows the professional to avoid the most hated of administrative roadblocks: "phone tag".

INFOTAP also offers a variety of support resources for the professional. Among these resources are current listings of upcoming transportation and public works seminars and professional training courses in the region, listings of software sources and catalogs, a survey of microcomputer users groups covering a range of professional interests, and a selection of software reviews.

The Milwaukee Shuttle bulletin board was established to promote exchanges of information on transit topics. It's free. Anyone can access the system and place messages or read information. Information on the board covers technical training opportunities, report availability and ordering, software reviews and comments, rural transit issues, urban transit issues, management, planning, maintenance, and microcomputer applications.

To use the board, you need a computer or a terminal with a modem. Call the board with your modem at (414) 963-5235. After that you will be given instruction on what to do. You will be allowed to read information, write messages on the board, erase messages that you put on the board, and "upload" files for other users. If you want to talk to a real person, call (414) 963-5787. The board is available seven days a week, 24 hours a day. It has only one phone line, so if you get a busy signal, call back later.

The Milwaukee Shuttle is operated by the Center for Urban Transportation Studies at the University of Wisconsin-Milwaukee. Partial support for the board comes from a grant to UWM as an UMTA Center for Transit Research and Management Development.

Software and Source Book Goes Online

The "Software and Source Book" is the most comprehensive listing of microcomputer software for transportation professionals available. However, the publication is printed annually, and information can soon be out of date after the publication is printed. In an effort to make the most current information available to transportation professionals, the "Software and Source Book" will soon be moved to a bulletin board similar to those described above. An announcement will be made in the newsletters of the Federally-supported user groups when this occurs. The hard copy of the Source Book will continue to be printed annually.

Having software descriptions on a bulletin board means that you can view the latest information on software being used by the transportation community. It also means that software developers and users must notify us about new software that is out, and changes to existing software, as soon as this occurs. This is usually not a problem for vendors for obvious reasons, but agency people are usually less responsive. We urge you to notify us of new developments which you feel may be of interest to your peers, and to do this throughout the year rather than waiting for the annual solicitation. It is only through your communication with us that the "Software and Source Book" will continue to be a useful document. Please send any corrections or additions to the editor:

Ron Jensen-Fisher
UMTA, URT-41
Washington, DC 20590
(202) 426-9271

Publications

The following publications are oriented to transportation professionals:

"Microcomputers in Transit: A Hardware Handbook," developed by the Institute for Urban Transportation in Bloomington, Indiana. The handbook introduces management and staff of small to medium-sized transit operations to the hardware components of a microcomputer system. It describes the functions of each hardware component, and characteristics to look for in selecting equipment. To obtain this report, send a self-addressed mailing label to:

Technology Sharing Program (I-30HH)
Office of the Assistant Secretary
for Governmental Affairs
U.S. Department of Transportation
Washington, DC 20590

Please note the report's title and document number (DOT-I-84-46) when ordering.

"Microcomputers in Transit: A Software Handbook," developed by the Institute for Urban Transportation in Bloomington, Indiana. The handbook describes a process which can be used to identify tasks which can be done on a microcomputer. Also discussed is generic software (spreadsheets, database managers, word processors), applications software, operating systems, programming languages, and utility programs. To obtain this report, follow the same procedure as for the previous handbook, but reference document number DOT-I-84-47.

"Getting Started In Microcomputers," by UMTA and FHWA. This report describes the steps necessary to implement a microcomputer system in a small agency.

"Selecting a Single-User System," by UMTA and FHWA, is a comprehensive information reference on microcomputers, operating systems, and commercial software from a "how-to-select" point of view.

"Addressing Organizational Issues," by UMTA and FHWA, looks at the factors within an organization which influence the effectiveness of a microcomputer implementation.

The above three documents can be obtained by sending a self-addressed gummed label with your request to:

Microcomputer Reports
Price, Williams & Associates, Inc.
8484 Georgia Avenue, Suite 400
Silver Spring, MD 20910

"Hart's Directory of Microcomputer Software and Services," by Hart and Associates of Pleasant Hill, California, is a comprehensive volume of microcomputer software and services available to the civil engineering and construction industries. The directory contains 1,008 separate software listings compiled from 362 vendors worldwide. It can be obtained for \$50.00 from:

Alfred J. Hart
Hart & Associates
2250 Morello Avenue
Pleasant Hill, CA 94523
(415) 671-0382

"TIME CAPSULE" is a newsletter published four times a year by the Transit Industry Microcomputer Exchange (TIME), a national microcomputer user group for transit operations referenced above. The newsletter covers general microcomputer issues (security, database managers, operating systems) as well as agency experiences with microcomputer implementations. The newsletter is available to members of TIME. Newsletters similar to the "TIME CAPSULE" are published by the three other national user groups referenced above.

"Engineers Computer Applications Newsletter" is published monthly, and focuses on hardware and software for engineers involved in design. Subscriptions are \$96.00 per year from:

Engineering Computer Applications, Inc.
PO Box 3109
Englewood, CO 80155-3109
(303) 797-3603

Courses

FHWA and UMTA offer a two-day introductory course which contains two parallel sessions oriented to transportation planning and transit operations. There is no charge for this course. Contact your regional FHWA or UMTA office for more information.

A one-week course called "Microcomputers in Transportation Engineering" is being offered at Northwestern University on March 25-29, 1985 (\$450 per person). Contact:

The Traffic Institute (Registrar)
Northwestern University
555 Clark Street, PO Box 1409
Evanston, IL 60204
(312) 492-5040

A one-week course called "Microcomputers in Transportation" is being offered at MIT on June 24-28, 1985 (\$900 per person). Contact:

Summer Session Office
Room E19-356
Massachusetts Institute of Technology
Cambridge, MA 02139
(617) 253-2101

A one-week course called "Microcomputers in Transit Management" is being offered by the Institute of Urban Transportation at the University of Indiana on August 18-23, 1985. Contact:

Dr. Brendan Hemily
Professional Development Programs
Institute for Urban Transportation
825 East 8th Street
Bloomington, IN 47405
(812) 335-8143

Freeware[™]

Software can be obtained from a variety of sources as the references within this publication indicate. While many of the packages described herein were developed for transportation applications by universities and public agencies and are in the public sector, there is another class of software oriented to general applications (word processors, spreadsheets, file managers, etc.) which can be obtained at no cost. This software is called "Freeware" or "Shareware". The developers of such software allow users to freely copy the software and give it to others. Frequently a nominal fee is requested by the developer if the user finds the software to be useful.

A variety of such programs exist. Three of the more popular programs are listed below. All can probably be obtained from your local user group for the price of a floppy disk plus a copying charge. Otherwise you can order it from the developer for a nominal charge.

PC-Write, a word-processing program, has a variety of features and has received respectable reviews compared to other commercial word processors. The program can be obtained by sending \$10.00 to Quicksoft, 219 First N. #224, Seattle, WA 98109; (206) 282-0452.

PC-File III, a file manager, is quite comparable in quality to \$150 commercial file managers. It can be purchased for \$45.00 from Jim Button, Box 5786, Bellevue, WA 98006; (206) 746-4296.

PC-Talk III is a communications program which has been around for several years. It can be used to access the bulletin boards discussed earlier. It can be obtained for \$35.00 from The Headlands Press, Inc., Box 862, Tiburon, CA 94920; (415) 435-9775.

[™]Freeware is a trademark of The Headlands Press, Inc.

TRANSIT OPERATIONS

APPLICATIONS

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

APPLICATION	HASTUS	
DEVELOPER	GIRO, Inc.	
SUMMARY	<p>HASTUS is a fully interactive computer system which provides an integrated set of scheduling tools. The system differs from virtually all automated scheduling systems in several key ways. The powerful optimization routes are complemented by an extensive set of on-line commands that allow schedulers to interactively edit, adjust, and fine-tune schedules and runs to produce solutions that are not only cost-efficient but also operationally desirable. Extensive error-catching routines facilitate smooth editing by schedulers. HASTUS is powerful enough to handle virtually any size transit property and has been used for a division of 300-500 buses with unlimited interlining. The system is highly parameter-driven and can generate optimum operator schedules under a variety of work rules without reprogramming.</p>	
ENVIRONMENT	<p>HASTUS is currently configured to run under UNIX, Primos, and IBM CMS. The system utilizes its own file management routines so that it is machine independent and can run on a wide range of computers. It is currently running on an IBM 370, a Prime minicomputer, and a PIXEL 16-bit microcomputer.</p>	
STATUS	<p>HASTUS is currently in production use at transit systems in Montreal and Hull, Quebec. It is being installed at the New York City Transit Authority, and in Singapore.</p>	
AVAILABILITY	<p>HASTUS is distributed in the United States by Multisystems, Inc., and is available elsewhere from GIRO, Inc.</p>	
CONTACT	<u>In the USA</u> Mr. John Attanucci Multisystems, Inc. 1050 Massachusetts Ave. Cambridge, MA 02138 USA (617) 864-5810	<u>Outside the USA</u> Mr. Jean-Yves Blais GIRO, Inc. 5450 Cotes-Des Neiges, Off. 502 Montreal, Quebec H3T 1Y6 Canada (514) 731-3651

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

APPLICATION SAGEPAC - Transit Scheduling and Service Planning System

DEVELOPERS SAGE Management Systems Corp.

SUMMARY SAGEPAC consists of the following modules:

Runcutting: SAGERUNS, an interactive runcutting system, permits the creation, modification or "undoing" of individual runs or a set of runs. Runs can be cut with one set of parameters and then the parameters can be relaxed to reflect hard/soft work rules.

After all runs are cut, the software utilizes exhaustive switching and shifting techniques which are more efficient than RUCUS-related software. Straights can be maximized while key runs can remain unaltered during the process.

Rostering: Weekday, Saturday and Sunday runcut data are input to this module for the generation of weekly rosters to be posted and bid by operators. The program will maximize the number of bids for regular operators and usually reduces extraboard staff and the time required for daily extraboard bid preparation. The program is customized to local union requirements and checks that each bid does not violate any state or local rules.

Scheduling: An interactive database management system for schedule data development, maintenance and reporting. Data maintained include: nodes, running time, mileage, and dead-heads. The system provides automatic headway building, optimal vehicle blocking, garage allocation, interlining, on-line summary reports, and over 50 operations reports.

ENVIRONMENT IBM PC microcomputers under MS-DOS.

STATUS A list of users is available from the contact below.

AVAILABILITY License sale or demonstration packet available from contact below.

CONTACT Ian Moore
Director of Marketing
SAGE Management Systems Corp.
1911 North Fort Myer Drive, Suite 907
Arlington, VA 22209
(703) 243-0060

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

APPLICATION Headway Sheet Development/Vehicle Blocking/Driver Run-Cutting System

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SPONSOR CNY CENTRO, Inc., Syracuse, New York

SUMMARY HEADWAY SHEET MANIPULATIVE: The program interfaces with the existing RUCUS package. Two-sided through-downtown lines can be handled. The program works a four-panel "in-and-out on one side, and in-and-out on the other side" solution. A complete set of trip manipulative commands are available - Blowup, Delete, Change Pattern, Change Routine - all by time range. The creation and modification of trips is completely under the control of the Scheduler. Three blocking modes are included: 1) Consecutive - first in-first out - similar to the manual technique used at many properties; 2) Optional - which uses the Ford-Fulkerson Technique included with the RUCUS I package; and 3) Manual - which permits the user to create blocks by connecting specific trips to each other. RUN-CUTTING: Optional two-piece split construction techniques using the Hungarian Assignment Algorithms are available. Two-piece straight (small paid break) runs are constructed by a two-pass process that guarantees that early and late pieces will be paired. The program is completely parameterized. It has been used to construct runs under the most extreme circumstances. REPORTING: There are six to eight standard reports that are produced by the Schedule Department. These are customized to meet local requirements: Paddles/Manifests, Supervisor Guides, Master Schedules, Corner Books, Public Timetables, Run Guides, Pull-Out Sheets, Signup Sheets. Standard documents are available for smaller properties that do not need customized output.

ENVIRONMENT Altos 68000, 1MB memory, 40MB hard disk, UNIX System III and FORTRAN; or IBM PC/AT with 1MB memory, 20MB hard disk, and XENIX operating system.

STATUS Operational at Syracuse, New York; under development in Columbus.

CONTACT Mr. Don Moore
Director of Schedules
Central Ohio Transit Authority
1600 McKinley Avenue
Columbus, OH 43222
(614) 275-5836

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

APPLICATION Bus Schedule Timing

DEVELOPER Berkshire County Regional Planning Commission, Pittsfield, MA

SUMMARY For individual routes of a simple fixed-route transit system, input to the program consists of headways, running time between stops, and layover times. These are used to develop an initial schedule for each vehicle needed to provide service at the specified headways. Alternative arrival/departure times at a particular stop can be entered interactively to ascertain the effect on other stops. Various adjustments can then be made to develop the best overall schedule for the particular route.

ENVIRONMENT The procedure is implemented in VisiCalc™ under the DOS 3.3 operating system on an Apple II+ microcomputer with 64K memory and a disk drive.

STATUS The procedure has been used in work done with the local transit agency to study alternative revised bus routes and schedules.

AVAILABILITY The procedure has not been generalized or documented for general distribution.

CONTACT Charles W. Cook
Berkshire County Regional
 Planning Commission
 10 Fenn Street
 Pittsfield, MA 01201
 (413) 442-1521

™VisiCalc is a trademark of VisiCorp.

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

APPLICATION Chapel Hill Scheduler: Interactive Bus Scheduler

DEVELOPER Chapel Hill Transit

SPONSOR UMTA, Office of Methods and Support

SUMMARY This microcomputer program operates on user-specified, uniform running times between timepoints within each of several periods of the day. For route variations, such as branch lines or short turns, "patterns" define a subset of timepoints. With standard layovers also specified, the computer takes over much of the "number crunching" aspect of scheduling, allowing the schedule writer to try alternative schedules quickly and accurately. With the final schedule in computer-printable form, the production of timetables, driver "paddles", day cards, supervisor sheets, etc., is accurate and easy.

The "Chapel Hill Scheduler" (CHS), developed under an UMTA grant by Chapel Hill Transit in North Carolina, is an easy-to-learn, well-documented scheduling aid for the small, fixed-route operator. It is most efficient in scheduling long blocks of repetitive trips at headways that are uniform within major segments of the day. Odd headways and "trippers" are also accommodated, but must be treated individually.

The program facilitates manual blocking but no runcutting is included.

ENVIRONMENT IBM PC (and compatibles) Apple II
UCSD Pascal (requires UCSD to run) UCSD Pascal
Microsoft Pascal (runs as is)
Turbo Pascal (runs as is)

STATUS Operational.

AVAILABILITY Public domain.

CONTACTS Disk: TIME Support Center Modem: INFOTAP Bulletin
Department of Civil Engineering Board, Berkeley, CA
Rensselaer Polytechnic Institute (can download soft-
Troy, NY 12180-3590 ware but not docu-
(518) 266-6227, between 9:00 AM mentation). Have
and 4:00 PM EST your modem call
(415) 642-7088

microcomputers in transportation

Transit Operations Software

Scheduling and Runcutting

PROJECT DTS: Desk Top Scheduler

DEVELOPER ATE Management and Service Co. and Wilson-Hill Associates

SUMMARY DTS allows a scheduler to interactively build and edit trips (automated blocking and runcutting is not performed). Schedules can be built by inputting a headway, a single start time per trip, or by having DTS generate headways based upon load check counts and load standards. Capability to add, change, or delete trips is supported via a full-screen editing and windowing capability.

ENVIRONMENT The software is written in UCSD Pascal and runs under the UCSD operating system (Version IV) on the IBM PC with 128K RAM, and a hard disk or two floppy disk drives.

STATUS The system is operational in Dallas.

AVAILABILITY Available from contact below.

CONTACTS TIME Support Center
Rensselaer Polytechnic Institute
Department of Civil Engineering
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION	FMS: Fleet Maintenance System
DEVELOPER	DDS, Inc., San Diego, CA - in conjunction with San Diego Transit Corporation
SUMMARY	<p>The DDS Fleet Maintenance System (FMS) automates all vehicle inventory records and service histories, and issues timely instructions for all maintenance actions. The system also generates a variety of management reports on demand, which provide accurate, up-to-date information on all fleet activities.</p> <p>The units to be maintained are defined by the user. They can be any type of vehicle, equipment or other item requiring periodic maintenance, review or inspection. Maintenance activities and procedures are also defined by the user.</p> <p>Daily consumables information and mileages are used to generate repair orders for vehicles in need of PM inspections. Repair orders are requested for vehicles requiring specific repairs. Road call, accident, component rebuild (on/off property), and non-maintenance service are the other types of repair orders generated by the system.</p> <p>FMS enables management to monitor daily, monthly and annual operations of the maintenance facility. Accurate, up-to-date information makes it possible to analyze trends and identify potential problems. The result is a fleet operation which is significantly more precise, accurate and cost-effective.</p>
ENVIRONMENT	Operates on UNIX-based microcomputers.
STATUS	Operational at San Diego Transit Corporation since 1982.
AVAILABILITY	Available as a proprietary system under lease, sale and rental programs. Complete maintenance and training programs also available.
CONTACT	John Holley Product Manager, FMS DDS, Incorporated 5185 Mercury Point San Diego, CA 92111 (619) 565-9166

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION The Fleet Controller™

DEVELOPER Paul Setne

SUMMARY An existing database management package (MDBS III™) provides the basis for an interactive system to record and accumulate vehicle-specific histories, work assignments and reports. The repair history procedure is geared to the American Trucking Association's coding system for vehicle repairs. The package tracks detailed history by systems, schedules preventive maintenance, tracks fluid usage (diesel fuel, engine oil, automatic transmission fluid), provides vehicle inventories, provides mechanic seniority lists, etc. Interfaces with popular spreadsheets. The exceptional versatility of this package is limited only by the creativity of the operator.

ENVIRONMENT IBM PC (XT and AT). A hard disk is required.

STATUS Mendocino Transit Authority in California is currently using this package. Complete reference list is available on request.

AVAILABILITY The software is distributed as a proprietary package by the firm listed below. Available for immediate installation, and includes high-quality documentation.

CONTACT Stephen D. Smith
Fleet Computing International, Inc.
P.O. Box 1070
Minnetonka, MN 55345
(612) 938-8861

™MDBS III is a trademark of Micro Data Base Systems, Inc.

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION EZFLEET1: Fleet Maintenance Information System

DEVELOPER ATE Data, Inc.

SUMMARY EZFLEET1 is designed to supply daily information on vehicle performance statistics, servicing information, preventive maintenance schedules, early detection of major problems, defects reporting, a vehicle history file, and more. EZFLEET1 focuses on the key issues of cost reduction, service dependability and productivity improvement.

The basis of EZFLEET1 is the mating of hand-held, portable data collectors with a microcomputer and a specially-developed software package. Each collector can record information on vehicle number, mileage, and fluid consumption (fuel, oil, coolant, transmission fluid and other data) for up to 350 vehicles per shift per unit. The data is then relayed into a computer. Daily reports are produced in just minutes, for use by management in finding and avoiding problems.

ENVIRONMENT ● Morrow Micro Decision, MD3, 80-column printer (limited availability--no future enhancements available).
● IBM PC or XT, 80-column printer.

STATUS Operational at WMATA, Washington, DC; and New Jersey Transit in several cities in New Jersey.

CONTACT Lawrence D. Duckworth
ATE Data, Inc.
617 Vine Street, Suite 800
Cincinnati, OH 45202
1-800-543-1944
(513) 381-7424

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION EZFLEET2: Maintenance Shop Productivity, Tracking and Reporting System

DEVELOPER RTA

SUMMARY Repair shop software system with a parts inventory management system module and parts failure module. Tracks repair histories and costs by division, vehicle type, or all vehicles. Analyzes mechanic productivity. Includes preventive maintenance (PM) scheduling. Identifies fuel exceptions. Provides a multi-state fuel tax monitoring and a tires management module. Inventory control includes the ability to set maximum levels for parts needs based on historical usage and to reorder parts automatically based on user-established criteria. Automatically updates and recalculates the average price when new stock is received. Produces purchase orders for requisitions and provides information on primary and "will fit" (alternative) parts. Produces bin labels and parts tags and provides a comprehensive parts listing. Generates a parts vs. vehicle cross-reference listing for parts needs identification and parts obsolescence control. Can be integrated with EZFLEET1.

ENVIRONMENT IBM PC or compatibles under MS-DOS; CP/M or MP/M-based systems available at additional cost.

STATUS Operational at Monroe Transit System in Monroe, Louisiana; and Rock Island Mass Transit in Rock Island, Illinois.

CONTACT Lawrence D. Duckworth
ATE Data, Inc.
617 Vine Street, Suite 800
Cincinnati, OH 45202
(513) 381-7424, or call toll-free (800) 543-1944

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION FLEET*MATE: Vehicle Maintenance and Parts Inventory Control

DEVELOPER Multisystems, Inc.

SUMMARY FLEET*MATE is a vehicle maintenance and parts inventory control package for use by transit systems operating from four to over 100 buses. FLEET*MATE was designed for use on a transit property with no data processing staff; it can be used directly by administrative or maintenance staff with minimal training.

Parts inventory control functions include reorder prompting, inclusion of part issues in vehicle histories, FIFO or average costing, usage analysis of parts, physical inventory support, processing of purchase orders, and posting of cost and quantity adjustments. Vehicle maintenance functions include user-specified coding level of detail and codes for work order processing; tracking of daily mileages, fueling inspections, repairs, and road calls for vehicle histories; user-specified maintenance intervals for inspections for each fleet; and component tracking.

Standard reports include vehicle history reports for user-specified periods and activities, a maintenance labor performance report, a summary vehicle performance report, a fleet performance report, parts usage reports by vehicle and part, and a fuel inventory report. Users can develop their own on-line queries and ad hoc reports with the FLEET*MATE package.

ENVIRONMENT A single user version of FLEET*MATE runs on the IBM PC under MS-DOS (hard disk required) and a multiuser runs on an Altos 586 computer under XENIX. It is currently being implemented under UNIX on a Plexus computer. FLEET*MATE uses the INFORMIX database management system.

STATUS Originally implemented as part of a statewide project for the Wisconsin Department of Transportation, FLEET*MATE is in use at nine small transit properties in Wisconsin.

AVAILABILITY Available as proprietary software from contact below.

CONTACT John Attanucci
Multisystems, Inc.
1050 Massachusetts Avenue
Cambridge, MA 02138
(617) 864-5810

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Transit Operations Software

Maintenance

APPLICATION Equipment Maintenance/Parts Inventory/Purchasing

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SUMMARY EQUIPMENT MAINTENANCE: Preventive maintenance (PM) can be "triggered" by either time or miles, or both. Multiple schedules are maintained. The particular schedule assigned to a vehicle can be changed any time. Job Standards can be used to estimate mechanic hours. These can be modified by actual experience under control of the user. Projections of maintenance requirements for the next 45 days (one month advance) are based on recent history. Actual schedules are finalized by Management. Status of the Fleet, Mechanics, and Work Orders is immediately available through CRT query. Unscheduled and scheduled maintenance can be combined, e.g., if a piece of equipment breaks down, a "look ahead" feature can be triggered to catch up scheduled maintenance at the same time, reducing "in garage" frequency. Complete Vehicle and Mechanic history files are maintained. Data can be summarized and tabulated by any combination of category and time frame, e.g., How many valve jobs has Mechanic X performed on Vehicle Type Y within the past 3 months? A full set of analytical reports, by Fleet, Location, Mechanic, and Vehicle are available. The query function facilitates the generation of reports at the request of the user. PARTS INVENTORY: Multilocation inventory system with master and locational reorder levels. Critical levels are preset and automatically adjusted with usage. Three alternate vendors and/or manufacturers can be input for each part; the system keeps track of preferred vendor or manufacturer. Pricing is under control of the user; FIFO, LIFO, or average are usual schemes. Preprinted sheets and automatic data entry through hand-held computers facilitate "4-wall" physical inventory.

ENVIRONMENT Altos 68000, 1MB RAM, 40MB hard disk, UNIX System III and FORTRAN; or IBM PC/AT with 1MB memory, 40MB hard disk and XENIX operating system.

STATUS Operational.

CONTACT Mr. Mike Harbour
Tri County Transit
438 Woods Avenue
Orlando, FL 32805
(305) 841-2279

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Transit Operations Software

Maintenance

APPLICATION MICRO EMIS: Microcomputer Equipment Management Information System

DEVELOPER Public Technology, Inc.

SUMMARY The rapidly escalating costs of energy, labor and equipment are forcing governments to re-examine the manner in which their fleets are being managed. MICRO EMIS provides an on-line system which can trace these crucial costs and provide management summaries and exception reports in the areas of equipment inventory, fuel, repairs, preventive maintenance and departmental billing. The system is based on a database management system (dBASE II™). As a result, it also includes ad hoc inquiry and reporting capabilities.

ENVIRONMENT PC-DOS, MS-DOS or CP/M operating system, fixed-disk drive, monitor and 132-character printer.

STATUS The system has been installed in Delaware, Ohio, and Yuma, Arizona.

AVAILABILITY The system is provided with software and on-site support to install the system and train users.

CONTACT Cindy Kahan
Public Technology, Inc.
1301 Pennsylvania Avenue, N.W.
Washington, DC 20004
(202) 626-2455

™dBASE II is a trademark of Ashton-Tate

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Transit Operations Software

Maintenance

APPLICATION	VehicleCTRL: Vehicle Maintenance Reporting System
DEVELOPER	Display Data Corp.
SUMMARY	<p>VehicleCTRL allows the fleet manager to control expenses by tracking fleet operation and maintenance costs. VehicleCTRL can schedule vehicles for maintenance up to a year in advance, and produce a report which lists not only the units due for PM, but also the exact operations which need to be done. VehicleCTRL will also track individual fuel and oil ticket purchases, as well as all repair orders. This menu-driven system includes 42 different analysis reports, divided among four categories: Repair Order Analysis, Component Repair Cost Analysis, Fuel/Oil Analysis, and a Total Cost Analysis. These reports allow the manager to detect troublesome vehicles and take the proper corrective action.</p> <p>VehicleCTRL will benefit the fleet manager by increasing the lifespan of equipment while reducing unexpected downtime through effective maintenance. The system will also keep more accurate maintenance histories on vehicles, thereby increasing the value of the vehicle at resale time.</p> <p>The computer capacity is 600 vehicles for the IBM PC, and up to 3500 vehicles for the IBM PC/XT.</p>
ENVIRONMENT	IBM PC, 128K, 2 disk drives IBM PC/XT, 128K, 10MB hard disk
STATUS	Operational in a variety of agencies.
AVAILABILITY	Available for purchase: \$599 for software for the IBM PC; \$799 for software for the IBM PC/XT.
CONTACT	Susan Bates Display Data Corp. Executive Plaza IV Hunt Valley, MD 21031 (301) 667-9211

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Transit Operations Software

Maintenance

APPLICATION Vehicle Maintenance Information System

DEVELOPER LTK Management Services, Inc./AGS International, Ltd.

SUMMARY The Vehicle Maintenance Information System is one of three modules of a turnkey package which includes hardware, software, user training, documentation, supplies, customization and maintenance. The other system modules (parts inventory, driver records) are described elsewhere in this document.

The Vehicle Maintenance Information System enables a fleet operator to track the maintenance of each vehicle in its fleet. Maintenance costs can be aggregated by vehicle, vehicle subsystem, vehicle type, or fleet. Preventive maintenance, scheduled inspections, and fuel and oil consumption are also recorded by the system. Vehicle histories are maintained for on-line reporting or for printed batch reports.

The system offers fleet operators comprehensive records of the characteristics of each vehicle in a fleet, and provides the flexibility to answer questions such as:

- 1) How does 8-cylinder engine reliability and fuel consumption compare with 6-cylinder vehicles?
- 2) How do 1983 vehicles compare with 1980 vehicles from a maintenance cost standpoint?
- 3) Which vehicles are costing the most to maintain and operate?

Among the types of reports provided by the system are: Individual Bus History, Vehicle Component History, Fuel and Oil Consumption, Inspection Schedule, Component Maintenance Summary, Employee Performance, Vehicle Cost Summary, and Daily Shop Log.

ENVIRONMENT Burroughs B-25 series business microcomputer system, 512K RAM, 10MB Winchester disk, COBOL.

STATUS System installed and operating with several bus fleet operators, including Richmond (VA) Public Schools.

CONTACT George N. Dorshimer, P.E.
LTK Management Services, Inc.
Pennsylvania Building, Suite 1300
1500 Chestnut Street
Philadelphia, PA 19102
(215) 563-2579

microcomputers in transportation

Transit Operations Software

Maintenance

APPLICATION Parts Inventory Control

DEVELOPER LTK Management Services, Inc./AGS International, Ltd.

SUMMARY The Parts Inventory System is one of three modules of an integrated fleet management system. The other two modules (vehicle maintenance, driver records) are described elsewhere in this publication.

The Parts Inventory System is available for single or multiple parts distribution locations within a single company. Reorder levels are user-definable, and are used to trigger reorder notices during system operation. The system can accommodate up to 10,000 vendors and 100,000 part numbers, each with a 25-character text description. Parts costs are interfaced with the vehicle maintenance system using the average cost method of pricing. Users requiring use of FIFO and LIFO inventory costing systems can also be accommodated.

The system records all parts issue transactions, including the vehicle and mechanic to which the part was issued. Parts receipts are recorded, and include the cost and the vendor from which the part was purchased.

Reports provided by the inventory system include:

- Inventory Status of a Selected Part
- Parts Usage by Vehicle
- Vehicle Maintenance Costs
- Vendor Analysis
- Inventory Valuation
- Reorder

ENVIRONMENT Burroughs B-25 series business microcomputer system, 512K RAM, 10MB Winchester disk, COBOL.

STATUS System installed and operating with several bus fleet operators, including Richmond (VA) Public Schools.

CONTACT George N. Dorshimer, P.E.
LTK Management Services, Inc.
Pennsylvania Building, Suite 1300
1500 Chestnut Street
Philadelphia, PA 19102
(215) 563-2579

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Transit Operations Software

Maintenance

APPLICATION	VMS, PCA: Public Works Department Operations
DEVELOPERS	Roger Creighton Associates, Inc.
SUMMARY	<p><u>Vehicle Management System (VMS)</u>: VMS is an integrated system of work-flow procedures, forms, and a microcomputer program. It was designed to improve maintenance management and provide accurate cost accounting for vehicle fleets, with minor modifications to customary record-keeping.</p> <p>VMS provides: 1) vehicle data, including historical usage and fuel consumption, year-to-date maintenance costs by vehicle component, tire mileage, key performance indicators, and warnings on due dates for inspection and preventive maintenance; 2) fleet analysis on usage, fuel, and maintenance costs, and warnings with performance indicators and inspection/PM due dates; and 3) tire inventory report (in stock, on vehicles, and junked) sorted in decreasing order of miles accumulated.</p> <p><u>Project Cost Accounting (PCA)</u>: PCA allocates the costs of personnel to projects for cost-accounting purposes. Costs may be allocated for up to 99 projects.</p> <p>PCA also computes bi-weekly wages and prints out hours for each employee, by category, for up to 15 categories, including straight-time hours, overtime hours, double-time hours, and benefit hours such as holiday, sick leave, and vacation.</p> <p>RCAI's PCA program is modular. An equipment cost accounting module is available at extra cost.</p>
ENVIRONMENT	PCA is available for the IBM PC and PC/XT; IBM-compatibles; and the TRS-80 II/12/16. In all cases 128K of core memory is required, plus two double-sided diskette drives and a 132-column printer. No external operating system is required.
STATUS	Used by Columbia County Public Works Department and Ravina Central School District in New York.
AVAILABILITY	Available for sale from contact below.
CONTACT	Charles Manning Roger Creighton Associates, Inc. 274 Delaware Avenue Delmar, NY 12054 (518) 439-4991

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Transit Operations Software

Maintenance

APPLICATION	TIMS™: Transportation Information Management System
DEVELOPER	Bispac Systems, Fair Oaks, CA
SPONSOR	Mid-Placer Transportation Agency
SUMMARY	<p>This package provides a vehicle maintenance management reporting system which is work-order driven. The system computes costs per operating mile or engine hours on a cost per vehicle basis. Established work-order history files are easily accessed with menu screens. The data also computes inventory stock levels and will printout reorder items on demand. Preventive maintenance alerts can be established using several parameters, including calendar, operating hours or miles. A unique feature of the system is its ability to compare equipment and engine types for vehicle specifications and life-cycle costing.</p> <p>The system also can provide maintenance managers with a variety of exception reports, such as mechanic productivity (including tracking the number of turn-backs) and driver abuse to equipment. Reports include: vehicle master file, vehicle history report, cost per mile (or hours), inventory listing, utilization, and stock status preventive maintenance alerts, complete audit trails and a variety of other management reports.</p>
ENVIRONMENT	The program is written in BASIC and support IBM System 23 or System 36 hardware. It is also available on the IBM PC/AT.
STATUS	In use at Eldorado School District in Diamond Springs, and Oxnard United School District in Oxnard, California.
AVAILABILITY	Available as a proprietary system from the contact below. Six months guarantee, user training and telephone support available.
CONTACT	Gary Coverdale Bispac Systems 4095 Bridge Street, Suite A Fair Oaks, CA 95628 (916) 967-5555

™TIMS is a trademark of Bispac Systems

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Transit Operations Software

Maintenance

APPLICATION	Capital Equipment Maintenance Program
DEVELOPER	Norse Systems Inc., New Haven, CT
SUMMARY	<p>This program has been developed to provide complete control of both scheduled and unscheduled maintenance activities for vehicle fleets. It is a database management system designed to provide access to system data in an easy-to-use and timely fashion. All maintenance and inventory activity is fully integrated to the accounting functions. Application functions include the following:</p> <ul style="list-style-type: none">● Inventory Control● Purchase Order Control● Yard Fuel Control● Unit/Equipment Cost Tracking● Vehicle Licensing and Taxes● Vehicle Specifications● Detail and Summary Maintenance History● Before the Fact Repair Orders for Scheduled and Unscheduled Repairs● Maintenance Task Scheduling and Structuring● Accounts Payable● General Ledger● Payroll
ENVIRONMENT	Any computer hardware capable of supporting the "PICK" operating system.
STATUS	The program has been implemented for a fleet of 400 vehicles at Chestnut Hill Bus Co. in Bridgeport, Connecticut.
AVAILABILITY	Operational. Marketed nationally by the developer.
CONTACT	John V. Nejfelt Norse Systems, Inc. 100 Hemingway Street New Haven, CT 06513 (203) 468-6560

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Transit Operations Software

Maintenance

APPLICATION VEMM: Fleet Maintenance System

DEVELOPER Modeling Systems, Inc.

SUMMARY VEMM (Vehicle Maintenance Monitor) is one of the most comprehensive vehicle maintenance computer packages available to vehicle fleet owners today. The program maintains information on vehicles, work orders, parts inventory, purchase orders, fuel pumps, and related items. It provides multiple cross-checks for accurate data entry, a quick method of retrieving data and a large variety of analytical reports. These reports include: vehicle status reports, exception reports, inventory catalogues, stock usage analyses, preventive maintenance and repair schedules by miles and days, labor reports, fuel usage analyses, repair cause and type reports, maintenance histories, cost distributions and many management summary reports.

VEMM is a cost-effective tool for administrative record-keeping as well as for maintenance scheduling, fuel management, inventory planning, and management cost analysis. This module is also fully compatible with MSI's Vehicle Routing System (SCOOTER) and its database management system.

STATUS Operational at MBTA, Office of Special Needs, Boston, Massachusetts; Clark County School District, Las Vegas, Nevada.

AVAILABILITY Software is designed for both micro and mini Digital computers running either RSX or VMS. Both software and DEC turnkey systems are available immediately.

CONTACT Geoffrey Berlin
Modeling Systems, Inc.
1718 Peachtree St.
Atlanta, Ga 30309
(404) 876-9977

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Transit Operations Software

Maintenance

APPLICATION Fleet Management/Equipment Management

DEVELOPER The MCS Group, Inc.

SUMMARY The Fleet/Equipment Management Package is a series of comprehensive software modules designed for equipment managers. It operates as a stand-alone system or integrates into a larger system for county highway administrators [see description for CHRIS elsewhere in this document].

The primary function of the software is to track equipment usage and costs. For each item of equipment, the system maintains records which contain general information (i.e., make, model, serial number, etc.), as well as specific information on maintenance scheduling, depreciation, MTD, YTD and accumulated direct cost breakdowns, and repair and fuel costs per mile/hour. Equipment is tracked by categories with budgeted expenses, income, and mileage/hours compared with actual rates by hour, month or year.

The program automatically calculates depreciation and distributes overhead costs to each piece of equipment, based on percentage of total expenses.

Transaction logs are printed to provide audit trails, and concise management reports are produced that reveal which items are cost-effective. Reports include:

- Category Listings
- Master Listings
- Cost Analysis
- Cost Distribution
- Rental Variance
- Expense Variance
- Rental/Expense Variance
- Maintenance Alert

ENVIRONMENT Operates on IBM PC and compatible computers that use the MS-DOS operating system and the BI-286 BASIC Interpreter. Requires at least 64K RAM and a dual-diskette system.

STATUS Operational at the Pennington County Highway Department, Rapid City, South Dakota.

AVAILABILITY Available from contact for \$1,200.00.

CONTACT The MCS Group, Inc.
2465 West Chicago
Rapid City, SD 57702
(605) 341-6755

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Transit Operations Software

Maintenance

APPLICATION Equipment/Materials Inventory Package

DEVELOPER The MCS Group, Inc.

SUMMARY The Equipment/Materials Inventory Package was designed to track inventory parts and consumable materials normally used by highway departments. It operates as a stand-alone module, but is most functional as part of the Fleet/Equipment Management package of the County Highway Resource Information System (CHRIS), also developed by the MCS Group.

 The module monitors inventory levels of virtually any type of category (repair parts, fuel, gravel, etc.). Entries into this module flow into the Fleet/Equipment Management module, Job Costing, or CHRIS, if installed as part of a total system.

 The software is very user-friendly with simple data entry screens. It flags low-inventory levels and provides reports that track current unit costs, average costs, date of last purchase, and MTD and YTD usage totals. It allows automatic posting to various general ledger accounts.

ENVIRONMENT Operates on IBM PC and compatible computers that use the MS-DOS operating system and the BI-286 BASIC Interpreter. Requires at least 64K RAM and a dual-diskette system.

STATUS Fully operational at the Pennington County Highway Department, Rapid City, South Dakota.

AVAILABILITY Available from contact for \$995.00.

CONTACT The MCS Group
 2465 West Chicago
 Rapid City, SD 57702
 (605) 341-6755

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Transit Operations Software

Maintenance

APPLICATION BBARN: Space Requirements for a Bus Garage

DEVELOPER Rick Kuner, New Alternatives Software, a Division of New Alternatives, Inc., Chicago, IL

SUMMARY The BBARN program generates an architectural space program for any bus fleet from 5 to 350 buses. The space program includes an itemized breakdown for more than 45 elements in the General Offices, Operations, Repair, Vehicle Storage (indoors or outdoors), and Outside Areas. BBARN is useful for:

- 1) analyzing the surplus (or deficiency) of space in an existing bus garage,
- 2) determining the site size required for a new garage,
- 3) estimating the staging required to meet future needs,
- 4) preparing a space program.

ENVIRONMENT Apple II+ or IIe, Commodore 64, or IBM PC or XT. The program is written in BASIC and requires one disk drive.

STATUS The program is fully operational. The mainframe version of BBARN (in FORTRAN) has been used by New Alternatives, Inc. for the Rockford (Illinois) Mass Transit District, Loves Park (Illinois) Transit System, and nine other transit garages.

AVAILABILITY The software on a 5 1/4-inch floppy disk and User's Manual is distributed as a proprietary package for \$295.

CONTACT Rick Kuner
President
New Alternatives, Inc.
8 South Michigan Avenue, Suite 610
Chicago, IL 60603
(312) 263-2808

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Transit Operations Software

Maintenance

APPLICATION	DB Master™ Parts Inventory
DEVELOPER	Transportation Systems Center, U.S. Department of Transportation, Cambridge, MA
SPONSOR	UMTA, Office of Methods and Support
SUMMARY	In order to demonstrate a typical use of a representative database file manager for a microcomputer, TSC used DB Master™ to create a very simple parts inventory system. Although it was not directly intended for inventory application, this system can be used to manage a small parts inventory or to become familiar with some features of parts inventory systems, with database file managers, or with DB Master itself. The system does not have sophisticated features such as the ability to track part usage over time or maintain vendor information, but it can be used to track stock quantities and store parts order information.
ENVIRONMENT	Apple II or Apple III computer (DOS 3.3 operating system), two disk drives, printer, DB Master™ software required.
STATUS	Operational.
AVAILABILITY	Available from contact below.
CONTACTS	TIME Support Center Rensselaer Polytechnic Institute Department of Civil Engineering Troy NY 12180-3590 (518) 266-6227, between 9:00 AM and 4:00 PM (EST)

™DB Master is a trademark of Stoneware Microcomputer Products

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Transit Operations Software

Financial Management

APPLICATION General Ledger/Payroll/Payables/Fixed Asset and Grant Management System

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SPONSOR Michigan Department of Transportation (Lansing) and Isabella County Transportation Commission (Mount Pleasant)

SUMMARY **PAYROLL:** The master Employee Information file maintains current, month-to-month, quarter-to-date, and year-to-date data for earnings and deductions. The system supports weekly, biweekly, monthly, and semimonthly pay cycles; provides hourly and salaried pay types. It tabulates vacation days accrued and used, sick days used, and weeks worked. Twelve deduction categories are provided, and the withholding algorithms allow for allocation of taxes among multiple entities and accommodate non-resident employees. The system is designed as an "exceptional payroll", i.e., calculations are performed on a standard work period so only the exceptions need to be entered. **GENERAL LEDGER:** In the Master File, the user can enter, change, delete, or query the Chart of Accounts and print out this information. Several master accounts can be set up to total a user-defined number of subaccounts. The Transactions Register provides flexibility of printouts - by batch, by source documents, by department - in various sequences. **GRANT MANAGEMENT:** A printed list of all or selected Grantors with detailed account information can be obtained. Transactions, when entered, update the Grantor File, the Grantor Activity Report, and the Transactions Register, which can be selected to print a Transactions Register for all transactions entered, debit transactions only, or credit transactions only.

ENVIRONMENT Altos 68000, 1MB memory, 40MB hard disk, UNIX System III and FORTRAN; Plexus P-35 with 3MB memory, 160MB hard disk; or IBM PC/AT with 1MB memory and 40MB hard disk.

STATUS Operational.

CONTACT Mr. Tom Cypher
New Orleans Regional Transit Authority
1001 Howard Avenue, #1700
New Orleans, LA 70013
(504) 569-2829

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Transit Operations Software

Financial Management

APPLICATION Analysis of Vehicle Rehabilitation and Replacement Plans

DEVELOPER Bureau of Finance, San Francisco Municipal Railway (MUNI), San Francisco, CA

SUMMARY Inputs to the program are vehicle acquisition and rehabilitation costs, assumed economic lives of the vehicles, and projected service and fleet requirements by mode. Outputs are annual acquisition/rehabilitation requirements and associated capital costs.

ENVIRONMENT The program is set up as a VisiCalc™ procedure which runs on an Apple II or II+ microcomputer with 64K of memory and two disk drives.

STATUS The procedure is being used by the MUNI Bureau of Finance to study alternative fleet acquisition and rehabilitation strategies.

AVAILABILITY The procedure could be transferred to another operator, although some customization would be necessary. Documentation is available from the address shown below. Templates will be copied onto your disks at your request, but MUNI will not support this application.

CONTACT Bruce Bernhard
Bureau of Finance
San Francisco Municipal Railway
425 Mason St., 7th Floor
San Francisco, CA 94102
(415) 558-5346

™VisiCalc is a trademark of VisiCorp.

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Transit Operations Software

Financial Management

APPLICATION Budget Calculator

DEVELOPER Transportation Systems Center, Cambridge, MA

SUMMARY The BUDGET CALCULATOR is a tool to estimate future revenues and expenses. Its first function helps the user allocate current expenses, as reported on the Section 15 form 301, for each of four functional categories to three level of service variables: weekday vehicles, revenue vehicle miles, and revenue vehicle hours. After calculating system level unit costs for the current year (using service supplied data from form 406), the program estimates future year unit and total costs based on the user's estimate of price changes for labor, services, and materials and the expected level of service parameters. The second function is used to estimate future revenues and bring expenses and revenues into balance. The user enters current revenue data from Section 15 forms 201 and 203 and an estimate of future year changes. Changes in service levels and average fares are used together with system-wide service and fare elasticities to estimate future year passenger fare revenue.

ENVIRONMENT Apple II, II+ and III with 64K RAM and one disk drive; program uses VisiCalc™.

AVAILABILITY Available from contact below.

CONTACT TIME Support Center
Rensselaer Polytechnic Institute
Department of Civil Engineering
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

™VisiCalc is a trademark of VisiCorp.

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Transit Operations Software

Financial Management

APPLICATION	Five-year Cost Projections
DEVELOPER	Bureau of Finance, San Francisco Municipal Railway (MUNI), San Francisco, CA
SUMMARY	Future-year costs for the entire agency are projected. The procedure incorporates three unit cost components by division within MUNI, obtained from historical experience. These cost components are fixed costs, costs varying by number of vehicles operated, and costs varying by number of vehicle-hours of service provided. The major policy inputs are future-year numbers of vehicles operated and vehicle-hours of service provided.
ENVIRONMENT	The program is set up as a VisiCalc™ procedure which runs on an Apple II or II+ microcomputer with 64K of memory and two disk drives (5-1/4 or 8-inch diskettes).
STATUS	The program has been used by the MUNI Bureau of Finance for over two years to assist in financial planning.
AVAILABILITY	Some templates would require modification for use by other organizations. Documentation of the templates and procedures for their use is available from MUNI at the address shown below. Templates will be copied onto your disks at your request, but MUNI will not provide support of this application.
CONTACT	Bruce Bernhard Bureau of Finance San Francisco Municipal Railway 425 Mason St., 7th Floor San Francisco, CA 94102 (415) 558-5346

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Transit Operations Software

Financial Management

APPLICATIONS DEB: Driver Extraboard Cost Model

DEVELOPER Tri-Met (Portland, OR), Booz-Allen and Wilson Hill Associates.

SPONSOR UMTA, Office of Methods and Support

SUMMARY UBUCKS/DEB estimates monthly driver wage and benefits expense over a five-year time horizon. Expenses are determined by comparing driver requirements to driver availability. The model has four distinguishing features:

- Derives driver requirements from a daily profile of service hours supplied by the user; up to 30 service changes can be identified by date
- Adjusts manpower levels, through hiring and layoffs, relative to service levels, attrition and absenteeism
- Estimates unscheduled pay hours from a simulation of extraboard activity
- Derives monthly top wage rates from user-supplied inflation rates and COLA clause parameters

ENVIRONMENT Software is operational on an IBM PC, with two disk drives and at least 128K memory, running under the NCI p-System.

STATUS Has been used at Tri-Met.

AVAILABILITY Public domain. Available from the TIME Support Center.

CONTACTS

TIME Support Center Department of Civil Engineering Rensselaer Polytechnic Institute Troy, NY 12180-3590 (518) 266-6227	Mr. Ron Hirshhorn Wilson Hill Associates 1025 Vermont Ave N.W. Washington, DC 20005 (202) 842-7799
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Mr. Ron Jensen-Fisher (UMTA Contact)
UMTA/URT-41
400 7th Street, S.W.
Washington, DC 20590
(202) 426-9271

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Transit Operations Software

Ridership Reporting

APPLICATION Passenger Counting System

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SPONSOR CNY CENTRO, Inc., Syracuse, New York

SUMMARY The Passenger Counting software will handle both wayside and onboard checks. The Collectors themselves are general-purpose hand-held computers (Radio Shack Model 100 with 32K memory). They have a full system of "prompts" to lead the user through the collection process. Keys allow the user to skip forward, back up, change entries, etc. Built-in logic permits end-of-line and key-point reconciliation. At these locations, counts can be modified to reconcile with actual loads. The collectors weigh less than two lbs, are easily held in one hand, and have sufficient storage and battery capacity for two full days of intensive use. A full set of Counts Reports is available, including: a) Passenger activity for a single trip; b) Passenger activity for all trips from time A to time B; c) Passenger activity for all daily trips; d) Difference between scheduled and actual arrival time at selected time points; e) Scheduled and actual running time; f) Total individual bus stop activity for all trips; g) Passenger activity for multiple trips showing loads at each bus stop; h) Passenger activity for multiple trips, ons and offs only; i) UMTA Section 15 nonfinancial reporting; and j) Point Check - Wayside counts to include passengers on board and on-time performance at selected nodes.

ENVIRONMENT Altos 68000, 1MB memory, 40MB hard disk, UNIX System III and FORTRAN; or IBM PC/AT with 1MB memory, 40MB hard disk and XENIX operating system.

STATUS Operational.

AVAILABILITY Available from contact below.

CONTACT Mr. J. Todd Plesko
Director of Service Development
CNY CENTRO, Inc.
One Centro Center
200 Cortland Ave, Drawer 820
Syracuse, NY 13205-0820
(315) 470-0206

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Transit Operations Software

Ridership Reporting

PROJECT CHECK*MATE and TIM (Transit Information Manager)

DEVELOPER Multisystems, Inc.

SUMMARY CHECK*MATE is used on a handheld computer to collect passenger boarding and alighting data by stop (ride checks), as well as times at selected stops. The program is menu-driven with prompts for all inputs; all time measurements are done automatically.

TIM uses load check, ride check, and driver count data to produce service reports at a variety of levels of detail, e.g. by route, date, time of day, or day of week. Flexibility of reporting is enhanced by the use of MDBS™, a commercial database manager.

ENVIRONMENT CHECK*MATE runs on an Epson HX-20 or HX-40 with integral micro-cassette drive and RS-232C port. Data entered into CHECK*MATE can easily be uploaded for analysis through the RS-232C port into TIM to produce reports without any coding or keypunching.

TIM runs on an IBM PC with 256K and a minimum of 5MB hard disk storage. TIM currently runs under CP/M-86; conversion to MS-DOS is in progress.

STATUS CHECK*MATE and TIM are currently being implemented at the MTA in Baltimore. Another installation in Phoenix is about to start.

AVAILABILITY CHECK*MATE is proprietary software available from Multisystems. TIM is public domain software developed by Multisystems under the sponsorship of UMTA's Office of Methods and Support.

CONTACT Mr. John Attanucci
Multisystems, Inc.
1050 Massachusetts Avenue
Cambridge, MA 02138
(617) 864-5810

™MDBS is a trademark of Micro Data Base Systems, Inc.

microcomputers in transportation

Transit Operations Software

Ridership Reporting

APPLICATION Passenger Count Evaluation

DEVELOPER Micro Consulting Associates, Mukilteo, WA

SUMMARY The program provides a quick, easy method of creating a database of passenger counts for up to 150 runs each day. The data is evaluated for a given run over a period of time, or for a given period of time and a selected group of runs. Output may be directed to the terminal or to a printer.

Two hard copy reports are supported. The first is a detailed report of daily driver reported counts totaled by route and day. It can be formatted to report any runs of interest for any period of days. The command "ALL" results in a printout of all runs for the whole database month. The second report is a monthly summary of route totals for each day separated into up to three categories such as Urban, Suburban, Inter-County, etc. Headings and titles of the reports can be customized for a specific user.

The program is menu-driven with operator guidance given in each case. No computer experience is needed. One year of data is contained on a single 5 1/4-inch disk for convenient archiving and month-to-month or year-to-year trend analysis.

ENVIRONMENT IBM PC or compatibles running PC-DOS or MS-DOS. Any Z-80-based system running CP/M, such as Kaypro, Osborne, North Star, etc. The program requires 64K RAM and at least one disk drive.

STATUS Currently in use by Community Transit, Snohomish County, Washington. The program is fully documented with user's manual and technical manual in hard copy. Source listing on 5 1/4-inch disk.

AVAILABILITY Available for sale from the contact listed below.

CONTACT Micro Consulting Associates
4722 94th S.W., Suite C
Mukilteo, WA 98275
(206) 355-3951

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Transit Operations Software

Ridership Reporting

APPLICATION Ridership Reporting

DEVELOPER Old Colony Planning Council, Brockton, MA

SUMMARY Programs have been developed to facilitate the entry and use of driver-recorded passenger count data. Revenue and ridership are entered by date, run start time and route. Outputs are available in the form of ridership summaries by day and operating division, by route, and by time of day, in the form of total riders, passengers per bus-mile, and passengers per bus round trip. Total revenues and ridership by operating division are also provided by day, by month, and as a monthly average in monthly summaries.

ENVIRONMENT The programs are implemented in BASIC enhanced by the Command-O software package under the 3.0 DOS operating system on a Commodore 8032 microcomputer with 32K of memory and two disk drives.

STATUS The programs have been used to study service and fare changes for the Brockton Area Transit System, and have been fully documented.

AVAILABILITY The procedures are available in source listing form or on a Commodore 8050 diskette. They would require modifications to incorporate another operator's relevant operating divisions and routes, as well as changes to accommodate any differences in forms used by drivers to report passenger and revenue counts.

CONTACT Pasquale Ciaramella
Old Colony Planning Council
Nine Belmont Street
Brockton, MA 02401
(617) 583-1833

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Transit Operations Software

Ridership Reporting

APPLICATION Processing of Data from Bus Passenger Surveys

DEVELOPER Golden Gate Bridge, Highway and Transportation District,
Department of Planning and Policy Analysis

SUMMARY Data from an ongoing bus passenger survey are entered in Visi-
Calc™ files. Each file represents a bus schedule surveyed;
each row within the file represents data for a single passen-
ger. These are read into DIF (Data Interchange Format) files
which can be used in both VisiCalc™ and BASIC programs. A
BASIC program checks for inconsistencies or omissions of key
data. When these are corrected, the DIF file is transferred to
a BASIC data file. There is one data file for each route in
each direction for each time of day.

Report programs provide the following:

- a. Estimates with 95% confidence intervals for average passen-
ger fare, average passenger distance traveled, and the pro-
portion of passengers living in each county. Estimates are
also made of the proportion of passengers using transfers,
commute tickets, and passes.
- b. Origin-destination lists.
- c. Passenger characteristics.

ENVIRONMENT Programmed in Apple III Business Basic to operate on an Apple
III with 256K of memory. Requires only one disk drive, but
three disk drives make operation more convenient.

AVAILABILITY Available from contact below.

CONTACT Ms. Joy Dahlgren
Associate Planner
Golden Gate Bridge, Highway & Transportation District
PO Box 3474
San Rafael, CA 94912-3474
(415) 457-3110, extension 415

™VisiCalc is a trademark of VisiCorp.

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Transit Operations Software

Ridership Reporting

APPLICATION	Route Performance and Cost Analysis ("Service Monitoring Package")
DEVELOPER	Capital District Transportation Authority, Albany, NY
SUMMARY	<p>Two programs are included. The first is a passenger count program which is used to enter counts taken by bus drivers eight days per month, and to provide averages for a selected time period (typically a month) by route for weekday, Saturday, and Sunday service. These averages are available for output and also maintained as a data file for use in the second program.</p> <p>The second program performs route analyses. Inputs include the passenger count file and a bus route data file which contains information on route distance, travel times, peak vehicle requirements, and average fare. Also, the analyst is asked to provide cost factors: dollars per bus-mile, per bus-hour, and per peak vehicle required. Based on these inputs, costs, revenues, and margins (revenue minus costs) are computed and used to determine a number of performance indicators: passengers and passenger-miles per mile, per hour, per trip, and per gallon of fuel; and costs, revenues, and margins, each per mile, hour, passenger, and passenger-mile. Each of these indicators are available for the average weekday, Saturday, and Sunday of the time period, as well as for the time period as a whole.</p>
ENVIRONMENT	The programs are written in Pascal under the UCSD II.1 operating system on an Apple II microcomputer with 64K RAM and two disk drives.
STATUS	The programs have been in use for nearly two years by CDTA. An IBM PC version is under development.
AVAILABILITY	The passenger count program is tailored to the format and procedures of CDTA's driver count sampling program, and thus may require modifications for use by other operators. The route analysis program is more general. Both programs are now available from the TIME Support Center.
CONTACT	TIME Support Center Rensselaer Polytechnic Institute Department of Civil Engineering Troy, NY 12180-3590 (518) 266-6227, between 9:00 AM and 4:00 PM (EST)

microcomputers in transportation

Transit Operations Software

Ridership Reporting

APPLICATION Section 15 Management Information System

DEVELOPER Washington Consulting Group

SPONSOR UMTA, Office of Information Services

SUMMARY This system consists of a microcomputer database for all agencies reporting Section 15 information in 1982 (Year IV), as well as selected trend information from 1979-1982. All "required level" 1982 Section 15 forms are contained in the database except for Form 408 (Revenue Vehicle Inventory). This information has been put in a Lotus 1-2-3™ spreadsheet format, permitting managers and analysts to manipulate the data and create their own peer groups.

The database is menu-driven and self-documenting. It is organized into six categories, five of which correspond to the Section 15 forms (000, 100, 200, 300, and 400 level forms) and one which contains trend information. Each file contains one or more Section 15 data elements sorted by system and mode. The files have been arranged in a statistical format, allowing the user to perform such statistical manipulations as mean, standard deviations, standard error, variance, minimums, maximums, etc.

Section 15 trend information (from 1979-1982) is included on a separate diskette. This information consists of aggregated systemwide and modal breakdowns of key financial, operational, and performance indicators. Graphical displays of this and the rest of the information in the database can be obtained through the use of the Lotus graphics routines.

ENVIRONMENT The program is written in Lotus 1-2-3™ to operate on the IBM PC and 100% compatibles. It can work on both floppy and hard-disk drives. The entire system currently consumes eight floppy disks.

AVAILABILITY The system is currently available for general use.

CONTACTS	Tom Hardcastle or David Budin Washington Consulting Group 1625 Eye Street, N.W. Suite 206-A Washington, DC 20006 (202) 457-6717	Ron Fisher (UMTA Contact) UMTA (URT-7) 400 7th Street, S.W. Washington, DC 20590 (202) 426-9157
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Transit Operations Software

Ridership Reporting

APPLICATION Section 15 Ridership Survey Processing

DEVELOPER Old Colony Planning Council, Brockton, MA

SUMMARY Programs have been developed to facilitate the entry and processing of ridership data required for transmittal to UMTA on Form F2710.69 (7-78) as part of the Section 15 annual submittal. The first program in the series provides a user-friendly environment for the entry of data recorded on the Survey Trip Sheet (UMTA Form F2710.4 (12-77))--day, date, time, route number, bus number, direction and the following information for each stop: arrival time, odometer reading, boarding passengers, and deboarding passengers.

The second program uses the data for all bus lines surveyed to date in a given year to provide Items 20-27 and 29 required on UMTA Form F2710-69 (7-78), for the weekdays, Saturdays and Sundays surveyed, and also for all surveys. These items include passengers boarded and on-board, bus trip distance and time, passenger-miles and minutes, capacity-miles and seat miles, and the total number of bus trips in the sample. Also provided are the following sample averages: passengers per trip, passenger-miles per trip, and passenger trip time per trip.

The third program uses the survey data file to provide printer plots of the load profiles (passengers on board versus route distance) for selected bus routes, directions, dates, days and times of the day.

ENVIRONMENT Commodore 8032, 32K RAM, and two disk drives.

STATUS The programs have been used to study service and fare changes for the Brockton Area Transit System, and have been fully documented.

AVAILABILITY The programs are available in source listing form or on a Commodore 8050 diskette.

CONTACT Pasquale Ciaramella
Old Colony Planning Council
Nine Belmont Street
Brockton, MA 02401
(617) 583-1833

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Transit Operations Software

Ridership Reporting

APPLICATION Section 15 Ridership Survey Processing

DEVELOPER Pierce Transit, Tacoma, WA

SUMMARY This Lotus 1-2-3™ template is intended to be used by the Section 15 survey taker. This individual inputs on and off information and various stop information from the Passenger Check Form while the program computes the remainder of the survey trip sheet and updates the Daily Record Sheet. The program is designed to be used by individuals who have had little experience with computers.

ENVIRONMENT IBM PC with two disk drives, 256K RAM and Lotus 1-2-3™.

STATUS Being utilized by Pierce Transit.

CONTACT Rich Olson
Pierce Transit
1235 South Sprague
Tacoma, WA 98405
(206) 593-6276

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION Fare Revenue Projections

DEVELOPER Bureau of Finance, San Francisco Municipal Railway (MUNI), San Francisco, CA

SUMMARY Historical revenue data has been used to develop a regression model which relates monthly fare revenues by type of payment (adult and senior monthly passes, and cash fares) to the following types of variables: season of the year, pass price/cash fare ratio, and days per month. The model is used to project fare revenues into the future.

ENVIRONMENT The program is set up as a VisiCalc/VisiTrend™ procedure which runs on an Apple II or II+ microcomputer with 64K of memory and two disk drives.

STATUS The procedure is used by the MUNI Bureau of Finance to project fare revenues and to study pricing policies.

AVAILABILITY The procedure could be transferred to another operator, but operators must identify, obtain data and test which variables are significant determinants of their revenues. Use of the procedures is fully documented, but procedures to identify variables are not. Documentation is available at the address shown below. Templates will be copied onto your disks at your request, but MUNI will not provide support of this application.

CONTACT Bruce Bernhard
Bureau of Finance
San Francisco Municipal Railway
425 Mason St., 7th Floor
San Francisco, CA 94102
(415) 558-5346

™VisiCalc/VisiTrend is a trademark of VisiCorp.

microcomputers in transportation

Transit Operations Software

Ridership / Revenue Estimation

APPLICATION Impact of Transit Fare Changes

DEVELOPER Berkshire County Regional Planning Commission, Pittsfield, MA

SUMMARY The existing distribution of transit passengers by fare level (based on zones traveled and base fare versus elderly and handicapped fare) and the existing fare structure is input. The procedure will then operate in one of two modes: (1) for a specified change in fare structure, the new passengers and revenue can be calculated; and (2) for a specified total revenue, a new fare structure which maximizes passengers will be calculated. The corresponding fare levels and predicted passengers are also determined.

 In both cases, estimates of revised passengers by fare level are normally based on an assumed fare elasticity of -0.33 . Other elasticity factors may be specified by the user.

ENVIRONMENT The procedure is implemented in VisiCalc™ under the DOS 3.3 operating system on an Apple II Plus microcomputer with 64K memory and a disk drive.

STATUS The procedure has been used in work done with the local transit agency to study alternative fare levels and fare structures.

AVAILABILITY The procedure has not been generalized or documented for general distribution.

CONTACT Charles W. Cook
 Berkshire County Regional
 Planning Commission
 10 Fenn Street
 Pittsfield, MA 01201
 (413) 442-1521

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION	FPE: Fare Policy Evaluation	
DEVELOPER	Technology Research and Analysis Corp. (TRAAC), Arlington, VA	
SPONSOR	UMTA, Office of Management, Research, and Transit Services	
SUMMARY	The FPE program analyzes a proposed fare policy by determining its effects on individual riders and summarizing these results by ridership categories. The user must supply group elasticities as well as ridership survey data. The program models the following fare policies: flat, pure distance-based, step distance-based, and zone-based. Different policies may be used for different ridership groups. The program is especially useful in determining the effects on various ridership groups of a major fare policy change. A typical application would be in analyzing a change from flat to distance-based fares. The original modeling approach was developed by Professors Ballou and Mohan of the State University of New York (SUNY) at Albany.	
ENVIRONMENT	Can be used on IBM and compatible microcomputers which have at least 128K RAM and two disk drives. Requires the NCI version of the UCSD p-System operating system.	
STATUS	The modeling approach used in FPE has been applied (using an earlier mainframe program developed at SUNY) to the Greater Albany, New York area.	
AVAILABILITY	Public domain. Available from TIME Support Center.	
CONTACTS	Robert Johnson TRAAC 2020 N. 14th Street Suite 400 Arlington, VA 22201 (703) 522-2000	TIME Support Center Rensselaer Polytechnic Institute Department of Civil Engineering Troy, NY 12180-3590 (518) 266-6227, between 9:00 AM and 4:00 PM (EST)

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION	DEL: Disaggregate ELasticity Model for Fare Revenue Forecasting	
DEVELOPER	Technology Research And Analysis Corp. (TRAAC), Arlington, VA	
SPONSOR	UMTA, Office of Management, Research, and Transit Services	
SUMMARY	<p>The Disaggregate ELasticity (DEL) Model is an easy-to-use, quick-response fare revenue forecasting model. Using the notion of demand elasticities, the DEL model forecasts for each user-defined submarket the impact on ridership and revenue of an overall fare and service policy. The model incorporates the effects of demographic changes, seasonality, and inflation, as well as the implication of ridership shifts between cash fare and pass-user categories. The basic version of the DEL model forecasts monthly transit ridership and revenue for a period of one year for five service and nine fare categories; however, users can easily expand the model depending upon available microcomputer memory. Additional features of the model include provisions for phasing in the final effects of any fare and service changes, availability of eleven reference tables displaying fare and service elasticities derived from various U.S. transit properties, and ability to produce output in graphical form.</p>	
ENVIRONMENT	Model is a template for the Lotus 1-2-3™ spreadsheet program, which runs on IBM and compatible computers. A one year forecast requires 320K RAM; a two year forecast requires 384K.	
STATUS	Tri-Met in Portland, Oregon, is currently using the model.	
AVAILABILITY	Public domain. Available from TIME Support Center.	
CONTACTS	Robert Johnson or Jitendra Bajpai TRAAC 2020 N. 14th Street Suite 400 Arlington, VA 22201 (703) 522-2000	TIME Support Center Rensselaer Polytechnic Institute Department of Civil Engineering Troy, NY 12180-3590 (518) 266-6227, between 9:00 AM and 4:00 PM (EST)

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION Transit Fare Revenue Subsidy

DEVELOPERS Dr. F. Navin, University of British Columbia
Dr. K. Button, Loughborough University (U.K.)

SPONSOR Greater Vancouver Transit Commission, Dept of Civil Engineering,
Transportation Group

SUMMARY A Gaudry-type ridership model is used with fare being one of the variables. Various regional fare policies (flat fare, time of day, travel distance, and time of day and distance) may be used. A simplified method of proportioning fare elasticities is also included. The subsidy-sharing formula for British Columbia is embedded in the program.

 A second program is included which uses the Apple II+'s High Resolution Graphics (HRG) to plot the annual ridership and fare revenue.

ENVIRONMENT Apple II+, 48K memory, one disk drive, Epson MX82 printer.

AVAILABILITY Source code on a 16-sector diskette; some modifications are needed to fare elasticities, basic ridership operation, and subsidy formulas. Fee of \$10 to cover price of diskette and mailing.

CONTACT Dr. Francis Navin
Department of Civil Engineering
2324 Main Mall
University of British Columbia
Vancouver, B.C. V6T 1W5
(604) 228-3158

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION TRFM: Transit Ridership Forecasting Model

DEVELOPER Alan J. Horowitz, Center for Urban Transportation Studies,
University of Wisconsin-Milwaukee

SPONSORS University of Wisconsin--Extension and UMTA University Research
and Training Program

SUMMARY The Transit Ridership Forecasting Model (TRFM) estimates rider-
ship on a single route. It is based upon state-of-the-art
methods of demand forecasting, employing many of the same steps
as mainframe programs. TRFM was designed specifically for ease
of operation. TRFM is a sophisticated forecasting tool which
is suitable for both quick response and detailed analysis.

FEATURES:

- 1) Fully interactive. Extensive use of animated color graphics
for data input makes working with TRFM a pleasure.
- 2) State-of-the-art. TRFM is built around the "four-step"
model: trip generation, trip distribution, mode split and
trip assignment.
- 3) Thorough documentation. A sixty-page reference manual will
allow a novice to become proficient in only a few hours.
- 4) Can be easily customized. All parameters for the model are
located on "Parameter Pages" which can be quickly accessed.
- 5) Fast calculation. Every optimization trick has been employ-
ed to reduce the time of execution to less than that of a
typical coffee break.

ENVIRONMENT Apple II/+/e/c with 64K RAM and one disk drive. Supports high
quality game paddles, mouse, color monitors, and a second disk
drive.

AVAILABILITY Available from contact below.

CONTACT Center for Urban Transportation Studies
University of Wisconsin--Milwaukee
PO Box 784
Milwaukee, WI 53201
(414) 963-5787

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Transit Operations Software

Ridership / Revenue Estimation

APPLICATION TOP: Transit Operations Planning and Analysis

DEVELOPER Dr. Mark Turnquist, Cornell University

SPONSOR U.S. Department of Transportation, Office of University
Research

SUMMARY The TOP model predicts short-range route level changes in cost and ridership as a function of service changes. The model is sensitive to changes in fare, number of stops, frequency of service, and running time.

ENVIRONMENT Operates on an Apple III microcomputer under the UCSD p-System. Three disk drives and 256K RAM are required. An IBM PC version is under development.

AVAILABILITY Available from contact below.

CONTACT TIME Support Center
Rensselaer Polytechnic Institute
Department of Civil Engineering
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

microcomputers in transportation

Transit Operations Software

Ridership / Revenue Estimation

APPLICATION FRACAS: Transit Operations Planning and Analysis

DEVELOPER Dr. George Kocur, Center for Transportation Studies, MIT,
Cambridge, MA

SPONSOR U.S. Department of Transportation, Office of University Research

SUMMARY The Fare and Route Analysis Computer Aided System (FRACAS) is a strategic planning model for transit systems. It both generates and evaluates service and fare options. It accepts inputs describing a fixed-route transit system's operating objectives, service parameters and existing service and market sensitivities, and produces guidelines for the route structures, fares and headways that will best meet the objectives. FRACAS is a flexible approach to the problems of adjusting service and fares to meet budget constraints, and is also useful in addressing service design issues such as peak/offpeak service mixes, the most appropriate vehicle size and the tradeoffs of express versus local service.

ENVIRONMENT Operates on the Apple II microcomputer under Apple Pascal. Two disk drives, 64K RAM and an 80-column display board are required. A printer is highly recommended.

STATUS The software is being modified by Dr. Kocur to operate on an IBM PC.

AVAILABILITY Available from the contact below.

CONTACT TIME Support Center
Rensselaer Polytechnic Institute
Civil Engineering Department
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

microcomputers in transportation

Transit Operations Software

Ridership / Revenue Estimation

APPLICATION STRAP: Short Term Ridership Analysis Program

DEVELOPER Cy Ulberg

SPONSOR Seattle Metro, Seattle, Washington

SUMMARY STRAP is a package employing multiple regression to analyze transit ridership. The program allows for convenient updating and modification of data files. It provides for adjustments due to seasonal variations and inflation rates, if desired. It has the capability to take lagged effects of variables into account.

The program can be used to predict ridership for up to two years using a wide range of scenarios. It automatically takes into account the effects of weekends and holidays on monthly ridership.

ENVIRONMENT IBM PC/XT, 128K RAM, and one disk drive.

STATUS STRAP has been used successfully at Seattle Metro for four years. The first year's experience with it is documented in Transportation Research Record 854: Bus Services, Transportation Research Board, Washington, DC 1982.

AVAILABILITY Available from contact.

CONTACT Cy Ulberg
Director, Center for Transit Research
and Management Development
University of Michigan Transportation
Research Institute
2901 Baxter Road
Ann Arbor, MI 48109
(313) 763-3585

microcomputers in transportation

Transit Operations Software

Personnel Recording

APPLICATION Employee Recordkeeping System

DEVELOPER LTK Management Services, Inc./AGS International, Ltd.

SUMMARY The Employee Recordkeeping System is one of three integrated modules of a turn-key fleet management system. The other two modules (vehicle maintenance, parts inventory control) are described elsewhere in this publication.

The Employee Recordkeeping System is an electronic personnel file that maintains up-to-date records for each employee of a fleet operation. Although designed primarily for bus fleet operators to track driver fulfillment of requirements, the system has wide applicability to virtually any type of transportation fleet. The system:

- 1) Maintains a complete personnel file for each employee;
- 2) Tracks compliance with pre-employment and periodic requirements like physical exams, refresher courses, and license renewals;
- 3) Records disciplinary actions and commendations for each employee, and ensures that each case is carried to conclusion;
- 4) Produces a wide range of reports for both internal management and external reporting to government agencies, school districts and others.

The system was designed for maximum flexibility and can be customized by the user to fit the precise requirements of each fleet. All incoming data are validated against file records, and self-explanatory messages are provided to the user for immediate correction.

ENVIRONMENT Burroughs B-25 series business microcomputer system, 512K RAM, 10MB Winchester disk, COBOL.

STATUS System installed and operating with several bus fleet operators, including George M. Carroll, Inc., of Newburgh, New York.

CONTACT George N. Dorshimer, P.E.
LTK Management Services, Inc.
Pennsylvania Building, Suite 1300
1500 Chestnut Street
Philadelphia, PA 19102
(215) 563-2579

microcomputers in transportation

Transit Operations Software

Personnel Recording

APPLICATION Driver Training Record System

DEVELOPER Bispac Systems

SUMMARY This program maintains up-to-date records on each driver in your fleet operation, and can be integrated with the TIMS™ system (described elsewhere in this document) to track a variety of management options; including equipment abuse and labor productivity reporting. Although initially designed to track stringent California school pupil transportation driver aspects, the program has wide application to transit and other fleet operations. A testing module can be included, based on your testing and licensing procedures. The program can produce a variety of management reports, including exception reports, and is very flexible. Menu screens make this system easy to operate.

ENVIRONMENT Operates on the IBM System 23, 36 and the PC/AT.

STATUS Operational at Lodi Unified School District in Lodi, and Mosquito Abatement District in Sacramento, California.

AVAILABILITY This software is immediately available as a proprietary package from the contact below.

CONTACT Gary Coverdale
 Bispac Systems
 4095 Bridge Street, Suite A
 Fair Oaks, CA 95623
 (916) 967-5555

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microcomputers in transportation

Transit Operations Software

Personnel Recording

APPLICATION Transit Personnel/Payroll Reporting System

DEVELOPER Washington Consulting Group, in association with Chase, Rosen, and Wallace

SPONSOR UMTA, Office of Methods and Support

SUMMARY This program tracks and calculates personnel and payroll information for all categories of transit employees. Work hours and absenteeism information are entered daily on an exception basis and are automatically transferred to permanent leave and payroll files. The permanent files supply up-to-date summary or individual absenteeism and payroll records, and can print a variety of customized reports on short notice. Although the system currently does not print payroll checks, it can be modified to do so. The database, moreover, is sufficiently detailed to permit analysis of bus runs, maintenance work schedules, platform hours, and absenteeism patterns.

ENVIRONMENT Written for dBASE II™, using the IBM PC. Hard-disk drive preferable, but can be implemented using floppy-disk drives. Can be customized to fit labor contracts or work rules of many transit agencies.

STATUS The system is now being implemented at SunTran of Albuquerque.

AVAILABILITY Currently available for general use. Documentation and source code are available from UMTA.

CONTACTS Tom Hardcastle Washington Consulting Group
1625 Eye Street, N.W., Suite 206-A
Washington, DC 20006
(202) 457-6717

Stan Rosen
Chase, Rosen, & Wallace
901 N. Washington St
Alexandria, VA 22314
(703) 836-7120

Tom Hillegass (UMTA Contact)
UMTA/URT-41
400 7th Street, S.W.
Washington, DC 20590
(202) 426-9271

™dBASE II is a trademark of Ashton-Tate

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Transit Operations Software

Personnel Recording

APPLICATION Personnel Recordkeeping

DEVELOPER San Mateo County Transit District (SamTrans)

SUMMARY Development is nearly complete on this software which allows input, manipulation, and output of a wide range of personnel information, including personal data and salary history. Printouts include data file listing, list of employees by health/dental insurance type, salary anniversary, Paid Time Off bonus anniversary, and others. Design is specific to SamTrans' union requirements, but can be modified to meet other needs.

ENVIRONMENT IBM XT with 256K RAM and DOS 2.0. dBASE II™ is the program language.

STATUS Installed and operating at SamTrans. Minor modifications still in progress.

AVAILABILITY Available for the cost of transmittal. Modifications to suit individual needs available at standard programming cost per hour.

CONTACT Gregory L. Kipp
Data Analyst
SamTrans
945 California Drive
Burlingame, CA 94010
(415) 872-6748

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Transit Operations Software

APPLICATION Transit Operations System

DEVELOPER SAGE Management Systems, Corp.

SUMMARY The Transit Operations System is a cluster of computer modules for the operations department at a transit property. It interfaces with SAGE's scheduling system and vehicle maintenance system, or can function in a stand-alone fashion.

The system has nine modules:

- 1) Operator Personnel Information
- 2) Production Schedule
- 3) Operator Bidding
- 4) Schedule and Exceptions for a Day
- 5) Operator Assignments for a Day
- 6) Extraboard Allocation Aids
- 7) Vehicle Assignments and Tracking
- 8) Operator Timekeeping
- 9) Operator Absentee Records

The above functions are supplied through screens and reports. The screens are "fill-in-the-blanks" forms along with a by-passable menu system. Some customization may be required to optimize the system for a given property's environment.

ENVIRONMENT IBM PC microcomputers under PC-DOS.

STATUS A list of users is available from the contact below.

AVAILABILITY For sale from SAGE.

CONTACT Ian R. Moore
Director of Marketing
SAGE Management Systems Corp.
1911 North Fort Myer Drive, Suite 907
Arlington, VA 22209
(703) 243-0060

microcomputers in transportation

Transit Operations Software

APPLICATION Transportation Management System

DEVELOPER VISTA Systems, Inc.

SUMMARY VISTA's Transportation Management System includes five modules which provide a comprehensive set of tools to assist transit planning, scheduling, and operating departments. The five modules are Data Maintenance, Scheduling, Run Cutting, Dispatch Control, and Operator Bidding.

Data Maintenance facilitates creation and maintenance of the scheduling database. Scheduling includes computer-assisted trip building, timetable maintenance, and hooking trips into vehicle assignments (blocks). Run Cutting performs computer-assisted run cutting. Dispatch Control provides computer-assisted dispatch and extraboard assignment functions, operator's exception timekeeping, bus assignment tracking, and road call/incident tracking. Operator Bidding provides an on-line tool to prepare for, monitor and control, and record operator bidding.

The first three modules are typically grouped together into the Transit Scheduling system. Dispatch Control and Operator bidding are each stand-alone modules. All modules interact directly with each other and utilize a central database.

ENVIRONMENT Operates on a 16-bit, UNIX-based microcomputer.

STATUS In use in Sacramento and San Diego, California; Wilmington, Delaware; Springfield, Massachusetts; and Albany, New York.

AVAILABILITY For sale from contact below.

CONTACT VISTA Systems, Inc.
900 State Road
Princeton, NJ 08540
(609) 921-0065

microcomputers in transportation

Transit Operations Software

APPLICATION RADAR II: Radio Dispatch Trouble Report Data Analysis

DEVELOPER Foray Systems

SUMMARY RADAR II provides both daily and monthly analysis of Coach Changes, Service Delays, Out Late Incidents, and Accessible Service Boardings.

Each day, clerical personnel use data entry routines to enter essential data from the Radio Dispatch log. The system is designed so that the data entry operator can enter the current day Out Late transactions and produce a printed report, then continue to enter the previous day's transactions and make correction to prior transaction data.

Once all of the day's data has been entered, the system produces four daily reports. All reports are produced by the Operating Division.

The monthly Coach Change Report is summarized by Problem Code and Operations Division. The report lists the Problem Codes in descending order of incident counts. The monthly detail Coach Change Report will filter out all buses with less than the user-defined number of incidents (e.g. less than four incidents ignored).

The monthly Accessible Service Report lists all lift-assisted boardings by bus line and bus stop intersection.

ENVIRONMENT IBM PC/XT, PC-DOS 2.0, dBASE III™.

AVAILABILITY Proprietary to Foray Systems; includes more than 15 programs and complete user manual.

STATUS Operational at RTD in Los Angeles.

CONTACT Foray Systems
2401 E. 17th Street, Suite 143
Santa Ana, CA 92701
(714) 731-7505

™dBASE III is a trademark of Ashton-Tate

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Transit Operations Software

APPLICATION	Transit Accident and Crime Information System
DEVELOPER	Southeast Michigan Council of Governments (SEMCOG)
SUMMARY	<p>This multipurpose microcomputer software system monitors, reports, analyzes and maps transit accident and crime data. A relational database management system is used to store a variety of information related to specific incidents of transit accidents and crimes. Users can use the default database elements or customize the system to meet unique information needs. Functions of the database include: data input screens, full screen editing, and flexible searching and sorting routines. The real strength of this system lies in its ability to report, analyze and map transit incident data. Standard or custom reports are available for all database elements. A variety of statistical procedures include:</p> <ul style="list-style-type: none">● univariate descriptive statistics● two-way cross tabulations● frequency distributions, histograms, pie charts● time series analysis, etc. <p>Full color computer maps of transit data are available for:</p> <ul style="list-style-type: none">● specific site locations● shaded conformant maps at specified geographic levels. <p>All user interaction with various components of the system are handled by a menu-driven, user friendly interface. Comprehensive HELP and PROMPT screens are available for the inexperienced user.</p>
ENVIRONMENT	IBM PC or other MS-DOS microcomputers with 256K. For computer mapping, Hewlett-Packard 7470A or 7475A plotters. For larger transit systems, a 10MB hard disk is recommended.
STATUS	Under development.
CONTACT	Ms. Anne Nolan Mr. Jeff Moyer SEMCOG 800 Book Building Detroit, MI 48226 (313) 961-4266

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Transit Operations Software

APPLICATION	Accident Analysis Program
DEVELOPER	Bispac Systems
SUMMARY	<p>The program maintains information on accidents to allow comparative accident analysis. Using the categories developed by the California Highway Patrol, the program is invaluable in any transit or fleet operation. The software features easy to use menu screens, and can accommodate a wide variety of user needs.</p> <p>The program is useful to fleet trainers and can support a variety of fleet training options.</p>
ENVIRONMENT	Developed on the IBM System 23, it can also operate on the IBM System 36.
STATUS	Operational at Mid Placer Transportation in Auburn, California.
AVAILABILITY	The Accident Analysis Program is available as a proprietary system from the contact below.
CONTACT	Gary Coverdale Bispac Systems 4095 Bridge Street, Suite A Fair Oaks, CA 95623 (916) 967-5555

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Transit Operations Software

APPLICATION Bus Stop/Activity Center Telephone Information System

DEVELOPER Kenneth Roberts & Associates, Inc. (KRA)

SUMMARY Activity Center Information Highlights:

- These locations have a keyboard for input and a monitor for output.
- If no requests are pending, the monitor displays the next three trips on each line and the destination.
- The user can request routing from this point (stop); the monitor will display appropriate routings.
- The computer contains an index of major generators vs. stops. The user can input a generator or stop.
- If generators are not indexed yet, the request is recorded for future entry into the generator table. This lets management "learn" the more dominant requests.

Telephone Information Highlights:

- A telephone number is assigned to each stop--each number is unique to a line or a group of lines.
- The computer returns by voice output the next three departure times and the destination of a multiple-end line.
- If the departure times are close to the call-in time, then the time difference is given, e.g. "The next bus leaves in 10 minutes," rather than "The next bus leaves at 3:30 P.M."
- If the line has frequent headway, this information is given rather than specific times, e.g. "Buses leave every 5 minutes in the rush hour and every 10 minutes midday".

General Software Features:

- The system is completely interactive and on-line; all files, parameters, etc., are user-accessible.
- The hardware is portable and also can be accessed by remote terminals. The system is multi-user and timeshared.

ENVIRONMENT Altos 68000, 1MB memory, UNIX System III and FORTRAN.

CONTACT Jack Reilly
Capital District Transportation Authority
110 Watervliet Avenue
Albany, NY 12206
(518) 482-1125

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Transit Operations Software

APPLICATION Bus Stop Locator System

DEVELOPER Foray Systems, Inc.

SUMMARY The Bus Stop Locator System maintains data on each bus line stop in a transit system. The data is sorted in route sequence order and by street intersection.

The system features an INQUIRY capability that will list all of the stops at a given intersection, or will list each route that stops at a near, far or midblock location at the intersection. Listings include Route, Destination, and Service Limitations. The system will also print a Stop List for any given Route.

The system currently handles over 35,000 bus line stops for more than 240 numbered routes. The system uses relational data tables so that Route Destinations and Service Limits can be coded to user needs.

The data file contains: Street and Cross Street, Direction of Travel, Route Direction, Route Number, Route Sequence, City Code, Near/Farside, Turning Movement, Service Qualification Code and Special Comments.

ENVIRONMENT IBM PC/XT, PC-DOS 2.0, dBASE III™
DEC MICRO 11, RSX/11, CORTEX BUILDER

STATUS Operational at SCRTD since September 1983.

AVAILABILITY Proprietary to Foray Systems, Inc. Includes more than 20 programs and complete user manual.

CONTACT Foray Systems, Inc.
2401 E. 17th Street, Suite 143
Santa Ana, CA 92701
(714) 731-7505

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Transit Operations Software

APPLICATION 1-2-3 Route Planner

DEVELOPER Thomas Hillegass, UMTA

SUMMARY This Lotus 1-2-3™ spreadsheet facilitates the scoping out of routes, headways, layovers and workable modules easily and accurately from a sketch level where costs and general feasibility are of interest, to just before scheduling when exact times and service levels by time of day are needed. The method used is quite common to service planning as practiced, but the worksheet implementation makes it easy to try alternatives and to see quickly the results from the number of vehicles to the annual operating cost.

The general method used is simply to map out a route, break it into segments, measure distance and estimate speeds of running times, add layover, try some headways and adjust the layovers, headway, etc., until an efficient operation results. The spreadsheet makes it easy to do this for several times of day and week-ends, to keep totals of vehicles, hours and miles and to keep an eye on the annual operating cost implications of each step in this exploration process.

The weekday is represented by a peak service and base service for which vehicles, vehicle hours and vehicle miles are estimated and then factored to represent the rest of the weekday. The weekend is represented by a single service period for which hours and miles are factored to the rest of the weekend. Operating costs are estimated based on a "three factor" formula (peak vehicles, hours and miles) for the weekday and the weekend, and then are factored by weekdays per year and weekends per year to a total annual operating cost. Any number of routes can be processed and totaled on the spreadsheet. Thus an entire service plan could be built on a spreadsheet and costs estimated continuously.

ENVIRONMENT Lotus 1-2-3™ on an IBM PC or compatible.

AVAILABILITY Disk:

TIME Support Center
Dept of Civil Engineering
Rensselaer Polytechnic Institute
Troy, NY 12181
(518) 266-6227

Modem:

INFOTAP Computer Bulletin
Board (Can download docu-
mentation and spreadsheet
with proper communications
software. Have your modem
call (415) 642-7088)

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Transit Operations Software

APPLICATION School Bus Route Planning Programs

DEVELOPER Roger Creighton Associates, Inc.

SUMMARY RCAI has developed a system of five programs to increase the productivity and efficiency of school bus planning operations. The programs are:

School Bus Routing System (SBRS) prepares bus routes listing stops on the route, time schedule, and names and addresses of students on the route. SBRS allows action with the operator for preparation of most practical routes.

Address Guide System (AGS) permits a user to find, for any given street address, exact information on the location of bus stops for different grade levels.

Grade Advancement Program (GAP) allows users of SBRS to automatically update a rider file of students to prepare for next year's school bus routing.

Route Audit/Driver Directions Program (RA/DD) is a stand-alone program that automates preparation of driver route cards and time, mileage, and ridership audits.

Master Bus Scheduling and Evaluation (MBS/E) is a stand-alone program that enables a school district to schedule up to 1500 daily routes to a fleet of up to 150 buses, and then evaluate the efficiency of the resulting schedule.

ENVIRONMENT All of the programs are available for the IBM PC, XT and compatible machines; the TRS 80 Models II, 12, and 16; and the Apple II+ and IIe.

STATUS Used by Bethlehem School District and Averell Park Central School District, in New York.

AVAILABILITY Available from the contact below.

CONTACT Charles Manning
Roger Creighton Associates, Inc.
274 Delaware Avenue
Delmar, NY 12054
(518) 439-4991

microcomputers in transportation

Transit Operations Software

APPLICATION	STOPS
DEVELOPER	Criterion Inc.
SUMMARY	<p>STOPS is an interactive computer graphic program designed for transit system route planning and analysis. It uses computerized street network files and data from the 1980 census to retrieve information on the number and type of potential transit users within a specified distance of transit facilities.</p> <p>STOPS has two primary applications which are of major concern to the transportation planner. First, it can be used to evaluate the accessibility of various sub-groups of the population to transit facilities. Second, it can be used to measure the propensity for transit usage for alternative route configurations based on the number and type of potential transit riders with access to each route.</p> <p>To use STOPS, a user first identifies transit stops and routes using interactive computer graphics and specifies a maximum walking distance from each stop. The STOPS program is activated to delineate all possible paths from each stop that terminate within the specified distance. The census information related to the street links along those paths is then allocated to the appropriate transit stops. Socio-economic profile reports can be produced for either individual stops or for entire routes. The process can be continued iteratively to evaluate alternative route designs.</p>
ENVIRONMENT	IBM PC with two disk drives or an IBM PC/XT and a minimum of 256K and a color graphics card are required.
STATUS	Used by Colorado Springs Transit.
AVAILABILITY	STOPS software program \$895.00. Data files prepared at cost based on size of study area.
CONTACT	Bob Evatt Manager Criterion Inc. 11100 Roselle Street, Suite A San Diego, CA 92121 (619) 455-0162

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Transit Operations Software

PROJECT VisiCalc™ Applications

DEVELOPER Capital District Transportation Authority (CDTA)

SUMMARY This program consists of templates used in the development of CDTA's annual operating budget. Other templates include cash forecasting, analyzing data collected as part of Section 15 ride checks, and performing simple, one variable linear regression. An additional template for route planning is available for the IBM PC version.

ENVIRONMENT VisiCalc™ is required to run this program. At present, a diskette is available for the Apple II+ microcomputer (64K) and the IBM PC. Templates are compatible with Lotus 1-2-3™ on the IBM.

STATUS Operational.

CONTACT TIME Support Center
Rensselaer Polytechnic Institute
Department of Civil Engineering
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

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Transit Operations Software

APPLICATION Car Cost Analysis

DEVELOPER Campus Bus Service, Kent, OH

SUMMARY A variety of methods have been used in the past to present the costs of driving and operating a private automobile in an attempt to promote the use of alternative transportation methods. The use of brochures which outline the various methods for calculating these expenses tends to be time-consuming and confusing. The use of average driving statistics frequently makes the results impersonal. However, the use of a micro-computer will enable a cost analysis to be quickly performed and to be based on a specific automobile driven by a specific individual. This allows the results to be very personalized and easy to obtain. This type of program is ideal for public displays where the mystique of a computer can still be effectively used as a marketing tool.

ENVIRONMENT Apple II+, Radio Shack Model III or IV, or IBM PC; 48K RAM, one 5 1/4-inch disk drive, and a 132-character printer with form-feed are required.

STATUS The program is currently being used by many transit properties in the U.S. and Canada.

AVAILABILITY The cost of the software, which will be configured for a particular system, is \$30.00 U.S.

CONTACT Greg Seibert
Manager, Electronic Systems
Campus Bus Service
100 Moulton Hall
Kent, OH 44242
(216) 672-RIDE

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Transit Operations Software

APPLICATION Statistical Sampling of Trip Data

DEVELOPER Transit Industry Microcomputer Exchange

SUMMARY The program determines which vehicle trips should be sampled to obtain statistically valid values for route ridership, fare levels, etc. The initial program identifies alternate sampling plans, each consisting of the number of days and number of trips per day to sample. Subsequent programs randomly select the actual days and trips to sample. The program follows the procedures and uses the values in the tables of the Bus Transit Monitoring Manual (Report No. UMTA-IT-09-9008-81-1). The user must supply the following inputs: the between day and within day coefficient of variation of the trip measure being studied, the desired tolerance level of significance, length of the sampling period, and total number of trips operated per day.

ENVIRONMENT Apple II+, 48K RAM, or IBM PC, a disk drive, and a printer. Program is written in BASIC.

AVAILABILITY Available from contact below.

CONTACT TIME Support Center
Rensselaer Polytechnic Institute
Department of Civil Engineering
Troy, NY 12180-3590
(518) 266-6227, between 9:00 AM and 4:00 PM (EST)

microcomputers in transportation

Transit Operations Software

- APPLICATION Microcomputers in Transit: A Software Handbook
- DEVELOPERS Eve Wyatt, Editor, Institute for Urban Transportation;
Applications developed by staff at transit agencies
- SPONSOR UMTA, Office of University Research and Training
- SUMMARY Spreadsheets
 General Applications
 Time Trend Analysis, Multiple Regression
 Preparation of Operating Documents
 Budgeting
 Wage and Fuel Budget, Operating Budget, Budget Comparison,
 10-Year Operating Budget, 10-Year Capital Budget, Cash
 Flow Projection, Cash Flow Manager
 Financial Analysis
 Fare Structure Analysis, Cost Tracking and Forecasting
 Service Monitoring
 Monthly Route Summary, Monthly Reporting System with
 Macros, Service Variance Tracking, Ride Check Analysis
 and Summary
 Service and Operations Planning
 Route Evaluation, Schedule Builder A, Schedule Builder B,
 Run Summary
- Database Managers
 Customer Service Records, Client Records, Parts Inventory
- ENVIRONMENT Each application is documented to be reconstructed and modified
as required on commercial spreadsheet or database management
software.
- AVAILABILITY This document will be available at no cost from:
 Technology Sharing Program
 Office of the Secretary
 U.S. Department of Transportation, I-30
 Washington, DC 20590
- CONTACT Eve Wyatt
 Indiana University
 Institute for Urban Transportation
 825 East Eighth Street
 Bloomington, IN 47405
 (812) 335-8143

**TRANSPORTATION PLANNING
SOFTWARE**

microcomputers in transportation

Transportation Planning Software

Land Use and Trip Generation

APPLICATION HLFM: Highway Land-Use Forecasting Model

DEVELOPER Alan J. Horowitz, Center for Urban Transportation Studies,
University of Wisconsin-Milwaukee

SPONSOR Wisconsin Department of Transportation

SUMMARY The Highway Land-Use Forecasting Model (HLFM) estimates population and employment redistribution due to highway projects in or near small communities. It is based on the Lowry-Garin model of land-use forecasting. HLFM was designed for ease of operation, using interactive color graphics for data input and display of results. It will handle road networks with up to 200 intersections, 400 two-way road segments, and 40 land-use zones. Results consist of employment and population totals in each zone and estimates of traffic on each road segment. All parameters are found on "Parameter Pages", which can be quickly accessed. Several "Worksheets" are provided to aid numerical data entry.

ENVIRONMENT Apple II+/e/c with 64K RAM and one disk drive. Supports high quality game paddles, mouse, color monitors, and a second disk drive. The program is written in BASIC and can be easily customized.

AVAILABILITY Undergoing field testing. Available approximately July 1, 1985, from contact below.

CONTACT Center for Urban Transportation Studies
University of Wisconsin-Milwaukee
PO Box 784
Milwaukee, WI 53201
(414) 963-5787

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Transportation Planning Software

Land Use and Trip Generation

APPLICATION HALLEY and COHORT: Population Projection

DEVELOPER Ned Levine, UCLA School of Architecture and Urban Planning

SUMMARY HALLEY is a three-part population projection program in template form. It contains a life expectancy table, an age-structure model, and a population projection program. The population projection program allows the addition of assumptions about fertility and migration to produce a 10-year population projection.

A supplementary program, COHORT, which is included in the same package, allows the user to enter survival rates directly, allowing for population projections where survival rates have already been determined or where chain projections are desired.

ENVIRONMENT HALLEY operates on the IBM PC and compatibles. It requires DOS 1.1, Lotus 1-2-3™, and two disk drives.

AVAILABILITY Available from contact below.

CONTACT MTP Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

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Transportation Planning Software

Land Use and Trip Generation

APPLICATION Trip Generation

DEVELOPER Microtrans Corp.

SUMMARY Trip Generation by Microtrans calculates the amount of traffic generated by 80 different land uses or building types. The program uses the database in the ITE Trip Generation Report, 3rd edition, 1983. It is completely menu-operated and requires no user lookup of terminology, land use types, or data. It is designed to be used in connection with:

- Traffic Impact Analyses
- Evaluation of Land Use Development Scenarios
- Transportation Corridor Analyses
- Small Area Transportation Planning
- Design of Traffic Circulation Systems
- Quick Response Planning Techniques

This program can be used for single or mixed-use developments. The user can add trip adjustment factors to reflect local conditions, effect of alternative modes, and/or effect of mixed-use developments on driveway volumes. It also includes a file option which is compatible with Lotus 1-2-3™ or Lotus Symphony™, so calculation results can be saved on diskette and retrieved for further analysis. [Editor's Note: see also "Land Use Estimator" under 'Site and Subarea Planning'.]

ENVIRONMENT PC-DOS and MS-DOS operating systems; CP/M available at extra cost. 128K RAM and one 360K disk drive are required, though two disks are desirable. Needs an 80-column or larger printer.

STATUS Operational. Used in Houston, Texas; Jersey City, New Jersey; and other cities in the U.S. and Canada. The program is also used in seminars at Northwestern University.

AVAILABILITY Available from contact for \$395.00.

CONTACT Penny L. Buttke, President
Microtrans Corp.
PO Box 636
Portland, OR 97207
(503) 223-4728

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Transportation Planning Software

Land Use and Trip Generation

APPLICATION Trip Generation

DEVELOPER New York State Department of Transportation

SUMMARY Program calculates number of trips generated in a census tract according to the number of households in each of four family life cycle stages. Census data used as input. Other geographical units may also be analyzed.

ENVIRONMENT Apple II or Apple II+, 48K RAM, one disk drive, Apple BASIC.

STATUS Operational, being upgraded to be more user-friendly.

AVAILABILITY Free from contact.

CONTACT Ronald W. Tweedie
Director, Data Services Bureau
New York State Department of Transportation
1220 Washington Avenue
State Campus, Building 4
Albany, NY 12232

microcomputers in transportation

Transportation Planning Software

Network-Based Highway and Transit Planning

APPLICATION TRANPLAN

DEVELOPERS R. James W. Fennessy and Raif Kulunk for DeLeuw, Cather & Co.

SUMMARY TRANPLAN, the most popular proprietary transportation modeling software, is a comprehensive, fully integrated, user-oriented system, with highway and transit programs fully compatible, thus simplifying the procedures of multi-modal systems planning. Unlike other transportation software, TRANPLAN uses English-like syntax and uniform specifications in all programs.

TRANPLAN is designed for 3,000 zones and 16,000 links. For highway network analysis, TRANPLAN accepts turn prohibitors, turn penalties, and up to 31 links at each node. The path building algorithm is a vine builder which guarantees the minimum path with turn prohibitors and penalties. Transit network analysis utilizes the UTPS link/line concept but with up to 30 modes. TRANPLAN's suite of programs encompass the following categories:

- Trip Distribution/Mode Choice
- Matrix Utilities
- Reporting
- Plotting
- Sub Area Analysis
- Graphics: Network Editing
- Highway Networks
- Transit Networks
- Network Loading
- Trip Generation
- Selected Link Analysis
- Interactive Data Input

[Editor's Note: see also "NED" under 'Network Encoding and Plotting'.]

ENVIRONMENT Operates within MC68000 UNIX environment and IBM PC-DOS: 256K of memory is required, with 512K recommended.

AVAILABILITY Several license sale options and demonstration packet available. Source code is also available.

STATUS Used by many public agencies and consultants.

CONTACT James Fennessy
 Manager, Systems Division
 DKS Associates
 1419 Broadway, Suite 700
 Oakland, CA 94612
 (415) 763-2061

microcomputers in transportation

Transportation Planning Software

Network-Based Highway and Transit Planning

APPLICATION MicroTRIPS

DEVELOPER PRC Voorhees

SUMMARY MicroTRIPS is a comprehensive software system for transportation planning paralleling UTPS/PLANPAC in functional capability. MicroTRIPS includes programs for:

- Highway and Transit Network Simulation
- Travel Demand Forecasting: Generation, Distribution, Mode Split
- Matrix Manipulation and Adjustment
- Capacity Restraint Assignment: Iterative, Incremental, Volume-Averaging, or Multi-Route
- Subarea Windowing
- Selected Link Analysis
- Network Plots: With Automatic or User-Defined Windows, Node & Link Annotation, Bandwidths, up to 10 colors
- Network Performance Summary

MicroTRIPS programs are menu-driven, can be operated interactively or through pre-stored command files, and can be interfaced with UTPS and Database Management programs.

ENVIRONMENT CP/M, IBM PC-DOS, MS-DOS Operating System versions available, minimum of two disk drives recommended, hard disk recommended for systems over 300 zones.

STATUS Over 60 installations worldwide including the cities of Austin, Dallas, Ft. Worth, and Richardson, Texas; North Central Texas COG; Altamonte Springs, Colorado; Seminole County, Tampa and Winter Park in Florida; Bakersfield, Los Angeles, San Diego and San Francisco in California; King County and Kent City in Washington; Boulder and Denver in Colorado; and Edmonton and Toronto in Canada.

AVAILABILITY For sale from contact below.

CONTACT Pat Costinett or Bob Stribling
PRC Engineering
1500 Planning Research Drive
McLean, VA 22102
(703) 556-2487/2489, or
(800) 336-3772, ext. 2487

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Transportation Planning Software

Network-Based Highway and Transit Planning

APPLICATION	EMME/2		
DEVELOPER	Center De Recherche sur les Transports, Universite de Montreal		
SUMMARY	<p>EMME/2 is a comprehensive multi-mode urban transportation planning system designed for interactive graphic use, as described in Transportation Research Record 866, pp. 1-8.</p> <p>The system contains about 50 modules in the following groups:</p> <ul style="list-style-type: none">- Utilities- Network Editor- Matrix Editor- Function Editor- Assignment Procedures- Results <p>The assignment procedures include the following features:</p> <ul style="list-style-type: none">- Equilibrium Road Assignment- Transit Assignment- Multimodal Equilibrium Assignment- Variable or Fixed Demand <p>The system handles problems of up to 400 zones, 2500 nodes, 8000 links, 200 transit lines, and 15000 transit line segments.</p>		
ENVIRONMENT	Operates on 68000-based microcomputer under the UNIX operating system (such as the PIXEL 100/AP,80) and on the MICRO-VAX under the VMS operating system. Requires a minimum of 1MB RAM and a 40MB Winchester harddisk. Graphic terminals supported are the Tektronix 4115B, the Tektronix 4010 and 4110 series, and compatible terminals such as the VISUAL 550, and Cybernex.		
STATUS	Implemented in Portland, Oregon; Stockholm, Sweden; Vancouver, B.C.; and Montreal, Quebec, among others.		
AVAILABILITY	Object code license for 68000-based microcomputers under UNIX and for MICROVAX under VMS. Software support agreements in effect and available.		
CONTACT	<table><tr><td>INRO Systems Inc. 279 E. 44th St., Suite 145 New York, NY 10017</td><td>INRO Consultants, Inc. 83 Dufferin Road Hampstead, Quebec Canada H3X 2X8 (514) 731-8403</td></tr></table>	INRO Systems Inc. 279 E. 44th St., Suite 145 New York, NY 10017	INRO Consultants, Inc. 83 Dufferin Road Hampstead, Quebec Canada H3X 2X8 (514) 731-8403
INRO Systems Inc. 279 E. 44th St., Suite 145 New York, NY 10017	INRO Consultants, Inc. 83 Dufferin Road Hampstead, Quebec Canada H3X 2X8 (514) 731-8403		

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Transportation Planning Software

Network-Based Highway and Transit Planning

APPLICATION	MOTORS: Microcomputer Software for Transportation Planning
SUMMARY	<p>MOTORS is an integrated package of 35 modules designed to cover the whole range of multi-modal transportation planning functions. The package contains programs for:</p> <ol style="list-style-type: none">1) Trip Generation - category analysis or multiple regression2) Trip Distribution - gravity model (power or exponential) or Fratar growth factor3) Modal Split - trip interchange using ratios or differences4) Highway Networks - network checking, building, minimum path skimming, tree-building, all-or-nothing and capacity restrained assignment5) Transit Networks - network building, tree-building, minimum path skimming, route and link assignment6) Matrix Programs - building, converting, manipulating, formatting, compressing and splitting <p>The programs have been designed throughout to be interactive, user-friendly, and forgiving. Systems of up to 200 zones, 800 nodes and 2500 links can be modeled on CP/M micros, and up to 400 zones, 2000 nodes, and 6000 links on MS DOS micros.</p>
ENVIRONMENT	Either a CP/M operating system with 64K RAM and two disk drives, or an IBM PC (or IBM-compatible) with 256K RAM and two disk drives or a hard disk drive.
STATUS	In use by consultants and government agencies in the United States (including Washington and Denver), Canada (including Toronto and Ottawa), United Kingdom, South Africa, and Holland. User list is available.
AVAILABILITY	For sale from contact below.
CONTACT	Bob Lewis M.M. Dillon Ltd. 47 Sheppard Avenue East Toronto, Ontario Canada M2N 6H5 (416) 229-4646

microcomputers in transportation

Transportation Planning Software

Network-Based Highway Planning

PROJECT MINUTP

DEVELOPER COMSIS Corp.

SUMMARY Complete highway transportation planning system similar in operation to UTPS, PLANPAC, etc. System consists of nine programs that interconnect to operate in either a batch or on-line processing mode. Easy setup capability allows for rapid analysis of various scenarios and system configurations. Standard package includes modules for:

- Network Building (Macro Speeds/Capacities)
- Path Selection (Cost, Time, Dist, Turn Pen/Prohib)
- Trip Generation (User Rates, Equations, Generators)
- Trip Distribution (Gravity Model)
- Matrix Manipulations (Add, Sub, Div, Mpy, Repl, Format, Sum, Print, TLF, Modal Choice, Row/Col/Value Selection)
- Matrix Conversion (Transpose, Expand/Compress, Renum)
- Traffic Assignment (All-or-Nothing, Stochastic, Select Link, Capacity Restraint, Turn Volumes)
- Network Analysis Report Generator

ENVIRONMENT IBM PC (or compatible) with PC-DOS/MS-DOS.

<u>RAM</u>	<u>Disks</u>	<u>Zones</u>	<u>Nodes</u>	<u>Links</u>
192K	2-320K	100	900	2500
256K	2.5M	500	3000	11000
320K	5M	1000	8190	16400

STATUS In use at County of Fresno COG; Colorado Department of Highways; City of Virginia Beach; and many other agencies.

AVAILABILITY MINUTP as described (w/training, test data).....\$5000
Demonstration System (19 zones, 50 nodes).....\$ 100

Additional modules available at extra cost:

- Network Plotting
- Network Manipulation
- Fratar Distribution
- Data Base Converter for Sub-area modeling
- Transit Network Routing/Assignment (2/1/85)

CONTACT Mr. Larry Seiders
COMSIS Corporation
The 1200 Building
2685 Marine Way, #1208
Mountain View, CA 94043
(415) 964-5911

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Transportation Planning Software

Network-Based Highway Planning

APPLICATION ASSIGN: Traffic Generation, Distribution & Assignment

DEVELOPER CH2M Hill

SUMMARY Program ASSIGN performs traffic generation, distribution, and assignment. The assignment process is accomplished through a modified application of Moore's minimum time path algorithm. Both single-path and multipath assignment options are accomplished through a cascading analysis of nodes, also referred to as Dial's multipath assignment algorithm. Traffic can be distributed between all zones through use of a Gravity/Fratar model or, alternatively, a vehicle trip table developed offline can also be employed. The program allows for either an unrestrained or a capacity-restrained assignment to be performed. In a single-path assignment, turn penalties can also be specified for any intersection movement in the network. Output capabilities include both video and hardcopy review of minimum time paths, link volumes, initial and final travel speeds, turning movements at preselected intersections, select link analyses (for a single-path assignment), vehicle miles traveled, and vehicle hours traveled.

ENVIRONMENT The program is operational on an Apple II+ or an Apple IIe computer with 64K (RAM) and two disk drives.

STATUS The program has been used for studies in Eugene, OR; Sacramento and Orange County, CA; Richland, WA; Seattle, WA; and Hail, Saudi Arabia.

AVAILABILITY For sale from contact below.

CONTACT Wayne K. Kittleson
CH2M Hill
2020 SW Fourth Avenue
2nd Floor
Portland, OR 97201
(503) 224-9190

microcomputers in transportation

Transportation Planning Software

Network-Based Highway Planning

APPLICATION	TMODEL: Transportation Modeling System
DEVELOPER	Professional Solutions, Inc., Beaverton, OR
SUMMARY	<p>TMODEL is screen menu-driven for easy step-by-step operation. Entry/edit routines allow for quick corrections of data. Set-up takes less than eight hours, revisions less than 15 minutes.</p> <p>TMODEL is unique in that both intersection and link capacities and delays are used to find trees and calculate the gravity model for each increment or iteration. Options include stop sign/signal modeling, time/distance weighting, link pre-loading, and keeping turn movements for up to six approaches per intersection. Trip distribution and assignment are performed completely in RAM for maximum speed.</p> <p>Model outputs are provided for a standard link report (two format options), trip table, and turn movement report, and may be modified as desired. Outputs show links and nodes with capacity problems (V/C ratios over 0.9). Select zone analysis provides details on link volumes and percentages of total link volume attributable to selected zones. [Editor's Note: see also "TMPLLOT" and "TMNET-DB" under 'Network Encoding and Plotting'.]</p>
ENVIRONMENT	Versions are available for Apple II/II+/IIe/IIc/III, CP/M-80 (40 formats), IBM PC (PC-DOS) and MS-DOS (Wang PC, HP 150, etc.). Disks are available to support many popular formats.
STATUS	The TMODEL system has been used by Washington County, Oregon, and in over 25 states and provinces, including California, Colorado, Florida, Maryland, Massachusetts, Missouri, Oregon, Pennsylvania, Tennessee, Texas, Utah, Washington, and Greece.
AVAILABILITY	For sale from contact below for \$1200. Sample version (with reduced dimensions) available for \$60.
CONTACT	Robert M. Shull Professional Solutions, Inc. 3765 NW 173rd Place Beaverton, OR 97006 (503) 645-4422

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Transportation Planning Software

Network-Based Highway Planning

APPLICATION TS MicroTrans

DEVELOPERS TRANSWARE Systems

SUMMARY TS MicroTrans is an integrated package of computer programs designed for area or subarea analysis of highway networks. It performs transportation planning functions which parallel UTPS or PLANPAC, but with easy setups. The package may be used independently for modeling a city or region, or as part of a windowing procedure within a large urban area.

TS MicroTrans currently accommodates 250 zones, 1500 nodes and 3000 links in its minimum configuration.

TS Microtrans programs include the following features:

Network Building	Trip Generation
Tree Building	Trip Distribution
Minimum Path Skimming	Matrix Manipulation
Traffic Assignment	Row/Column Reporting
Matrix Compression	Capacity Restraint
Assignment Merging	Network/Path Reporting

ENVIRONMENT System : PC-DOS
RAM: 128K
Disks: Two 320K floppies, or one floppy and one hard disk.

STATUS Currently being used by the North Dakota Highway Department and by consultants in Southern California.

AVAILABILITY For sale at \$995.00 from contact below. User manual and demonstration diskettes provided for review upon request.

CONTACT John M. Kain, AICP
TRANSWARE Systems
42 Sequoia Tree Lane
Irvine, CA 92715
(714) 559-4599
(714) 786-9266

microcomputers in transportation

Transportation Planning Software

Site and Subarea Planning

APPLICATION IRAP: Local Area Traffic Assignments - Interactive Routing
 Assignment Process
 MTPS: Traffic Assignments - Microcomputer Transportation
 Planning System
 CAPCALC (Version 2): Traffic Engineering: Intersection Capacity
 Analysis

DEVELOPER Roger Creighton Associates, Inc.

SUMMARY IRAP is intended for application in micro-areas, such as central business districts, regional shopping malls and their environs, industrial parks, and university campuses. It was designed to allow multiple paths between zones to be used. All turning movements within the micro-area are estimated.

 MTPS is similar to standard traffic simulation models run on mainframe computers. The system consists of seven coordinated programs. It uses a standard gravity model formulation to develop a trip table. The user can change the overall expected trip length and the exponential within the gravity formula. Traffic volumes on individual links are printed out.

 CAPCALC fully automates for microcomputers the "Planning" and "Operations and Design" routines of Transportation Research Board Circular 212, "Interim Materials on Highway Capacity" (second printing, June 1980), for calculating capacities and levels of service for signalized intersections. For unsignalized intersections, all routines except one table look-up are also automated. Revisions to CAPCALC will be made periodically to keep it consistent with the latest procedures.

ENVIRONMENT Apple II+ and Apple IIe, IBM PC, and Radio Shack TRS Models II, 12, and 16. A minimum of 64K RAM and two disk drives are required. Program comes as "turnkey", and thus is independent of the resident operating system on the machine.

STATUS All programs are operational and fully tested. Presently being used by NYSDOT; King County, Washington; Augusta-Richmond counties, Georgia; many local governments and private consultants.

AVAILABILITY For sale at \$750 (IRAP); \$500 (MTPS); and \$485 (CAPCALC).

CONTACT Charles Manning
 Roger Creighton Associates, Inc.
 274 Delaware Avenue
 Delmar, NY 12054
 (518) 439-4991

microcomputers in transportation

Transportation Planning Software

Site and Subarea Planning

APPLICATION IMPAX: Traffic Impact Analysis

DEVELOPER PRC Engineering

SUMMARY IMPAX is an integrated package of computer programs for use in local area traffic impact analysis. The package is designed specifically for interactive use on a microcomputer, and addresses the analysis of incremental traffic loads on street networks, related to specified land uses or developments. Traffic generation is assigned to a street network through interactive control of trip distribution patterns.

The package offers extensive and powerful methods of retrieval, analysis, and output presentation of the data, including:

- street volumes
- intersection turn volumes
- level of service

The software allows selective inclusion of traffic generators, and geographic selectivity of output. Up to three different analytical scenarios may be quantitatively compared. Traffic on any link, intersection, or turning movement may be disaggregated to contributing land uses.

The interactive nature of the software allows rapid evaluation of alternative scenarios at a considerable level of detail. The package is ideally suited for project impact analysis, development planning, and traffic engineering needs, including PUD's, mixed use developments, neighborhood planning, and CBD redevelopment.

ENVIRONMENT IBM-PC, or CP/M operating system; 64K, two disk drives, and a dot matrix printer.

STATUS Operational in City of Palo Alto and Kern County COG, in California.

AVAILABILITY Available from contact below.

CONTACT Mike Bates
PRC Engineering
972 Town & County Road
Orange, CA 92667
(714) 835-4447

microcomputers in transportation

Transportation Planning Software

Site and Subarea Planning

APPLICATION CASWELL MODEL: Traffic Assignment Predictor for New Developments

DEVELOPER John R. Caswell, Consultant, in cooperation with the Town of
Lincoln, MA

SUMMARY The CASWELL MODEL (APPREHEND) is a tool which local Planning and
Zoning Boards can use to predict the impact of a development on
the roads in their community. The development need not be in the
community but may be in a nearby town. The CASWELL MODEL allows
the playing of "what-if" games and includes the capability to add
or close roads in order to model various traffic control ideas.

ENVIRONMENT Currently operating in BASIC PLUS on a PDP-11. The CASWELL MODEL
is being adapted to the IBM Personal Computer.

STATUS In use in Lincoln, Massachusetts.

AVAILABILITY Available from contact below.

CONTACT John R. Caswell, Consultant
Box 98
Lincoln Center, MA 01773
(617) 259-0830

microcomputers in transportation

Transportation Planning Software

Site and Subarea Planning

APPLICATION QRS: Quick-Response Travel Estimation

DEVELOPER COMSIS Corp., Wheaton, MD

SPONSORS UMTA, Office of Methods & Support
 FHWA, Office of Highway Planning

SUMMARY In 1978 the Comsis Corporation produced an NCHRP report* which described techniques for quickly estimating urban travel volumes. Most of the methods were presented as tables or nomographs which are tedious to use. The Quick Response System (QRS) software has been developed to relieve this tedium by implementing these techniques on a microcomputer.

Only those techniques involved with the traditional four-step planning process (trip generation, distribution, mode split and assignment) have been implemented. Other techniques (traffic smoothing, corridor diversion, intersection capacity analysis, incremental mode split, etc.) will be added later. [Editor's Note: see also TspAssign in this section.]

ENVIRONMENT Operates on the Apple II, IBM PC and TRS-80 microcomputers under the UCSD p-System Version IV. Two disk drives and 64K of RAM are required. Note: this software will NOT run under Apple Pascal.

AVAILABILITY Available from the contact below.

CONTACT MTP Support Center, DTS-63
 Transportation Systems Center
 Kendall Square
 Cambridge, MA 02142
 (617) 494-2247

*Comsis Corporation, "Quick-Response Urban Travel Estimation Techniques and Transferable Parameters," NCHRP Report 187, 1978.

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Transportation Planning Software

Site and Subarea Planning

APPLICATION TspAssign: Traffic Assignment

DEVELOPER Transportation Systems Planning

SUMMARY TspAssign is an interactive assignment program that is perfect for QRS users. The two files used in this program (a network file consisting of an A node, B node, speed, capacity distance, and ADT; and a trip table file) can be input quickly, accurately and at a lower cost. TspAssign will do an all-or-nothing assignment or incremental randomized capacity restraint.

TspAssign was originally developed for QRS users, thereby giving them a level of assignment wherein time savings, alternatives analysis and reliability can be realized. All data files can be saved on disk, printed and manipulated for later use. Output can be requested in several forms: 1) Volume/capacity assigned, 2) Volume assigned at each increment, 3) Trace from all origin zones to all destination zones. This data can be saved to disk.

ENVIRONMENT Operates on the IBM PC and compatibles (including the Z100 and the Radio Shack 2000) under MS-DOS, and requires 128K RAM and two disk drives. Written under compiled Pascal.

STATUS Operational; in use by the City of Jacksonville, Florida, Planning Department. Will be available for the Apple computer in July 1985.

AVAILABILITY For sale from contact below.

CONTACT David L. Phipps
Transportation Systems Planning
4139 Piper Drive
Jacksonville, FL 32207
(904) 731-9616

microcomputers in transportation

Transportation Planning Software

Site and Subarea Planning

APPLICATION Land Use Estimator

DEVELOPERS Microtrans Corp.

SUMMARY Land Use Estimator by Microtrans™ calculates the maximum building size for a parcel of land with given zoning and parking requirements. It is designed to be used in connection with:

- Trip Generation by Microtrans
- Traffic Impact Analysis
- Evaluation of Land Use Development Scenarios
- Input for Transportation Planning
- Land Use Planning

The program allows the user to explore a variety of land use options. For each development scenario, calculation results indicate the following:

- Maximum size of building
- Area of building footprint
- Lot coverage
- Floor area ratio
- Number of parking spaces

Up to 28 different scenarios can be derived, then results can be prioritized (four listed per page) for presentation purposes. The output can be printed, or saved on diskette and retrieved for further analysis. It can also be retrieved using Lotus 1-2-3™ or Lotus Symphony™.

ENVIRONMENT All current microcomputer operating systems. Requires 64K RAM and one 360K disk drive, though two drives are desirable. Also requires an 80-column or larger printer.

STATUS Operational.

AVAILABILITY For sale at \$99.95.

CONTACT Penny L. Buttke, President
Microtrans Corporation
PO Box 636
Portland, OR 97207
(503) 223-4728

™Lotus 1-2-3 and Lotus Symphony are trademarks of Lotus Development Corp.

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Transportation Planning Software

Mode Choice

APPLICATION RTD Pivot Point Logit Model

DEVELOPER Susan Cohen, Regional Transportation District, Denver, CO

SUMMARY The RTD version of the pivot-point logit model is designed to predict changes in transit ridership. Service level changes which can be analyzed include changes in transit fares, headways, in-vehicle travel times and access/egress times. Changes in parking costs and access and travel times by other modes may also be analyzed.

 The model formulation is based on the pivot-point logit model developed by Cambridge Systematics, Inc. for the Federal Energy Administration. The model coefficients for the RTD version of the model are those of the Unified Travel Patterns Model developed by the Denver Regional Council of Governments. However, any set of model coefficients may be used, and a sample template using the CSI coefficients is also enclosed.

ENVIRONMENT Requires IBM PC or compatible, SuperCalc3™ and MS-DOS 2.0 or higher. The templates are also on disk in ASCII format for uploading to other spreadsheet programs.

AVAILABILITY Available from the contact below.

CONTACT MTP Support Center, DTS-63
 Transportation Systems Center
 Kendall Square
 Cambridge, MA 02142
 (617) 494-2247

™SuperCalc3 is a trademark of Sorcim Corp.

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Transportation Planning Software

Mode Choice

APPLICATION Mode Choice: Work Trip Mode Choice Estimation Model

DEVELOPER Cambridge Systematics, Inc.

SUMMARY Mode Choice is a Lotus 1-2-3™ template which provides a worksheet-based technique for estimating travel modes for work trips, based on population attributes and travel choice characteristics. The model has a logit form. The attributes of each mode are established by the model, and the relative "utility" of each mode is compared to estimate its share of the total market. A complete description of the model and its derivation is included in "Transportation Air Quality Analysis--Sketch Planning Methods," prepared by Cambridge Systematics for the Environmental Protection Agency in 1979.

ENVIRONMENT Runs on IBM PC and compatibles, with Lotus 1-2-3™ Version 1A and DOS 2.0. At least 192K RAM and one DSDD disk drive is required.

AVAILABLE Available from contact below.

CONTACT MTP Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

™Lotus 1-2-3 is a trademark of Ashton-Tate

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Transportation Planning Software

Geographic Data Processing and Display

APPLICATION DemoScan: Access and Reporting of Census Data

DEVELOPER Claritas Partners, L.P.

SUMMARY DemoScan consists of report generation and data manipulation utilities to produce demographic summaries for any Census, ZIP, or user-defined geographic areas, such as transportation zones. Input data include any Census data as well as user input data. Output includes a choice of six standard report formats or flexible custom formatting. Summary measures available are counts, percentages, indices, and cumulative values. A single report can contain up to 500 geo-units and 10 columns of data.

DemoScan was designed for ease of use by non-programmers and non-data processors. It is completely menu-driven allowing for step-by-step report generation, yet allows the advanced user complete flexibility in custom designing a report. Data utilities include selecting geo-units for processing, aggregating data across geo-units, and inputting new data.

ENVIRONMENT DemoScan operates under the UCSD p-System for the Apple II with 64K RAM, and IBM PC with 128K RAM, printer, and 2 disk drives.

AVAILABILITY For sale from contact below.

CONTACT Victoria Grossack
Claritas Partners, L.P.
201 N. Union St.
Alexandria, VA 22314
(703) 683-8300

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Transportation Planning Software

Geographic Data Processing and Display

APPLICATION Census Data System

DEVELOPERS Sammamish Data Systems, Inc.

SUMMARY The Census Data System is capable of interactively retrieving and displaying all of the data on the Census Bureau's STF1 and STF3 files. The heart of the system is the dBASE II™ relational database management system. The user can display the desired data in one of 79 "preprogrammed" displays, or write the data out to a separate disk file for further processing or to prepare special reports. Individual data items or structured sets of related data items can be retrieved with equal ease. The data can be grouped either by subject matter or by user-defined geographic areas.

The user is able to find the data through the use of English language commands. Data can be located for specific areas by the use of simple "FIND" commands. Data can also be retrieved for specific relationships such as "locate all cases where variable A is greater than 3 times variables B or C." All the data searches for geo-specific areas are done with names of the areas rather than census codes.

ENVIRONMENT The system is available for any machine supporting CP/M, and for the IBM PC (128K) with CP/M-86 or MS-DOS, or other MS-DOS microcomputers.

STATUS Used by the planning departments in the following areas: the Borough of Queens, New York; Hot Springs County, West Virginia; St. Petersburg, Florida. Also in use at the Whatcom County COG in Bellingham, Washington, as well as at other agencies and universities.

AVAILABILITY For sale from contact below.

CONTACT Mr. Richard Schweitzer
Sammamish Data Systems, Inc.
PO Box 70382
Bellevue, WA 98007
(206) 644-2442

™dBASE II is a trademark of Ashton-Tate.

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Transportation Planning Software

Geographic Data Processing and Display

APPLICATION	GADS: Geo-Data Analysis and Display System
DEVELOPER	Center for Urban Analysis
SUMMARY	<p>GADS provides capabilities to display data associated with zones described on a map image, and to combine zones into larger units by interacting with the displayed map image. GADS maintains the association and summarization of zonal data to the larger units. Data pertinent to the larger units only, as well as data pertinent to the constituent zones, may be displayed.</p> <p>GADS is an adaption of a mainframe-based program that has been used extensively for design of school attendance areas, police beat restructuring, organization of social service catchment areas, school bus planning, design and evaluation of paramedic service areas, planning for fire protection services, and similar applications.</p> <p>A GADS database consists of a zone identifier followed by descriptive data items for the zone. This tabular database may be created and exercised by spreadsheets or system utilities and programs, such as "awk" in UNIX-based systems.</p> <p>Graphic functions, including zoom and pan, enable portions of the map to be enlarged for detailed data analysis. Zonal configurations are defined by touching the cursor location to the zone and then to the desired larger unit.</p>
ENVIRONMENT	Programs are written in Pascal. GADS is implemented on 16/32-bit MC68000, multi-user Forward FT-3000 "Gateway Workstation", with 80MB disk and 1.5M RAM, using the XENIX operating system. A Seiko GR-1104 raster color terminal with digitizing tablet and puck interface is used as the display device.
AVAILABILITY	Available on fee-for-service basis for installation and training.
CONTACT	Frank Lockfeld Director-Center for Urban Analysis County of Santa Clara 70 West Hedding Street San Jose, CA 95110 (408) 299-3285

microcomputers in transportation

Transportation Planning Software

Geographic Data Processing and Display

APPLICATION DIDS: Interactive Computer Mapping

DEVELOPER Sammamish Data Systems, Inc.

SUMMARY The Desktop Information Display System (DIDS) is an integrated computer mapping system for microcomputers. It is capable of displaying data for counties, minor civil divisions, census tracts, and five-digit Zip codes in up to eight colors on the computer's CRT.

Output can be produced on a color dot matrix or inkjet printer, a plotter, or a film recorder. The software allows the user to zoom in on the display to enlarge portions of the map area with a two- and four-power enlargement. The image can be panned in any direction, colors can be changed from a color palette, several statistical tests can be invoked to display the data in various distributions, and the title, legends, and credit notes are totally user-definable. Data can be easily input using standard database management or spreadsheet software packages. By using specially-processed geographic boundary files, individual maps are prepared in seconds from user-defined menus. Digitized polygon boundary files are available for use with DIDS for all census tracts, counties and five-digit metropolitan ZIP codes.

ENVIRONMENT IBM PC, XT, or AT with IBM color card, Plantronics ColorPlus card or Everex Graphics Card, and 128K RAM. Zenith Z100 or TI Professional Micro. Any IBM compatible with appropriate color graphics card.

STATUS Has been used by the planning departments in the following areas: the Borough of Queens, New York; Dallas, Texas; New Orleans, Louisiana; and many other locations.

AVAILABILITY For sale from contact below.

CONTACT Mr. Richard Schweitzer
Sammamish Data Systems, Inc.
PO Box 70382
Bellevue, WA 98007
(206) 644-2442

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Transportation Planning Software

Geographic Data Processing and Display

APPLICATION MapScan: Microcomputer Mapping

DEVELOPER Claritas Partners, L.P.

SUMMARY MapScan consists of data preparation and mapping utilities to group areas by data classes and produce maps which display the classes using shades, symbols, or class numbers. Data classes may be n-tiles (e.g., quartiles) or defined by user-input ranges. Areas may be annotated with data values and geographic names and codes. Area boundaries may be displayed in different widths and colors based on levels of geography and/or data values. Maps also include a legend, title, footer, and other user-input text.

Maps may be produced at the ADI, DMA, State, County, ZIP, and Tract level or for custom geography such as transportation zones. Selection and scaling options provide the ability to automatically plot the entire map or a selected portion at a user-defined scale or fitted to any pre-printed base map which includes major roads, rivers, and other geographical features.

Input data for MapScan includes the cartographic database and a data file which may contain cross-reference geographic codes, Census data, and user data. MapScan is compatible with DemoScan, which provides utilities for reporting and processing Census and user data.

ENVIRONMENT MapScan is implemented in UCSD Pascal and operational on the Apple II (64K RAM), and the IBM PC (128K RAM), with a printer and a Hewlett-Packard plotter. Three disk drives are required for the Apple configuration, and two are needed for the IBM. Additional disk storage may be required depending on the geographic areas and amount of data for mapping.

AVAILABILITY For sale from contact below.

CONTACT Victoria Grossack
Claritas Partners, L.P.
201 N. Union St.
Alexandria, VA 22314
(703) 683-8300

microcomputers in transportation

Transportation Planning Software

Geographic Data Processing and Display

APPLICATION	2-D: Address Matching, Geographic Retrieval and DIME Maintenance
DEVELOPERS	Center for Urban Analysis, in collaboration with Census Bureau staff, with funding by UMTA, Office of Methods and Support
SUMMARY	<p>The 2-D system provides capabilities to display, query, and maintain a DIME-based digital map. The system can retrieve geographic data by matching street addresses and street intersections with the map. GBF/DIME records are organized in a structure based on the mathematical representation of a map. The system incorporates separate "geometric" and "descriptive" records for each node, segment and block. Modifications can be made without system degradation or file rebuilding. Data for the 2-D system may be initialized directly from Census Bureau GBF/DIME records.</p> <p>The system provides interactive graphic display, retrieval and complete editing of portions of the map. Address matching is based on a Soundex coding scheme that enables imperfectly spelled names to be retrieved easily.</p>
ENVIRONMENT	Programs are written in Pascal. 2-D is implemented on 16/32 bit MC68000, multi-user Forward FT-3000 "Gateway Workstation", with 80MB disk and 1.5M RAM, using the XENIX operating system. Program operation requires 512K RAM.
STATUS	Version 4.1 is being used by Santa Clara County; Version 4.2 is under development. Previous versions have been transferred to 68000-based systems at the Baltimore Regional Planning Council and the Statistical Research Division of the Census Bureau.
AVAILABILITY	Fee-for-service basis for installation and training.
CONTACT	Frank Lockfeld Director-Center for Urban Analysis County of Santa Clara 70 West Hedding Street San Jose, CA 95110 (408) 299-3285

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Transportation Planning Software

Geographic Data Processing and Display

APPLICATION PCMAP

DEVELOPER Criterion Inc.

SUMMARY PCMAP is a menu-driven thematic mapping program for use with the IBM Personal Computer. The program allows mapping of any geographic area (such as census tracts), linear features (such as freeways), and point-specific items (such as hospital locations).

Only four commands are required to generate a basic map with PCMAP. More sophisticated maps also can be created quickly and efficiently. The user exercises various map options by "filling in the blanks" in an on-screen form.

For transportation planners, PCMAP provides an excellent tool for data summary and reporting. Applications include:

- evaluation of characteristics at the residence-end and work-end for population, housing, and employment,
- analysis of conditions for journey-to-work trip lengths, mode, vehicle use, carpooling, and travel times.

PCMAP can also be used to produce successive overlay maps for transit planning. Selected transit-related variables such as car ownership, income, and percentages of elderly and young population can be plotted on transparent map sheets to be overlaid with each other and with the street network as a base. In this way, potential areas of high transit patronage can be identified for use in evaluating alternative routes.

ENVIRONMENT IBM PC with 256K and color graphics card. Outputs to HP7470 or HP 7475 or CALCOMP M84 plotters. Also produces output for most dot-matrix printers.

STATUS PCMAP is used by a number of agencies and private firms, including the Association of Central Oklahoma Governments.

AVAILABILITY PCMAP software \$895.00. Boundary files also available.

CONTACT Bob Evatt
Manager
Criterion Inc.
11100 Roselle Street, Suite A
San Diego, CA 92121
(619) 455-0162

microcomputers in transportation

Transportation Planning Software

Network Encoding and Plotting

APPLICATION NED: Network Editing and Display

DEVELOPER Center for Urban Analysis

SUMMARY NED was derived from the Michigan Department of Transportation program NETEDIT. It enables road and transit networks to be created, annotated, edited, displayed and analyzed through interactive graphics. Loaded networks may be displayed with directional volumes shown as link annotation, link colors or widths. NED is currently integrated with the TRANPLAN suite of transportation planning programs [see application description for TRANPLAN].

Changes made interactively with NED may be processed with programs from TRANPLAN. The Network Editing and Display program allows changes in networks to be quickly modeled and evaluated.

ENVIRONMENT The network editing programs are written in FORTRAN(F77). NED is implemented on a 16/32-bit MC68000, multi-user Forward FT-3000 "Gateway Workstation", with 80MB disk and 1.5M RAM, using the XENIX operating system. A Seiko Gr-1104 raster color terminal with digitizing tablet and puck interface is used as the display device. Approximately 1M RAM is required for program operations. An IBM PC/XT/AT application is under investigation (December 1984). The display sub-programs assume graphics terminals with Tektronix Plot-10 compatibility; Plot-10 itself is not required.

STATUS Version 1.0 is being used by Santa Clara County; Version 1.1 is under development.

AVAILABILITY Available on a cost basis.

CONTACT Frank Lockfeld
Director-Center for Urban Analysis
County of Santa Clara
70 West Hedding Street
San Jose, CA 95110
(408) 299-3285

microcomputers in transportation

Transportation Planning Software

Network Encoding and Plotting

APPLICATION TMPLLOT: Graphics Enhancement for TMODEL

DEVELOPER Professional Solutions, Inc., Beaverton, OR

SUMMARY TMPLLOT plots a TMODEL network on the monitor screen and dot matrix printer. Attribute values such as volume, capacity, v/c ratio, design speed, operating speed and node delay are graphically represented by link width and node diameter. Select zone information may also be plotted for specific development analysis.

 TMPLLOT can display the entire study area or can "zoom" or "window" in for finer area detail. The window area, scale, and attribute value limits are all user-definable for maximum flexibility.

 TMPLLOT shares the same easy entry/edit and menu-driven features as TMODEL [described elsewhere in this document].

ENVIRONMENT Versions are available for Apple II/II+/IIe/IIc and IBM PC (PC-DOS). The IBM PC requires an IBM-compatible graphics adaptor. A graphics compatible dot-matrix printer is required.

STATUS The TMODEL System has been used in Washington County, Oregon, and in over 25 states and provinces including California, Colorado, Florida, Maryland, Massachusetts, Missouri, Oregon, Pennsylvania, Tennessee, Texas, Utah, Washington, and Greece.

AVAILABILITY For sale from contact below for \$250.00. Sample version (with reduced dimensions) available for \$30.00.

CONTACT Robert M. Schull
 Professional Solutions, Inc.
 3765 NW 173rd Place
 Beaverton, OR 97006
 (503) 645-4422

microcomputers in transportation

Transportation Planning Software

Network Encoding and Plotting

- APPLICATION TMNET-DB: Lotus 1-2-3™ Template for TMODEL
- DEVELOPER KELLERCO, McLean, VA
- SUMMARY TMNET-DB provides high-speed network data input-output analysis for TMODEL™, using Lotus 1-2-3™. This template permits input of link group, roadway type and node coordinates upon interactive prompts from 1-2-3's macro command language. All other variables, if they are constant for each link category, are automatically calculated and output into the database in TMODEL format. These include capacity, distance and free-flow speeds as established by user-selected look-up tables. Manual edits or overrides can be easily typed in using 1-2-3's edit mode. Data entry time can be reduced by 75% or more.
- TMODEL™ output network files can also be loaded into the template, which then computes link specific speeds, vehicle miles and hours and volume/capacity ratios. The database in Lotus 1-2-3™ can then be used to compute summary statistics of performance by link group as desired by the user.
- ENVIRONMENT The current configuration requires any computer which runs Lotus 1-2-3™ and TMODEL, and has 384K RAM. Network processing is partially limited when the number of links exceeds 600 in 1-2-3, unless 640K is installed. By combining 1-2-3 output files, there is no actual limit, except combined database statistics for all files would require additional processing.
- STATUS TMNET-DB has been used in New York City and Montgomery County, Maryland. Current version of the template is designed for more advanced Lotus 1-2-3™ users. Fully documented and menu-driven version is under development.
- AVAILABILITY For sale from contact below.
- CONTACT Edward T. Herlihy
Senior Systems Analyst
KELLERCO
Two Tysons Corner Center
McLean, VA 22102
(703) 827-9020

™TMODEL is a product of Professional Solutions, Inc.

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microcomputers in transportation

Transportation Planning Software

Impact Estimation

APPLICATION	ROADWAY AQ: Roadway Design Air Quality Impact Analysis INTERSECTION AQ: Intersection Design Air Quality Impact Analysis
DEVELOPER	Charles Cook, Berkshire County (MA) Regional Planning Commission, with modifications by Cambridge Systematics, Inc., Cambridge, MA.
SUMMARY	<p>ROADWAY AQ is a VisiCalc™ template which can be used to estimate the air quality impacts of a roadway's design. Predictions for three kinds of emissions--carbon monoxide, hydrocarbons and nitrogen oxide--are provided for both a base year and user-selected future years. Design parameters include the number and width of travel lanes, projected travel volumes, design capacities, roadside characteristics and roadway type. Current emission rate tables are provided, but may be updated by the user.</p> <p>INTERSECTION AQ is a similar template which examines air quality impacts of alternative intersection designs.</p>
ENVIRONMENT	Operates on the Apple II, Apple III and IBM PC microcomputers. One disk drive, 64K RAM and the VisiCalc™ spreadsheet software are required. A version for the IBM PC and Lotus 1-2-3™ is also available.
AVAILABILITY	Available from the contact below.
CONTACT	MTP Support Center, DTS-63 Transportation Systems Center Kendall Square Cambridge, MA 02142 (617) 494-2247

™VisiCalc is a trademark of VisiCorp.

™Lotus 1-2-3 is a trademark of Lotus Development Corp.

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Transportation Planning Software

Impact Estimation

APPLICATION	Computation of Accident Rates and Economic Evaluation of Proposed Accident Countermeasures
DEVELOPER	Joseph L. Schofer, Midwest System Sciences, Inc.
SUMMARY	<p>This program facilitates analysis and evaluation of proposed highway accident-reducing projects. Screen-oriented and command-driven, it presents the user with a series of input forms emulating hand computation procedures. The user specifies attributes of the location and enters up to eight years of accident records. The program computes accident rates and permits the user to describe a countermeasure, its capital, operating, and maintenance costs, and its expected contribution to reducing accidents by severity class.</p> <p>The program then predicts expected accident experience based on 1) user-specified annual traffic growth rate or horizon year volume; 2) assumptions that the historic accident rates prevail in the absence of the countermeasure, and that user-specified accident reductions due to the countermeasure occur.</p> <p>Given user-specified average accident costs by severity class, the program computes present and annualized project costs, accident reduction benefits, net worth, and benefits/cost ratio. Reports summarizing all inputs and results may be printed.</p>
ENVIRONMENT	The program requires an IBM PC with at least 64K RAM, one DSDD diskette drive, and MS-DOS.
STATUS	The program has been in use at the District 1 office of the Illinois DOT since August, 1984.
AVAILABILITY	For sale by contact.
CONTACT	Midwest System Sciences 325 Sheridan Road Wilmette, IL 60091

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Transportation Planning Software

Impact Estimation

APPLICATION TRANSTSM: Transit Ridership, Energy Analysis

DEVELOPERS New York State Department of Transportation

SUMMARY TRANSTSM program calculates ridership changes and energy savings associated with eleven transit-related TSM actions. Microcomputer version of manual worksheets in UMTA report, "Energy Impacts of Transportation Systems Management Actions."

ENVIRONMENT Apple II or II+, 48K RAM, one disk drive, and Applesoft BASIC.

STATUS Operational.

AVAILABILITY Free from contact.

CONTACT Ronald W. Tweedie
Director, Data Services Bureau
New York State Department of Transportation
1220 Washington Avenue
State Campus, Building 4
Albany, NY 12232

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Transportation Planning Software

Impact Estimation

APPLICATION PROLEV: Project Level Energy Analysis

DEVELOPERS New York State Department of Transportation

SUMMARY Program PROLEV calculates the direct energy due to vehicle flow and indirect energy associated with construction actions on the specific project segment being analysed. Methodology based upon program and procedures developed by CALTRANS and noted in "Energy Requirements for Transportation Systems" (NCHRP Project 20-7, Task 8 or as FHWA workshop notes with the same title). [Editor's Note: see also "HICOND" in this section.]

ENVIRONMENT Apple II or II+, 48K RAM, one disk drive, and Apple BASIC.

STATUS Operational.

AVAILABILITY Free from contact.

CONTACT Ronald W. Tweedie
Director, Data Services Bureau
New York State Department of Transportation
1220 Washington Avenue
State Campus, Building 4
Albany, NY 12232

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Transportation Planning Software

Impact Estimation

APPLICATION HICOND: Project Level Highway Condition Energy Analysis

DEVELOPERS New York State Department of Transportation

SUMMARY Program PROLEV.HICOND calculates energy impacts associated with pavement rehabilitation improvements. Program works in conjunction with PROLEV data.

ENVIRONMENT Apple II or II+, 48K RAM, one disk drive, and Apple BASIC

STATUS Operational.

AVAILABILITY Free from contact.

CONTACT Ronald W. Tweedie
Director, Data Services Bureau
New York State Department of Transportation
1220 Washington Avenue
State Campus, Building 4
Albany, NY 12232

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Transportation Planning Software

Highway Construction and Maintenance

APPLICATION HIM: Highway Impact Analysis/Modeling

DEVELOPER Infocomp Systems, Inc.

SUMMARY The Highway Impact System consists of file maintenance and reporting functions which permit planners to store information about the current condition of a network, commodities being transported, and vehicles transporting them. This information combines with site-specific information collected on interview to serve as input to processing programs which calculate the level of stress being generated by either an actual or projected transportation scenario. Stress levels are compared to each segment's ability to absorb stress. In this way, planners can identify and prioritize areas of concern, in addition to determining their causes and a preliminary indication of the required level of response.

System reports provide output in summary and detail for road segments, vehicle types, commodities, and time of year. Final output provides an indicator of the structural strength of roadway required to support the level of traffic indicated. The system may be run for user-defined subsets of the overall road network, vehicle fleet, and commodity inventory.

ENVIRONMENT HIM runs on the Hewlett-Packard HP3000 using the standard operating system and a report generator which is part of the software. The system requires approximately 20MB disk storage for all programs and data bases. The system requires a single terminal and a 132-column dot matrix printer.

STATUS Installed at South Dakota DOT, Pierre, South Dakota.

AVAILABILITY The system is offered either for sale or on a service bureau basis. In both cases, contact below.

CONTACT Kenneth M. Kennard
Infocomp Systems, Inc.
2340 Robinson, Suite 110
Colorado Springs, CO 80904
(303) 630-8345

microcomputers in transportation

Transportation Planning Software

Highway Construction and Maintenance

APPLICATION PMS: Flexible Pavement Management System

DEVELOPER Caltrans, in cooperation with Zen Jao, FHWA Region 9

SPONSOR FHWA, Region 9

SUMMARY PMS is an adaption for microcomputer of the Caltrans Flexible Pavement Management System. The program furnishes an inventory and strategy system for evaluating pavement distress and plots strategies and priorities for rehabilitation. PMS uses simplified decision trees to analyze distress and assign repair strategies. The program determines the dominant strategy for rehabilitation of each segment, figures out the repair costs and assigns priority based on the ADT, ride, and compatible repair strategy. The user can change all the trigger values on the decision trees, the cost parameters, and the priority rankings.

ENVIRONMENT PMS is available for Radio Shack microcomputers (Models 2, 12, and 16), and for the IBM PC and compatibles. On Radio Shack Model 2, the TRSDOS 2.0A operating system is required; for Models 12 and 16, TRSDOS 4.1 or 4.2 is needed. The IBM PC version operates under MS-DOS 2.0

STATUS Operational.

AVAILABILITY Available from the contact below.

CONTACT STEAM Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

microcomputers in transportation

Transportation Planning Software

Highway Construction and Maintenance

APPLICATION Low-Volume Road Maintenance/Rehabilitation Decision-Making

DEVELOPER West Virginia University, Department of Civil Engineering

SPONSOR U.S. Forest Service, Northeastern Forest Experiment Station

SUMMARY Program has been developed to assist in making a preliminary determination of the feasibility of upgrading/rehabilitating unpaved low-volume road links. Program is self-guiding in that user is asked various questions which need to be considered when reviewing a road for potential upgrading. User simply makes "YES/NO" responses to questions about road usage, road surfacing, drainage, geometric design, soils, bridges and other factors of this nature. Output is a list of those road links in a jurisdiction which are candidates for upgrading or rehabilitation.

ENVIRONMENT Program written in Applesoft BASIC. Operates on 48K Apple II microcomputer under the DOS operating system. One disk drive required. IBM PC version is also available.

STATUS Program has been in use for approximately one year by Monongahela National Forest, Elkins, West Virginia.

AVAILABILITY Program has been developed for roads in the Appalachian region. Transferability to other geographic areas may be affected by differences in physical environment. Available at cost in source listing form or on diskette.

CONTACT Ronald W. Eck, P.E.
Department of Civil Engineering
West Virginia University
PO Box 6101
Morgantown, WV 26506-6101
(304) 293-5580

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Transportation Planning Software

Highway Construction and Maintenance

APPLICATION Rail-Highway Grade Crossing Resource Allocation

DEVELOPER West Virginia University, Department of Civil Engineering

SPONSOR Based on research sponsored by the West Virginia Department of Highways, in cooperation with the Federal Highway Administration

SUMMARY The U.S. Department of Transportation's Rail-Highway Grade Crossing Resource Allocation Model assists agencies in setting priorities for rail-highway grade crossing improvement programs. This optimization model uses data about the physical and operational characteristics of each crossing from the National Railroad Highway Grade Crossing Inventory and accident data from the Railroad Accident/Incident Reporting System. Originally written in FORTRAN, the program has been adapted to the Applesoft BASIC language for use on the microcomputer. Transfer of data from magnetic tape to diskette can be accomplished using a commercial communications software package with a micromodem.

ENVIRONMENT Program written in Applesoft BASIC. Operates on 48K Apple II Computer under the DOS operating system. One disk drive required. Procedure requires at least three diskettes (one for the resource allocation program, one for output, and at least one for the original data, depending on magnitude of accident and inventory data in the jurisdiction of interest).

STATUS In use at West Virginia University.

AVAILABILITY Copies of the resource allocation program (one diskette), sample data for West Virginia (two diskettes), sample output (one diskette) and limited documentation are available for \$25.00 per set to cover expenses. Please make checks payable to "Department of Civil Engineering Fund".

CONTACT Ronald W. Eck, P.E.
Department of Civil Engineering
West Virginia University
PO Box 6101
Morgantown, WV 26506-6101
(304) 293-5580

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Transportation Planning Software

Highway Construction and Maintenance

APPLICATION HC20 and HC30: Hydrocarbon Emissions Impacts of Roadway Construction Projects

DEVELOPER Transportation Planning Division, Broward County Office of Planning, Fort Lauderdale, FL

SUMMARY These programs were developed to project hydrocarbon emissions resulting from new roadway construction and roadway widening projects for Broward County's Transportation Control Plan for Air Quality. HC20 is based on all-or-nothing traffic assignment to a facility. HC30 incorporates capacity restraint assumptions for assignment of traffic. The programs utilize MOBILE3 emission factors and default parameters. These factors and parameters can be altered for a specific area by the user.

Required inputs include project name and length, before and after facility types, area type, and traffic volumes by year of analysis. Program outputs consist of before and after average speeds and annual hydrocarbon emissions, as well as annual emission credits.

ENVIRONMENT Hardware: Digital Equipment Corporation PDP 11/44 or Micro 1123
Operating System: RSX11M-Plus Version 2.1
Software: FORTRAN-77

STATUS Operational. Documentation in development.

AVAILABILITY Source and execute files are available free from contact.

CONTACT Scott P. Seeburger
Broward County Transportation Planning Division
115 S. Andrews Avenue
Fort Lauderdale, FL 33301
(305) 357-6608

TRAFFIC ENGINEERING

SOFTWARE

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Traffic Engineering Software

General Traffic Operations

APPLICATION TEAPAC - Traffic Engineering Application Package

DEVELOPER Barton-Aschman Associates, Inc.

SUMMARY TEAPAC is a comprehensive, fully-integrated system of traffic engineering programs as follows:

Traffic Operations

SIGNAL: Signalized Intersection Analysis and Design

NOSTOP: Bandwidth Progression

PRETRANSYT: Easy Input and Time Space Plot for TRANSYT

ATGRADE: Approach Capacity

TULC: Turn Lane Capacity

RAMP: Ramp Capacity

WEAVE: Weaving Capacity

Site Traffic

TUBES: Machine Counts

URNS: Turning Count Analysis

SITE: Generation, Distribution & Assignment

Survey Analysis

TED: TEAPAC Editor and Data Manager

DTABS: Dynamic Tabulation of Survey Data

PLOT: Curve/Histograms

SURVEY: Real Time Data Collection and Analysis

Air Quality

COERP: CO Emission Rates Estimation

HIWAY I/II: Dispersion Modeling

CALINE3: California Dispersion Model

Transit

SCHEDULE: Bus Schedule Preparation

ENVIRONMENT 64K CP/M-80, including IBM PC, XT, and AT with CP/M-80.

STATUS Used by cities, planning agencies and consultants nationwide.
List available from contact on request.

AVAILABILITY License arrangements made by contact below.

CONTACT Dennis W. Strong, P.E.
Barton-Aschman Associates, Inc.
820 Davis Street
Evanston, IL 60201
(312) 491-1000

microcomputers in transportation

Traffic Engineering Software

General Traffic Operations

APPLICATION	ATEMS: Traffic Engineering Programs
DEVELOPERS	Mohle, Grover & Associates (MGA)
SUMMARY	<p>The ATEMS (Automated Traffic Engineering Management System) programs are designed to increase the productivity of the traffic engineering function by providing powerful traffic engineering related analysis capabilities in a simplified form and at a low price. Software is furnished under license agreement. The ATEMS programs include:</p> <p>CAPSSI (Comprehensive Analysis Program for Single Signalized Intersections) Based on delay per new Highway Capacity Manual</p> <p>PASSER (Progression Analysis and Signal System Evaluation Routine) With time-space diagrams.</p> <p>TRANSYT 7 PLUS (Traffic Network Study Tool)</p> <p>SPEED (Speed Data Reduction Program)</p> <p>TARP (Traffic Accident Report Program) With collision diagram plotting and high accident location surveillance</p> <p>COUNT (Traffic Count Reduction Program)</p> <p>TCD Inventory Program (Available for SIGNS, CURBS, MARKINGS, SIGNALS, and LIGHTING)</p>
ENVIRONMENT	CP/M or MS-DOS operating systems, dual floppy disk drives and 64K of RAM.
STATUS	Operational in the following cities: Beverly Hills, Big Bear Lake, Chino, Claremont, Compton, Cupertino, Cypress, Downey, Emeryville, Escondido, Gardena, Huntington Beach, Irvine, Oakland, Orange, San Bernardino, Santa Clara, Santa Monica, West Covina and Whittier, California; Arizona State University, Tempe, Arizona; Fort Collins and Lakewood, Colorado; Jersey City, New Jersey; Dallas, Texas; Wickliffe, Ohio; and Richland, Washington.
AVAILABILITY	For sale by contact.
CONTACT	Albert L. Grover Executive Vice-President MGA 901 East Imperial Highway, Suite A La Habra, CA 90631 (714) 738-3471

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Traffic Engineering Software

General Traffic Operations

APPLICATION Traffic Engineering Programs

DEVELOPER Bather Belrose Boje, Inc.

SUMMARY VOLTAPE/VOLPLOT - An interactive traffic-volume count data analysis program
SIGART/TIMESPACE II - An arterial signal timing program
PASSER/PASSER DATA LOADER - An interactive multiphase arterial signal timing program
SIGRID - A grid signal timing program
TRANSYT/7 and TRANSYT/7F - General purpose arterial and grid signal timing plan development and analysis program
TIMESPACE III - A general purpose timing space diagram plotting program
CMA - An interactive, TRB 212-based, signalized intersection evaluation program
INTERCALC - An interactive Webster-based multiphase signalized intersection development and analysis program
ICAPACITY - An interactive HCM-based signalized intersection approach capacity analysis program

ENVIRONMENT All programs operate on CP/M-80, MS-DOS or PC-DOS-based micro-computer systems. CP/M systems require 50K of RAM; MS-DOS and PC-DOS systems require 128K of RAM. At least one 180K disk and a 132-column printer are required.

STATUS All programs are fully operational. Used by Traffic Division, City of Minneapolis, Minnesota; Sioux Falls, South Dakota; and Lakewood, Colorado.

AVAILABILITY Available on a license agreement basis from contact.

CONTACT William M. Belrose
Bather Belrose Boje, Inc.
7101 York Avenue South
Minneapolis, MN 55435
(612) 921-3303

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Traffic Engineering Software

General Traffic Operations

APPLICATION	NCAP: Intersection Capacity Analysis
DEVELOPER	Professional Solutions, Inc., Beaverton, OR
SUMMARY	<p>NCAP Intersection Capacity Analysis provides three alternative methods for analyzing intersection capacity as described in TRB 212 and updated to reflect proposed chapters for the 1985 Highway Capacity Manual.</p> <p>NCAP features easy menu operation and data entry similar to TMODEL (described elsewhere in this document). NCAP will read TMODEL turning movement files for minimum data entry requirements.</p> <p>Complete tables are included from the proposed 1985 Highway Capacity Manual, with no need for manual lookups. An instant recalculation feature is available, permitting you to change one or more intersection characteristics with instantaneous capacity recalculation.</p> <p>Intersection data can be analyzed with the Planning, Operations & Design, or Unsignalized Intersection Methods with no data reentry of shared characteristics. Outputs are similar to standard recognized worksheets for ease of comparison and checking.</p>
ENVIRONMENT	Versions are available for Apple II/II+/IIe/IIc, IBM PC (PC-DOS), MS-DOS, (Wang PC, HP150, etc.), and CP/M-80 (40 formats).
STATUS	NCAP has been used in Washington County, Oregon, and other locations.
AVAILABILITY	For sale from contact below for \$295.00
CONTACT	Robert M. Shull Professional Solutions, Inc. 3765 NW 173rd Place Beaverton, OR 97006 (503) 645-4422

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Traffic Engineering Software

General Traffic Operations

APPLICATION Intersection Level-of-Service Analysis - Planning

DEVELOPER Old Colony Planning Council

SUMMARY The Old Colony Planning Council has developed a program which will compute the capacity of an intersection using the Critical Movement Analysis method for "Planning" described in TRB Circular 212. The program calculates the LOS for at-grade, two phase signalized intersections. Required as inputs are peak hour turning movement volumes; number of lanes; and the G/C ratio. All other inputs can be calculated on the basis of these. The program can be applied to existing conditions to determine whether or not problems might exist with the geometry or signalization. Alternative improvements can be tested to achieve a design LOS through adjustments to lane geometry and signal timing.

ENVIRONMENT Apple II+, 48K, Applesoft BASIC.

STATUS Operational.

AVAILABILITY Available for free from the contact. Please send a 5 1/4-inch dual density, soft sector diskette.

CONTACT Pasquale Ciaramella
Old Colony Planning Council
Nine Belmont Street
Brockton, MA 02401
(617) 583-1833

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Traffic Engineering Software

General Traffic Operations

APPLICATION Intersection Level-of-Service Analysis - Operations and Design

DEVELOPER Transportation Planning Division, Broward County Office of Planning, Fort Lauderdale, Florida

SUMMARY The program was developed following the Critical Movement Analysis method for Operations and Design described in TRB Circular 212. The program calculates intersection LOS, Saturation and Critical Volumes for at-grade, signalized intersections with up to eight phases. A "left-turn check" is performed on those intersection approaches without an exclusive left-turn phase.

All required inputs, except signal timing, may be retrieved from a local file. The file interface may be overridden so that any intersection may be analyzed through manual inputs. Required inputs include intersection geometry, hourly turning movements and signal phasing. The user can either default values or enter area-specific data for lane utilization, truck/bus factor, local bus factor, pedestrians, and minimum left-turns per cycle. The program also includes a recalculation function so that alternative intersection designs may be tested.

ENVIRONMENT Hardware: Digital Equipment Corp. PDP 11/44 or Micro 1123
Operating System: RSX11M-Plus Version 2.1
Software: FORTRAN-77 and forms management subroutines

STATUS Operational; documentation in development.

AVAILABILITY Source and execute files are available free from contact.

CONTACT Scott P. Seeburger or Jeff Weidner
Broward County Transportation Planning Division
115 S. Andrews Avenue
Fort Lauderdale, FL 33301
(305) 357-6608

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Traffic Engineering Software

General Traffic Operations

APPLICATION	Computation of Accident Rates and Economic Evaluation of Proposed Accident Countermeasures
DEVELOPER	Joseph L. Schofer, Midwest Systems Sciences, Inc.
SUMMARY	<p>This program facilitates efficient and routine analysis and evaluation of proposed highway accident-reducing projects. Screen-oriented and command-driven, it presents the user with a series of input forms emulating hand computation procedures. The user specifies attributes of the proposed improvement location and enters up to eight years of accident reports. The program computes accident rates and permits the user to describe a countermeasure, its capital, operating, and maintenance costs, and its expected contribution to reducing accidents by severity class.</p> <p>The program then predicts expected accident experience over the project time horizon based on (1) user-specified annual traffic growth rate or horizon year volume; (2) assumptions that the historic accident rates prevail in the absence of the countermeasure and that user-specified accident reductions due to the countermeasure occur.</p> <p>Given user-specified average accident costs by severity class, the program computes present and annualized project costs, accident reduction benefits, net worth, and benefit/cost ratio. At the user's option, reports summarizing all inputs and results may be printed.</p>
ENVIRONMENT	The program requires an IBM PC with at least 64K RAM, one DSDD diskette drive, and MS-DOS.
STATUS	The program is operational and has been tested for one year in training environments. It is in use at the District 1 office of the Illinois Department of Transportation.
AVAILABILITY	For sale by contact.
CONTACT	Midwest System Sciences 325 Sheridan Road Wilmette, IL 60091

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Traffic Engineering Software

General Traffic Operations

APPLICATION COUNT1

DEVELOPER Carl Shea, FHWA

SPONSOR FHWA, Office of Highway Planning

SUMMARY COUNT1 is a program written in BASIC which computes the sample sizes for the estimation of regional vehicle miles traveled (VMT). The program implements those sections of the Guide to Urban Traffic Volume Counting (FHWA Report FHWA/PL/81/019, September 1981) which concern the development of an integrated traffic counting program for the estimation of regional VMT. From input factors such as the numbers and types of highways to be counted, estimated volumes and errors, and desired precision, the program produces the numbers of samples needed for each category.

ENVIRONMENT Operates on the IBM PC and compatibles under MS-DOS 1.1 or 2.0.

AVAILABLE Available from contact below.

CONTACT STEAM Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

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Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION	TMC: Turning Movement Count Analysis Program
DEVELOPER	Timelapse, Inc.
SUMMARY	<p>The TMC Program enables you to analyze data from the TMC/48, a microprocessor-based turning movement counter. The TMC Program totals volumes by five or 15-minute intervals for 16 distinct movements. Each direction--North, South, East, West--includes four movements: through traffic, right turn, left turn, and a special category, such as pedestrians, which may be specified by the user. Data collected at more than one intersection can be separated and analyzed as individual locations.</p> <p>The TMC Program enables you to examine and edit data from the TMC/48, merge data records, save and retrieve data disk files and print turning movement reports. For data recorded by 15-minute intervals, a peak period analysis can be performed which includes calculating peak hour factors and the percentage of turning vehicles.</p>
ENVIRONMENT	The TMC Program reads the TMC/48 through an RS232 interface manufactured by Timelapse. Computer requirements are a MS-DOS or CP/M-based system with 64K RAM, one disk drive (90K minimum) and a 132-column printer. Apple systems require a CP/M add-on card. Computers such as Apple and Radio Shack must be upgraded to provide CP/M operating system.
STATUS	The TMC Program has been operational since July 1982. It is being used in over 250 city and county traffic engineering departments.
AVAILABILITY	The TMC Program is available commercially through Timelapse or one of our regional representatives. Call the number below for the representative in your area.
CONTACT	Roy M. White Timelapse, Inc. 9025B 131st Place N. Largo, FL 33543 (813) 585-4230

microcomputers in transportation

Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION Reduction and Analysis of Punched Tape Mechanical Traffic Counts

DEVELOPER Traffic Division, Public Works Department--County of Tulare, CA

SUMMARY Raw traffic counts, read directly from punched tape or entered manually, are summarized as an average daily traffic count. Hourly volumes are listed both numerically and graphically by the date and day of week. The 24 hourly volumes are automatically adjusted by previously determined factors for day of week and month of year variations before being totaled. The final sum is adjusted to accepted rounding standards. Other program provisions include comments on location, counter number, road width and condition, etc.

ENVIRONMENT Technical Systems Consultants (TSC)
Flex DOS
Written in TSC EXTENDED BASIC language.

STATUS Operational. Program being converted to run on the IBM PC.

AVAILABILITY Software within public domain. Program and documentation available from contact.

CONTACT Richard Webb
Assistant Traffic Engineer
Tulare County Public Works Department
Room 10, County Civic Center
Visalia, CA 93291
(209) 733-6654

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Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION Reduction and Analysis of Spot Speed Survey Field Data

DEVELOPER Traffic Division, Public Works Department--County of Tulare, CA

SUMMARY Vehicle speed samples, along with other pertinent field data, are summarized onto a print-out which provides both a numerical and graphical representation. Significant characteristics of the study, such as 85th percentile, 10 MPH pace, cumulative number and percentage, average speed, etc., are summarized for passenger vehicles, trucks and buses, and all vehicles. Other information, including existing speed limits, ADT, road conditions, etc., may also be listed on the form.

ENVIRONMENT Technical Systems Consultants (TSC)
Flex DOS
Written in TSC EXTENDED BASIC language.

STATUS Operational. Program being converted to run on the IBM PC.

AVAILABILITY Software within public domain. Program and documentation available from contact.

CONTACT Richard Webb
Assistant Traffic Engineer
Tulare County Public Works Department
Room 10, County Civic Center
Visalia, CA 93291
(209) 733-6654

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Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION Reduction of Truck Counts, Classified by the Number of Axles,
Into a Standard Traffic Index

DEVELOPER Traffic Division, Public Works Department--County of Tulare, CA

SUMMARY Present one-way classified truck counts, ADT, peak-hour, annual
expansion rate and other factors are used by this program to
produce a 10- and 20-year Traffic Index based on previously
determined equivalent axle load constants. A worksheet showing
all calculations and results is provided, along with a select-
able number of memorandums which list only the pertinent data.

ENVIRONMENT Technical Systems Consultants (TSC)
Flex DOS
Written in TSC EXTENDED BASIC language.

STATUS Operational. Program being converted to run on the IBM PC.

AVAILABILITY Software within public domain. Program and documentation avail-
able from contact.

CONTACT Richard Webb
Assistant Traffic Engineer
Tulare County Public Works Department
Room 10, County Civic Center
Visalia, CA 93291
(209) 733-6654

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Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION Turning Movement Counts and Signal Warrant Studies

DEVELOPER James D. Schroll, Anne Arundel County (Maryland) Department of Public Works

SUMMARY The program uses VisiCalc™ templates to collate and analyze turning movement volumes and approach volumes for signal warrant studies. TMC15 is a template which collates and analyzes (row and column totals, maximum and average volumes) turning movement volumes gathered in 15-minute increments. WARRANTS is a template which analyzes hourly approach volumes to determine if signal warrants are met (including accident, pedestrian, and reduced warrants). TMC>WARRANTS(N/S) and TMC>WARRANTS(E/W) perform the same functions as TMC15 and prepare hourly totals for direct imprinting on WARRANTS template (N/S for major road running north/south, E/W for east/west).

ENVIRONMENT Templates in use on Apple II+ with one 5 1/4-inch disk drive, 64K memory, and VisiCalc™.

AVAILABILITY Available free, with instructions from the contact below.

CONTACT STEAM Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

™VisiCalc is a trademark of VisiCorp.

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Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION	VOLPRO, SPEEDPRO, and AXLEPRO: Vehicle Counter Analysis
DEVELOPER	Timelapse, Inc.
SUMMARY	<p>VOLPRO enables the user to analyze data gathered with automatic counters. Data is transferred from the volume counter into the microcomputer either automatically or manually. One to six channel counts can be entered, with the allowable counting interval ranging from one minute to 60 minutes. The data can be examined on the computer screen, stored on a diskette, edited, summarized, printed, or merged with other data. With 60-minute intervals, the weekly reports include hourly and daily averages, and peak hour volumes. With 15-minute intervals, the weekly reports feature hourly totals and several peak hour calculations. Additional features include a signal warrant analysis and graphical plotting.</p> <p>SPEEDPRO and AXLEPRO enable the user to analyze speed or vehicle classification data gathered with automatic traffic recorders. The data can also be entered manually if collected using radar or other devices. Data is collected in up to 15 vehicle classifications (as recommended by FHWA) or in 15 speed bins in 2 mph or 5 mph ranges. The data can be entered in intervals from 1 to 60 minutes. It can be examined on the screen, edited, stored, summarized, printed, and graphically plotted. The reports also indicate totals of volume, mean speed, 85th percentile speed, etc.</p>
ENVIRONMENT	The software reads the volume recorder through a special interface unit, which varies depending upon the volume counter used. Data is accepted from counters manufactured by Leopold & Stevens, Streeter Amet, GK Instruments and others. Computer requirements are a MS-DOS or CP/M operating system with 64K RAM, one disk drive (90K minimum), and printer.
STATUS	In use at over 100 traffic engineering departments. List available on request.
AVAILABILITY	VOLPRO, SPEEDPRO and AXLEPRO are available commercially through Timelapse or one of our regional representatives. Call the number below for the representative in your area.
CONTACT	Roy M. White Timelapse, Inc. 9025B 131st Place N. Largo, FL 33543 (813) 585-4230

microcomputers in transportation

Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION SPEED SURVEY ^2

DEVELOPER J.P. Clement, P.E.

SUMMARY SPEED SURVEY ^2 is a full spot engineering and traffic survey program with: road data; collision rates; percent under and over the prima facie and posted speeds; percent under, at and over the pace speed; sample size; confidence level; variance; standard deviation; skewness; and kurtosis. The program generates graphs for which you control bar vs. line, percent vs. number, high to low vs. reverse vertical scale, graphic character and vertical range. The program source code in Microsoft BASIC is supplied so that the user may customize the program.

 SPEED SURVEY ^2 is menu-driven with full editing capability. The program inputs speed data and graphic options. The program outputs various speed plots, road data, accident rates, speed stats, and curve stats.

ENVIRONMENT IBM PC and compatibles, plus most CP/M systems. Requires 64K for 8-bit and 128K for 16-bit computers. One 5-1/4-inch floppy disk drive is required and a second floppy drive or a hard disk is desirable. An 80-column text printer is optional. Operates under MS-DOS, PC-DOS, CP/M-80 with MBASIC, BASIC 86, BASIC 80, BASICA, etc.

STATUS Operational in Thousand Oaks, California.

AVAILABILITY Disk or program listing and manual are available from the contact below.

CONTACT J.P. Clement, P.E.
 350 Spindlewood Avenue
 Camarillo, CA 93010

microcomputers in transportation

Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION Traffic Engineering Programs

DEVELOPER Bather Belrose Boje, Inc.

SUMMARY The SPEEDPLOT Data Collection and Analysis System, a combined portable, battery-operated computer system and programs, is available for spot speed measurement and analysis.

Vehicle speeds are field-measured using a measured distance and the timing capability of the portable computer. This procedure provides accurate data, is easy to set up and use, and eliminates the need for other types of speed measurement devices such as a radar speed meter.

The recorded speeds are then processed by the SPEEDPLOT analysis program and may be saved or printed. All standard speed analysis measures are provided, including "bell" and "S" curves, 50th and 85th percentiles, pace, speed range and sample size. A data analysis report and a summary narrative report are provided.

Programs are available separately or can be provided as integrated systems including programs and microcomputer equipment.

ENVIRONMENT The SPEEDPLOT analysis program operates on CP/M-80, MS-DOS or PC-DOS-based microcomputer systems. CP/M systems require 50K of RAM, MS-DOS and PC-DOS systems require 128K of RAM. At least one disk and an 80-column printer are required.

The SPEEDPLOT Data Collection and Analysis system consists of programs and a portable battery-operated computer. Systems are available based upon the HP110, DG1, Epson PX8 and others. Standard peripherals are available as system hardware options.

STATUS Used by Traffic Division, City of San Diego; Stockton, California (SPEEDPLOT).

AVAILABILITY Available on a license agreement basis from contact.

CONTACT William M. Belrose
Bather Belrose Boje, Inc.
7101 York Avenue South
Minneapolis, MN 55435
(612) 921-3303

microcomputers in transportation

Traffic Engineering Software

Field Data Collection and Analysis

APPLICATION COUNTS PLUS][, COUNTS PLUS][Enhancement

DEVELOPERS Al Butler; Transyt Corp., Tallahassee, FL (COUNTS PLUS)[]
James Bonneson; Henningson, Durham & Richardson, Omaha, NB
(COUNTS PLUS)[] Enhancement)

SUMMARY COUNTS PLUS)[] is a program which processes 24-hour mechanical
traffic counts with 15-minute subtotals (which may be cumulative) and evaluates signal warrants based on intersection geometry, approach speed, counts, and community size. The counts may be input manually or loaded from disk data files created by machine reader programs. COUNTS PLUS)[] can also perform multi-way stop warrants analysis.

The COUNTS PLUS)[] Enhancement incorporates a VisiCalc™ template into the COUNTS PLUS)[] program so that 8-hour counts can be extrapolated and used in place of 24-hour counts.

ENVIRONMENT Operates on the Apple II family of microcomputers with at least 48K RAM, two disk drives, and an 80-column printer. A digital keypad is recommended for inputting manual counts. The VisiCalc™ spreadsheet software is needed in order to use the COUNTS PLUS)[] Enhancement template; an Apple-compatible word processing program is also required for the Enhancement.

AVAILABLE Available from contact below.

CONTACT STEAM Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142

™VisiCalc is a trademark of VisiCorp.

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION POSIT: Program for Optimization of Signalized Intersection
Timing

DEVELOPER Hobih Chen

SUMMARY POSIT produces an optimal signal setting, including cycle time
and phasing pattern, that can minimize fuel consumption for an
isolated intersection. POST is highly user-friendly. The IBM
PC version is designed on window technology, and uses color.

ENVIRONMENT Runs on the IBM PC under MS DOS, and the Apple II under the
UCSD p-System.

STATUS Operational. The program is being used in over 30 universi-
ties (including MIT), consulting firms, and public agencies
(including the city of Milwaukee).

AVAILABILITY The program is available free of charge. Send \$15.00 to cover
copying costs and shipping and handling.

CONTACT Hobih Chen
Transportation Center
2011 Learned Hall
University of Kansas
Lawrence, KS 66045
(913) 864-5658

microcomputers in transportation

Traffic Engineering Software

Signal Timing Simulation and Optimization

PROJECT TRANSYT-7F: Traffic Signal Timing Optimization

DEVELOPER University of Florida Transportation Research Center (TRC)

SUMMARY TRANSYT-7F was developed by TRC for the Federal Highway Administration and is an "Americanized" version of the British TRANSYT-7 traffic signal timing optimization program. The program provides optimal signal timing plans which minimize stops, delay and fuel consumption, and can be used to time isolated intersections or coordinated arterial or network systems.

ENVIRONMENT IBM PC (or PC compatible) microcomputers with DOS 2.0 and 256K RAM. Two floppy disk drives and a 132-character printer are also required. An 8087 math coprocessor chip is recommended to speed execution.

STATUS Fully operational. In use by over 200 cities, states, and consultants nationwide.

AVAILABILITY The program and documentation are available through the STEAM Support Center for \$15.00.

CONTACT Toni Wilbur
 FHWA/HTO-23
 400 7th Street, SW
 Washington, DC 20590
 (202) 426-0411

 STEAM Support Center, DTS-63
 Transportation Systems Center
 Kendall Square
 Cambridge, MA 02142
 (617) 494-2247

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION TRANSYT 7F, PASSER II 80, PASSER III, TIMDIS 2, CARDED: Traffic Signal Coordination

DEVELOPER DKS Associates

SUMMARY These five programs together make a comprehensive package for designing and documenting traffic signal coordination plans. TRANSYT 7F is Release 3 from the FHWA, which includes a cycle length search, queue capacity check, and other enhancements. Run time on the IBM PC is 5 minutes per intersection for full optimization. PASSER II 80 and PASSER III (for diamond interchanges) are identical to the mainframe versions, the major feature being automatic phase sequence selection. TIMDIS 2 is a menu-driven program which allows the user to quickly and easily perform manual coordination designs by interactively varying offsets, splits, phase sequences, speed, cycle length, etc., and observing the effects on both a time location diagram displayed on the computer screen and a detailed time-space diagram printed on any ordinary printer. CARDED is a menu-driven special screen editor which effectively puts the data coding form on the computer screen, complete with column markers, headings, and explanatory information, thereby greatly simplifying the task of creating and editing data input files for TRANSYT and PASSER, or any other program requiring 80-column card image input files.

ENVIRONMENT All programs operate on the IBM PC and compatibles with 256K, DOS 2.0 or 2.1, 8087 math coprocessor (for TRANSYT), and 132-column printer. Also available for MS-DOS and UNIX systems.

AVAILABILITY License sale or demonstration packet available from contact below.

STATUS List of current users available on request.

CONTACTS Warren Tighe
Senior Transportation Engineer
DKS Associates
1419 Broadway, Suite 700
Oakland, CA 94612
(415)763-2061

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION EZ-TRANSYT

DEVELOPER TRANSTEK Software

SUMMARY EZ-TRANSYT is a powerful input database management program that guides the user to generate virtually error-free input data files for TRANSYT-7F runs. The program allows the user to maintain a traffic network database that can be updated very easily. The program has Multi-Window Color Display, On-Line Pop-Up Help Manual, and comprehensive error-checking. The program also generates a more readable database information summary.

ENVIRONMENT Available for the IBM PC under MS-DOS 2.0.

STATUS The program is being used by the City of Fairfield, California; Pennsylvania State University; and other agencies.

AVAILABILITY Available from contact for \$95.00.

CONTACT Charles Liu
9411 Lee Highway, No. 211
Fairfax, VA 22031

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION EZ-PASSER

DEVELOPER TRANSTEK Software

SUMMARY EZ-PASSER is an optimized and interactive implementation of the highly popular PASSER II 80, a general purpose program developed to assist the traffic engineer in determining optimal traffic signal timing for an arterial street where progression is desired through signals having more than one arterial signal phase. The program is user-friendly, and runs very fast (one minute for a 7-intersection arterial). The IBM PC version is designed on window technology and has color display.

ENVIRONMENT Available for the IBM PC running MS DOS 2.0, and Apple micro-computers using the UCSD p-System.

STATUS The program has been used by the City of Rockford, Illinois; New York DOT; and other agencies.

AVAILABILITY Available from contact for \$250.00

CONTACT Charles Liu
9411 Lee Highway, No. 211
Fairfax, VA 22031

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION FREWAY/SIGNAL

DEVELOPER Nagui Roupail, University of Illinois at Chicago

SUMMARY FREWAY is a program which addresses the user-impact of freeway lane closures during construction and maintenance operations. FREWAY calculates both normal and work zone capacities on a freeway, and measures traffic performance in terms of queue length, queue stack and dissipation time, and queue size at the end of each hour. It addresses total vehicle delay, average delay and percentage of vehicles delayed. Cumulative plots of demand and capacity and queue behavior are output in tabular form. Color graphics are included.

 SIGNAL does two-phase signal timing for isolated intersections. Timing of pedestrian signals is included.

ENVIRONMENT Runs on IBM PC or compatibles, using DOS 2.0 and IBM BASICA. Two DSDD disk drives and a color/graphics adaptor are recommended.

AVAILABLE Available from contact below.

CONTACT MTP Support Center, DTS-63
 Transportation Systems Center
 Kendall Square
 Cambridge, MA 02142
 (617) 494-2247

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Traffic Engineering Software

Signal Timing Simulation and Optimization

APPLICATION TAPM: Transit Action Performance Model

DEVELOPER University of Michigan, Department of Civil Engineering

SPONSOR UMTA, Office of Methods and Support

SUMMARY TAPM is a collection of three models which calculate the effects of bus signal pre-emption, isolated intersection signal setting, and bus stop spacing.

 The bus signal pre-emption program uses Radwan and Hurley's model to evaluate operation strategies for both main and cross-street bus traffic. Green extension and red truncation capabilities are assumed.

 The bus stop spacing model is a modification of a model developed by L.J.S. Leslie.

 The optimal signal timing model uses an iterative procedure which minimizes total person delay at individual intersections. It employs A.J. Miller's delay formula.

ENVIRONMENT TAPM operates on the Apple II family of microcomputers. It requires 48K RAM, Pascal language card, two disk drives, and a monitor and printer.

AVAILABLE Available from contact below.

CONTACT MTP Support Center, DTS-63
 Transportation Systems Center
 Kendall Square
 Cambridge, MA 02142
 (617) 494-2247

microcomputers in transportation

Traffic Engineering Software

Traffic Data Management

APPLICATION Integrated Traffic Data System

DEVELOPER Oak Ridge National Laboratory (ORNL)

SUMMARY ORNL is developing a microcomputer-based distributed processing system which will allow the following: (1) storage of network-wide traffic data on a Winchester disk, (2) maintenance of the traffic database via a database management system (DBMS) operating on a microcomputer, (3) automatic structuring of input data sets for various traffic simulation and signal timing optimization programs, (4) submission of jobs and retrieval of outputs via communication lines for jobs run on a remote main-frame computer, and (5) allowance of use of optimization program output as input to simulation models. The system will be menu-driven, making it easy to learn and use, and design provisions will be made for future expansion of the system to include other traffic engineering applications, interactive graphics, etc.

ENVIRONMENT The system will be written using Pascal MT+ running under CP/M and MS-DOS. This provides transportability to a wide range of machines, including the Apple II and IBM-PC. The system uses a commercially-available database management system which will be distributed under an OEM royalty agreement.

STATUS Initial field testing is completed. This system will run on an IBM-PC and will interface to TRANSYT-7F (versions 3.0 and 4.0) and the NETSIM portion of TRAF. Release is expected by Spring 1985.

CONTACTS Dr. M.S. Chin
Oak Ridge National Laboratory
Transportation Energy Group
Oak Ridge, TN 37830
(615) 576-2718

Mr. Alberto Santiago
FHWA/HSR-40
6300 Georgetown Pike
McLean, VA 22104
(703) 285-2024

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Traffic Engineering Software

Traffic Data Management

APPLICATION SIGN INVENTORY ^2

DEVELOPER J.P. Clement

SUMMARY SIGN INVENTORY ^2 is a traffic sign inventory program that is a template for dBASE II™. Program source code is provided so that the application can be customized. Because the program comprises many smaller self-sufficient programs, it is easily modified to suit the user's input/output needs. The program is menu-driven with full editing capability.

The user inputs sign code, location (street, cross street, distance, direction from, postmile, road side), sign facing, sign size, work code, date and comments. The program outputs, either to the screen display or to the printer (using 80-column or 154-column formats) full or partial printouts of sorts and data searches in various orders, either in formal report formats or in edit sheet formats. Results can also be saved to disk.

ENVIRONMENT IBM PC and compatibles, plus most CP/M-80 systems. Requires 64K for 8-bit and 128K for 16-bit computers. One 5 1/4-inch floppy drive is required, and a second floppy drive or a hard disk is desirable. 80-column text printer optional. Operates under MS-DOS, PC-DOS, CP/M-80 with dBASE II™.

STATUS Operational in Thousand Oaks, California.

AVAILABILITY The program disk or program listing is available for \$25.00 to cover reproduction and shipping costs. Periodic enhancements will be made available as the program evolves further.

CONTACT City Traffic Engineer
City of Thousand Oaks
401 West Hillcrest Drive
Thousand Oaks, CA 91360

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Traffic Engineering Software

Traffic Data Management

APPLICATION Traffic Engineering Programs

DEVELOPER Bather Belrose Boje, Inc.

SUMMARY Bather Belrose Boje offers a series of microcomputer-based inventory programs, the MANAGER series, which provide an effective alternative to using large computer or manual inventory systems. These programs are interactive, menu-driven, similar in design and operation, and equally useful for small and large communities. The programs provide easy data maintenance and information retrieval, are simple to set up and use, and require no program development. They allow use of custom item descriptions and multiple maintenance areas, and offer extensive reporting capability.

THE SIGN MANAGER records sign information, including location, direction, sign type and size, and materials for face, blank and mounting.

THE PAVEMENT MARKING MANAGER includes such information as marking type, material, color and position, as well as start and end distance for curb painting, striping and pavement markings.

THE SIGNAL HARDWARE AND MAINTENANCE MANAGER records information on controller equipment, including poles, signal heads and detectors, as well as a complete record of maintenance and repair activities at any traffic signal location.

ENVIRONMENT All programs operate on CP/M-80, MS-DOS or PC-DOS-based microcomputer systems. CP/M systems required 50K of RAM, MS-DOS and PC-DOS systems require 128K of RAM. At least two 200K disks and a 132-column printer are required. A hard disk is recommended.

STATUS Traffic Division, City of Sioux Falls, South Dakota; Pueblo, Colorado; the State of New Mexico.

AVAILABILITY Available on a license agreement basis from contact.

CONTACT William M. Belrose
Bather Belrose Boje, Inc.
7101 York Avenue South
Minneapolis, MN 55435
(612) 921-3303

**MICROCOMPUTER SOFTWARE FOR
PARATRANSIT PLANNING AND OPERATIONS**



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Microcomputer Software For Paratransit Planning and Operations

APPLICATION	PASS: Paratransit Automated Support System
DEVELOPER	Multisystems, Inc., Cambridge, MA
SPONSOR	Wheels, Inc., Philadelphia, PA
SUMMARY	<p>PASS is a complete multi-user package for management of paratransit services. Modules in PASS include trip request processing, service scheduling, and management reporting for paratransit services, as well as a module for processing direct client reimbursements for transportation expense. The package maintains a client file (including travel history) for on-line verification of client eligibility. Trip request processing has extensive edit checking procedures to ensure swift and accurate data entry. Permanent or standing order trips can be prescheduled into skeleton tours. Service scheduling is a computer-assisted procedure to create vehicle tours (multiple carriers can be accommodated); unscheduled trips are listed by time and location to facilitate the scheduling process. The package produces driver manifests, operations reports for the system and by carrier, and client travel history reports. The reimbursement module accepts reimbursement vouchers, generates checks and a check register, maintains client reimbursement histories, and produces management reports.</p>
ENVIRONMENT	<p>Up to 16 users can be supported simultaneously using a TeleVideo 816/40 microcomputer. The TeleVideo has a 40MB hard disk and built-in tape backup capability. The hardware fully supports CP/M and CP/M-86 application programs. PASS is written in DataFlex, a relational database management system developed by Data Access Corp.</p>
STATUS	<p>PASS is currently in production use by Wheels, Inc., a contract manager for paratransit services in Philadelphia. PASS service management modules are used by Wheels to manage paratransit service under the Medical Assistance Block Grant program.</p>
AVAILABILITY	Available through Multisystems, Inc.
CONTACT	<p>Mr. Keith Forstall Multisystems, Inc. 1050 Massachusetts Ave. Cambridge, MA 02138 (617) 864-5810</p>

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION MIS: Management Information System

DEVELOPER University of Massachusetts, Department of Civil Engineering

SPONSOR Office of University Research, U.S. Dept. of Transportation.

SUMMARY This project involves the testing of a comprehensive management information system for use by small and medium sized, fixed-route, fixed-schedule transit operations. This MIS employs a commercial relational database management (RDBM) package to share information among administrative, operational, materials and equipment management, performance analysis, and financial management functions. Total software costs are in the range of \$2,000 including the RDBM, text editor, spreadsheet, report generator, mailing list, inventory, and complete financial package. All applications software interfaces with the RDBM.

Products of the research include standardized input formats (templates) for all major transit functions, sample standardized reporting formats, macros for queries and routine reports, and a user's guide for transit managers. The package which is being tested is distributed by Software Products International, Inc., of San Diego utilizing the "Logiquest III" RDBM. "Logiquest III" and graphics, word processing, and telecommunications software are now available under the name "Open Access."

ENVIRONMENT Logiquest III is being tested in its international version at the University of Massachusetts on an IBM PC with 128K RAM and a 10MB Corvus hard disk. The UCSD Pascal code is supported by a UCSD p-System.

STATUS This package is now being implemented at the University of Massachusetts's transit system (30 peak vehicles).

CONTACT Dr. John Collura (Principal Investigator)
Department of Civil Engineering
Marston Hall, Room 214
University of Massachusetts
Amherst, MA 01003
(413) 545-0635

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Microcomputer Software For Paratransit Planning and Operations

PROJECT	Information Management System
DEVELOPER	Micro/Trans - CAR, Inc.
SPONSOR	Regional Transportation Program Inc., Portland, ME
SUMMARY	A microcomputer record keeping system is being installed for a fleet of 16 special service, door-to-door vehicles. The information management files include a prescheduled trips file, vehicle schedule file, client file, bus ticket file, vehicle operations file, and vehicle maintenance repair file.
ENVIRONMENT	A six-user system is built around a Corvus 20MB hard disk with Omninet local area network. Five user "work stations" are equipped with an Apple II microcomputer, single floppy disk drive and video monitor. The sixth station has an Apple III with two disk drives. Both dot matrix and letter quality printers are available centrally as part of the network. Each Apple II has the DB Master™ file manager installed and the entire record keeping system is being built upon DB Master".
STATUS	Hardware is installed. The daily vehicle schedules are currently made up using the prescheduled trips and vehicle schedule files. Monthly ridership and invoicing information are drawn from those files. Other files are scheduled for operation in the future.
AVAILABILITY	DB Master™ is a file manager available commercially. The templates particular to this application will be public domain.
CONTACT	Ms Loretta Sharp, Director Regional Transportation Program Inc. 237 Oxford St. Portland, ME 04101 (207) 774-2666 Lawrence J. Harman Micro/Trans Division Call-A-Ride, Inc. PO Box 7 Hyannis, MA 02601 (617) 775-2734

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION PARMIS: Paratransit Management Information System

DEVELOPER KETRON, Inc.

SUMMARY PARMIS is constructed from four primary service modules: client database, scheduling, reconciliation and performance evaluation. The client database module automates all of the client-specific information necessary to appropriately authorize a client for system use and to post desired trips. Two versions for scheduling are available. One supports systems which assign vehicles to specific spatial areas along a typical corridor and allow route deviations to the pick-up locations of clients. The second supports systems which allow various vehicles to serve the same spatial areas. In both versions Scheduled Driver Trip Sheets (SDTS) are generated. The reconciliation module facilitates adjustment of SDTS to reflect such actual service delivery events as additional trips and no-shows, provides for assignment of cost values and accomplishes a variety of data summations. The performance evaluation module generates statistical information and can calculate agency-specific performance measures.

PARMIS is constructed using nested menus, a flashing cursor, English language questions which consistently ask what the user wants to do along with allowable answers (actions), "help" files, and error messages when the user makes a mistake with client files and trip data.

ENVIRONMENT Requires dBASE II™ as the database management system. Apple II+ and IBM PC versions. Hard disk useful on multi-user and larger systems.

STATUS Negotiating with several agencies for installation.

AVAILABILITY For sale from contact below.

CONTACT John N. Balog
Associate Manager, Transportation Planning
KETRON, Inc.
Hickory Hill Plaza
151 S. Warner Road
Wayne, PA 19087
(215) 964-3300

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION VAM3: Vehicle Route Allocation and Scheduling

DEVELOPER AEE, Inc. - Transportation Software Systems Division

SUMMARY VAM3 is a comprehensive vehicle scheduling package available for evaluating and designing route allocations and schedules. With user-friendly menu formats, VAM3 enables users to simplify and expedite the 1) collection and storage of network system and vehicle data, 2) generation of OPTIMUM or HEURISTIC (user-defined option) least-cost route schedules, and 3) generation of route and cost reports for management.

VAM3's Data Base Management function allows entry, retrieval, and editing of data for transport units, number of vehicles, route-lost times, route distances, route speeds, and costs per unit time. VAM3 provides two route allocation scheduling options. For an existing system, it provides for database construction, absolute optimization or heuristic (user-defined options) for the determination of least cost schedules. For new system design, it provides for database construction of alternative (new) route origin and destination points, absolute optimization or heuristic (user-defined options) for the determination of each alternative, and the least-cost ranking of all alternatives.

VAM3 provides the user with up to 600 (64K versions) or 2400 (128K versions) combinations of origin/destination sites.

ENVIRONMENT VAM3 is operational for all 64K or larger microcomputers using CP/M (including Apple conversions), IBM PC-DOS, Radio Shack TRSDOS, or Commodore DOS operating systems. VAM3 can be used in a single disk environment, though multiple disk environments are recommended.

STATUS Operational since mid-1983. In use at City of Milwaukee, Wisconsin. Multi-transport vehicle optimization module is complete, with database entry and display module scheduled for completion in Fall 1985.

CONTACT Dr. Donald Angelbeck
AEE, Inc.: Transportation Software Systems Div.
2516 Drummond Rd.
Toledo, OH 43606
(419) 531-8345

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Rural Transportation User and Vehicle Utilization Record-Keeping System

DEVELOPER Tennessee DOT and the University of Tennessee

SUMMARY The rural transportation recordkeeping program uses dBASE II™ to maintain and update a client file. Besides documenting the characteristics of the client--age, sex, address, funding sources, eligibility for travel on specific contracts, etc.--the client file maintains a running total of the trips to date by the client and date of last trip. Monthly reports are prepared summarizing number of trips and unduplicated persons by funding source and/or special contracts. A daily trip file which records client, van number and trip purpose is used to update each client's travel records. Files can be maintained for up to 20 counties, and reports can be generated for a single county or combination of counties.

A vehicle utilization file maintains and updates the operating history of each revenue vehicle including: fuel/oil consumption, trips carried, miles driven, revenue collected, hours of operation, etc. Monthly summaries are reported by county of vehicle operation or by vehicle.

A simple accounting system is included to document agency expenditures (such as salaries, fuel, etc.) by object codes. Monthly, quarterly or year-to-year data summaries are provided, as is a monthly expenditure report suitable for Section 18 reimbursement.

ENVIRONMENT The program runs on an Apple III with 256K and dBASE II™. A CP/M operating system and 5MB hard disk are required.

STATUS The program is being tested by the Mid-Cumberland Human Resources Agency, Nashville, TN, and Hamilton County Rural Transportation Program, Chattanooga, TN.

CONTACT Dr. Frederick J. Wegmann
Department of Civil Engineering
Perkins Hall
The University of Tennessee
Knoxville, TN 37916

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Microcomputer Software For Paratransit Planning and Operations

PROJECT PARIS: PARatransit Information System

DEVELOPER COMSIS Corp.

SUMMARY PARIS is a comprehensive, user-oriented, menu-driven Paratransit Information System. It is written in dBase II™, a high-level microcomputer language developed for non-programmers. No programming knowledge is needed to run the system. The user simply selects a system function from the terminal's displayed menu, and the computer programs run automatically.

PARIS processes trip requests in both a call-in and batch mode, in both a single and multi-user operating environment. Existing client records are immediately displayed. A data input screen is immediately displayed for new clients. The client master file is always current. Trip service information is entered on-line. A trip record is produced and printed at run time, and a master list sorted by carrier and time of day is produced at the end of each day.

Numerous reports are available including client, trip, carrier, cost, etc., for any time period, e.g. 3/1/84-3/15/84. File maintenance is fully menu-driven and includes commands to enter, change, delete, recall and print. Multi-parameter search capabilities are provided, e.g. list all trips from City A to City B. The use of PARIS has been instrumental in reducing the cost per trip in Washington County by 80% over a twelve-month period.

ENVIRONMENT CP/M, CP/M-86, MS-DOS (IBM PC, Apple, Molecular, Wang PC, etc.)

STATUS Operational at Washington County, Allegheny County, and Mid-County Transit Authority, Pennsylvania.

CONTACT Martin J. Fertal
Vice President
COMSIS Corp.
1225 Washington Pike
Bridgeville, PA 15017
(412) 257-0466

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Handicapped & Elderly Mobility & Registration System

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SPONSOR CNY CENTRO, Inc., Syracuse, NY

SUMMARY Subscription trips "drive" the system - each day's service begins with previously-booked subscriptions and then fills unused time slots with 24-hour advance and emergency trips. Registration of all eligible persons who regularly use the system, showing address, fare type, handicap code, and any special instructions for pickup. Groups can be specified for any purpose, e.g., shopping, nutrition, etc. Membership in a group can be permanent or temporary for up to 99 people. A group of riders can be scheduled en masse for either a subscription or a 24-hour trip. Printed manifests describe each run in terms of pick-ups and drop-offs, by time of day. Scheduler can decide which trips are assigned to which runs, within certain limits. Scheduling conflicts are shown on the CRT and a user-response is required before the trip can be scheduled. On-line inquiry routines can display contents of any given run, or display existing trips for any given passenger. Vehicle capacities are checked at the time of reservation for 24-hour advance trips, and cannot be exceeded for either regular seats or wheelchair slots. Ridership reports show numbers of one-way trips by zone, type of trip, and run number.

ENVIRONMENT Altos 68000, 1MB memory, 40MB hard disk, UNIX System III and FORTRAN; or IBM PC/AT with 1MB memory, 40MB hard disk and XENIX operating system.

STATUS Operational.

AVAILABILITY See contact below.

CONTACT Mr. J. Todd Plesko
Director of Service Development
CNY CENTRO, Inc.
One Centro Center
200 Cortland Ave, Drawer 820
Syracuse, NY 13205-0820
(315) 470-0206

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION SCOOTER: Vehicle Routing and Scheduling for Special Service Providers

DEVELOPER Modeling Systems, Inc.

SUMMARY SCOOTER is one of the most comprehensive vehicle scheduling computer packages available for preplanned routing and scheduling. SCOOTER enables users to simplify and expedite the collection and storage of client and vehicle data, the generation of route schedules, and the preparation of route analysis reports and invoices.

- A. Data Base Management - provides for the entry, retrieval and modification of data on clients, vehicles, and routes.
- B. Route Scheduling - provision for route construction, optimization and manual modification.
- C. Management Reporting - produces client origin/destination reports, vehicle route reports and billing invoices.

SCOOTER provides the transportation planner or dispatcher with a menu format to edit client, route and location site data files and to perform the vehicle routing function.

SCOOTER is a cost-effective tool for administrative record-keeping as well as for vehicle scheduling, fleet planning and management cost analysis. This module is also fully compatible with MSI's Vehicle Maintenance Monitoring System (VEMM) and its database management system.

STATUS Operational at MBTA, Office of Special Needs, in Boston; Clark County School District in Las Vegas, Nevada; and Riverside County Schools in California.

AVAILABILITY Software is designed for both micro and mini Digital computers running either RSX or VMS. Both software and DEC turnkey systems are available immediately.

CONTACT Geoffrey N. Berlin
Modeling Systems, Inc.
1718 Peachtree St.
Atlanta, GA 30309
(404) 876-9977

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION SST: Specialized Service Transit System

DEVELOPER Transportation Systems Center and Taurio Associates

SPONSOR UMTA, Office of Methods and Support

SUMMARY This is a public domain, dBASE II™ implementation for scheduling and recordkeeping by a small specialized service provider. It maintains a file of eligible clients, allows the scheduler to book advance reservations to vehicles, prints a driver manifest, receives mileage information and makes monthly reports and bills.

This is a complete, executable, menu-driven system, but you need access to dBASE II™ to try it out. It is intended as an example of a complete system, easily customized to local needs by a person well-versed in dBASE II™ programming.

ENVIRONMENT dBASE II™ on an IBM PC or compatible.

AVAILABILITY Available from contact below.

CONTACT MTP Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

™dBASE II is a trademark of Ashton-Tate

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION PSP: Paratransit Scheduling Package

DEVELOPER Transportation Computer Group

SUMMARY PSP is a scheduling and reporting system for small paratransit operations. It maintains a client file, creates and edits vehicle schedules, prints vehicle schedules, maintains a log of all trips, and processes monthly summaries for clients and vehicles. Permanent schedules can be maintained for a full seven-day week. PSP can support demand-responsive, fixed-schedule, and combined operations. It can accommodate 38 trips per vehicle per day, 4000 trips per month, and a client file of 990.

ENVIRONMENT Northstar Advantage and Horizon, 64K RAM, two DSDD disks. Program is currently being modified to run on IBM PC and compatibles and under a multi-user environment.

STATUS Operational at SPAN in Denton, Texas.

AVAILABILITY Available from contact below.

CONTACT William G. Barker
William G. Barker & Associates, Inc.
1608 Hawthorne Drive
Arlington, TX 76012
(817) 261-7120

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Ride Sharing System

DEVELOPER VISTA Systems, Inc.

SUMMARY VISTA's Ride Sharing System is a self-contained set of programs and data files which give ridesharing coordinators immediate access to carpooler data, as well as transit and vanpool services. The system allows for on-line operation as well as batch functions for bulk data processing.

The system will check matches for carpool subscribers using a database of people who have indicated they would like to carpool; for transit service using a database of transit service and its relationship to the ridesharing zone network, identifying route and service information; and for vanpools, using a database of vanpool service, and its relationship to the ridesharing zone network, identifying the vanpool driver and contact information.

The system reports primary and secondary levels of matches. Primary matching has exact matches on both the origin (home) and destination (work) zones, within a user-definable "window" around the desired start and stop times. Secondary matching has the same time-window characteristics, but is more relaxed geographically. The system includes an optional automatic geocoding facility.

ENVIRONMENT Operates on a 16-bit, UNIX-based microcomputer.

STATUS In use at the MTA in Nashville, Tennessee.

AVAILABILITY For sale from VISTA Systems.

CONTACT VISTA Systems, Inc.
900 State Road
Princeton, NJ 08540
(609) 921-0065

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Carshare/Vanpool/Transit Information System

DEVELOPER Kenneth R. Roberts & Associates, Inc. (KRA)

SUMMARY Carshare Highlights:

- Either interactive or batch with a "hold" provision for activity center campaigns.
- Hard copy output is "personalized" with appropriate letter-head and typewriter quality output.
- Either home-base or employer-base match lists. To maintain confidentiality, telephone numbers can be deleted.
- The search algorithm can be constrained at the customer's request. The system will do midstream (route to work) searches and Park-and-Ride--Dial-A-Ride pickup point scans at the option of the user.
- Match lists are sorted by desirability--the best are at the top.

Vanpool Highlights:

- Several matching algorithms are included which can be selected optionally by the user.
- Complete Vanpool listings are maintained and can be deployed--in summary or detail--at any time.

Transit Information System Highlights:

- Includes Fixed-Route, Park-and-Ride, and Dial-A-Ride data.
- Trip-specific material is included; complete schedules are available.
- Transfer points can be denoted--one or two can be scanned to set up multileg trips.

ENVIRONMENT Operates under the XENIX operating system with a minimum of 500K of RAM.

STATUS Operational at Tri-County Transit in Orlando, Florida.

CONTACT Kenneth R. Roberts
Kenneth R. Roberts & Associates, Inc.
10560 Main Street, Suite 515
Fairfax, VA 22030
(703) 591-6008

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Microcomputer Software For Paratransit Planning and Operations

PROJECT MicroCRIS: Rideshare Information System

DEVELOPER COMSIS Corp.

SUMMARY MicroCRIS is a comprehensive, user-oriented, menu-driven ride-share information system. It is written in dBASE II™, a high-level microcomputer language developed for non-programmers. No programming knowledge is needed to run the system. The user simply selects a system function from the terminal's displayed menu, and the computer programs run automatically.

MicroCRIS performs carpool, vanpool, public transit and park-and-ride matching in both a call-in and batch mode, in both a single and multi-user operating environment. It provides the capability of performing on-line geocoding using street address, major intersection and place name dictionaries. The system enables the user to enter public transit and vanpool route and schedule information quickly and easily, and searches actual routes in the matching process. File maintenance is fully menu-driven and includes commands to enter, change, delete, recall and print records, files, labels, etc.

ENVIRONMENT CP/M, CP/M-86, MS-DOS (IBM PC, Apple, Molecular, Wang PC, etc.).

STATUS Operational at City of Orlando, East-West Gateway Coordinating Council, New Hampshire Department of Public Works & Highways, Brooke-Hancock-Jefferson Regional Planning Commission, Island-Rides, Rhode Island DOT; Augusta-Richmond County Planning Commission; Pinellas County Planning Department.

CONTACT Martin J. Fertal
Vice President
COMSIS Corporation
1225 Washington Pike
Bridgeville, PA 15017
(412) 257-0466

™dBASE II is a trademark of Ashton-Tate.

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APPLICATION Rideshare Matching Program

DEVELOPER The Rideshare Company

SUMMARY Programs allow sorting and printing of ridesharing data to publish a monthly tabloid of "classified ads". Readers scan by destination and origin codes to pinpoint potential matches. Also, data is transmitted to typesetter, via a Hayes Smartcom Modem. Monthly activities are summarized and graphed using Lotus 1-2-3™.

ENVIRONMENT Hardware: IBM PC 196K RAM with 12.5MB hard disk
Hayes Smartcom II Modem

Software: Alpha Database Manager II
MultiMate Word Processing
Lotus 1-2-3
DOS 2.0

STATUS Implemented at Tulsa Transit Authority in Tulsa, Oklahoma.

AVAILABILITY Estimated hardware/software costs: \$11,000.00. Development consultation services available on request.

CONTACT Linda J. Costello
Vice President-Administration
The Rideshare Company
Two Congress Street
Hartford, CT 06114
(203) 527-4472

™Lotus 1-2-3 is a trademark of Lotus Development Corp.

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Microcomputer Software For Paratransit Planning and Operations

PROJECT POOLMATCH: Ridesharing Data Processing

DEVELOPER Jesse Glazer, Steve Kanya and staff of Crain & Associates
Systems Development Company

SUMMARY POOLMATCH is an online data processing system that performs all of the data processing functions normally required by areawide and private-employer ridesharing organizations. These include:

- Online maintenance of a file of commuters (applicants) up to 100,000 persons
- Online or batch matching for carpools, vanpools, and buspools
- Online or batch matching for transit information
- Online (immediate) automatic geocoding of addresses
- Online maintenance of file of up to 10,000 employers
- Vanpool driver/rider rosters and vanpool planning aids
- Evaluation statistics for performance reporting
- Other advanced features now being developed.

POOLMATCH is upward-compatible with data files from CIS, and replicates all CIS functions. It also has a number of new capabilities, such as true automatic address geocoding. The geocoding system can use many address-translation files; it is not dependent upon the DIME file.

POOLMATCH is normally installed as a turnkey package, including hardware, software, installation, training and maintenance. The software can also be purchased separately.

ENVIRONMENT UNIX or MS-DOS, 128K of user RAM.

STATUS First installed in 1981. Operational at MAG Ridesharing Program, Phoenix, Arizona; PAG RideShare Program, Tucson, Arizona; COMPOOL, Inc., Richmond, Virginia, and others.

CONTACT Jesse Glazer
Crain & Associates Systems Development Co.
2007 Sawtelle Blvd - Suite 4
Los Angeles, CA 90025
(213) 473-6508 or 822-2235

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APPLICATION Carpool Matching System

SPONSOR Office of Research & Economic Development and Transportation
 Planning Division of the City of Oklahoma City

SUMMARY The purpose of this software is to allow a metropolitan organization responsible for carpooling activities to have immediate access to a computer program that will add to and/or match carpool applicants. This user-friendly system allows for the easy production of a list of matched carpool applicants as well as a printed output to be sent to each applicant for his/her reference. The program produces a match-list based upon an X-Y coordinate grid system. It has provisions for flex-time and can be easily modified for other local needs.

ENVIRONMENT Written in MBASIC for microcomputers utilizing a CP/M operating system, it was developed with the intent that it be run on floppy diskette systems with one or more drives and minimal RAM. It is designed to function with a list of applicants of 2000 or less, each record having 125 bytes on a random access file. This program contains only two special characters that are unique to each microcomputer system: Clear screen & Bell.

STATUS Operational.

AVAILABILITY This program is available upon request in hard copy form.

CONTACT Ed Bonzie
 City of Oklahoma City
 200 N. Walker
 Oklahoma City, OK 73102
 (405) 231-2003

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Rideshare File Updating/Maintenance and Matching Program

DEVELOPER Genesee Transportation Council

SUMMARY The program is user-interactive and menu-driven. Rideshare files are indexed by Zip Code. In addition to entering and updating records, the program creates lists of rideshare candidates meeting arriving and departing time tolerances, sorted by Zip Code (and/or census tract).

ENVIRONMENT Program operates on an Apple III with 64K RAM, and is written in Apple Business BASIC. Two drives and a printer are required. Program is interactive with an IBM Displaywriter for letter-generating capabilities.

STATUS Operational since December 1982.

AVAILABILITY Available from contact below.

CONTACT Matthew Crider
Genesee Transportation Council
65 West Broad Street
Rochester, NY 14614
(716) 232-6240

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APPLICATION Carpool Matching Program

DEVELOPER Little Rock Metroplan, Little Rock, AR

SUMMARY The carpool matching program maintains a file of commuters wishing to carpool, performs carpool matching, and outputs a one-page form containing the following information for each selected commuter: the matches found by the program, a request for updated information, and other instructions.

ENVIRONMENT The program will be implemented under MS-DOS for IBM and compatible machines.

STATUS The program is being revised and translated to Microsoft BASIC. New version should be available by April 1985.

CONTACT John Barr
 Little Rock Metroplan
 Wallace Building--8th Floor
 105 Main Street
 Little Rock, AR 72201
 (501) 372-3300

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Microcomputer Software For Paratransit Planning and Operations

PROJECT PUTNAM: PUPil Transportation Network Analysis Method

DEVELOPER KETRON, Inc.

SUMMARY For over four years, KETRON has provided more than a dozen school districts with a CP/M-based system for optimizing their yellow-bus routes. PUTNAM comprises 40 BASIC-language programs which accept and validate student data (name, address, destination school(s), nearest bus stop) and the local road network, then help the Transportation Director interactively plan better routes. KETRON furnishes all necessary data-preparation and training assistance for first-year clients, consulting thereafter on an as-needed basis.

ENVIRONMENT Apple IIc, IIe, III; IBM PC; and TRS-80 microcomputers which have 64K with CP/M, plus a hard disk of at least 5MB.

STATUS PUTNAM techniques have been used by more than 12 school districts (including Cornwall-Lebanon, Upper Merion, and Line Mountain, Pennsylvania) to successfully evaluate/reduce transportation expenditures. Client references available upon request.

AVAILABILITY Software can be purchased by individual school districts or consortia. KETRON will consider franchising reputable firms/agencies outside the Middle Atlantic states.

CONTACT Dr. David N. Freeman
KETRON, Inc.
Hickory Hill Plaza
151 S. Warner Road
Wayne, PA 19087
(215) 964-3300

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION CAFES: Computer-Assisted Long-Range Forecasting of Ridership

DEVELOPER KETRON, Inc.

SUMMARY KETRON's proprietary CAFES packages will forecast enrollments of school children and yellow-bus riders up to 15 years ahead. Based on cohort survival factors and actual counts in each region of a school district, KETRON forecasts school openings and closings.

ENVIRONMENT Microcomputers such as the Apple II Plus, IIe, III. Mini-computers such as HP-3000 and DEC VAX. Mainframes such as IBM 43XX and Honeywell DPS/8.

STATUS In use in Greensboro, North Carolina.

AVAILABILITY Services can be purchased.

CONTACT Dr. David N. Freeman
KETRON, Inc.
Hickory Hill Plaza
151 S. Warner Road
Wayne, PA 19087
(215) 964-3300
(Micro and mini-computer versions of CAFES)

Dr. Richard H. Mann
KETRON, Inc.
One Broadway
Cambridge, MA 02142
(617) 491-4963
(Mainframe version of CAFES)

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APPLICATION Elderly & Handicapped Mobility Module

DEVELOPER VISTA Systems, Inc.

SUMMARY VISTA's Elderly & Handicapped Mobility Module automates the process of matching specialized transportation needs with available transportation, giving specialized transportation coordinators immediate access to vehicle trip data.

Individual trip requests are booked and assigned to a vehicle. The request is entered into the system, which then ascertains which vehicles can serve the trip and displays a list of options. The dispatcher then chooses from this list and makes the assignment. The system also has a feature (vehicle servicing) which records and reports mileage, fuel, oil and other consumables usage. Another feature (the Event Log) provides a facility to record vehicle maintenance activities on vehicles. The Events Log can be used to record the date, event type, vehicle or employee number, and up to nine lines of text description.

ENVIRONMENT Operates on a 16-bit, UNIX-based microcomputer.

STATUS In use at Pioneer Valley Transit, Springfield, Massachusetts.

AVAILABILITY For sale from VISTA Systems, Inc.

CONTACT VISTA Systems, Inc.
900 State Road
Princeton, NJ 08540
(609) 921-0065

microcomputers in transportation

Microcomputer Software For Paratransit Planning and Operations

PROJECT	New Hampshire Rural Public Transportation Microcomputer Technical Assistance Program	
DEVELOPER	Micro/Trans Division, CAR, Inc.	
SPONSOR	New Hampshire Department of Public Works and Highways, Public Transportation Division.	
SUMMARY	The NH Microcomputer TA Program provided a catalyst for the application of microcomputer systems to local Section 18 (UMTA Act) programs by providing assistance in the following areas: 1) review of local operations; 2) development of system specifications; 3) development of prototype database, spreadsheet, and graphics application from available retail software; 4) development of a prototype Section 18 project management system, data communications network, and microcomputer workshop for local transit operators. Microcomputer specifications for state management functions were developed in a working paper entitled, "Microcomputer Data Base Management for Small Transit Systems - the New Hampshire Prototype".	
ENVIRONMENT	Runs on the IBM PC and compatibles with a minimum of 256K RAM. A hard disk is recommended. Prototype files were developed using Rbase 4000™.	
AVAILABILITY	All applications software are available through retail outlets. Prototype applications developed for this project will be in the public domain.	
STATUS	First phase completed and report written. Now in process of procuring hardware.	
CONTACT	Richard P. Shine, Administrator Public Transportation Division NH Dept of Public Works & Highways John O. Morton Building Concord, NH 03301 (603) 271-2564	Lawrence J. Harman Micro/Trans Division Call-A-Ride, Inc. PO Box 7 Hyannis, MA 02601 (617) 775-2734

™Rbase 4000 is a trademark of Microrim Corp.

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Commercial Software Applications for Paratransit

DEVELOPER DYNATREND Inc.

SPONSOR UMTA, Office of Methods and Support

SUMMARY This report is a User Manual for the application of commercially available software products to paratransit management. It discusses the manual recordkeeping and operational demands placed on paratransit agencies and how these functions can theoretically be automated. It then describes in detail the automation of specific functions including scheduling; client and vehicle recordkeeping; and report generation for billing and performance measurement. Other options are discussed more generally. Data from an actual paratransit operation is used to perform all data processing functions. The focus is on the use of relational database management software. Spreadsheet, word processing and graphics applications are also discussed. Information is also provided on how to select software and on how to customize generic software products for specific applications.

ENVIRONMENT Procedures are implemented in R:base 4000™ and the Perfect™ software series (Perfect Calc and Perfect Writer) under MS-DOS 2.1 on an IBM PC compatible (Columbia) with 256K memory and two disk drives.

STATUS Report is complete.

AVAILABILITY Public domain, from the National Technical Information Service (NTIS), U.S. DOT's Office of Technology Sharing, or the contact below.

CONTACT Marc R. Cutler
DYNATREND Inc.
21 Cabot Road
Woburn, MA 01801
(617) 935-3960

™R:base 4000 is a trademark of Microrim Corp.

™Perfect Calc and Perfect Writer are trademarks of Perfect Software Corp.

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Microcomputer Software For Paratransit Planning and Operations

APPLICATION Instruction System for RTP Information Management System

DEVELOPER Micro/Trans Division of Call-A-Ride, Inc.

SPONSOR Regional Transportation Program, Inc., (RTP), Portland, ME

SUMMARY A "hands-on" system of programmed instruction for staff using the RTP Information Management System. Components include: an Introduction, System Overview, Getting Started, a System Tutorial, a Vehicle Schedule File Tutorial, and a Vehicle Maintenance and Repair File Tutorial.

ENVIRONMENT A six-user system of Apple II and III workstations connected in an Omninet local area network sharing a 20MB Corvus hard disk. The information management system and file tutorials are based on the DB Master™ Special Edition file management program.

STATUS The system has been completed and implemented.

AVAILABILITY The focus of the Instruction System is for RTP employees. The approach may be of interest to operations using retail software. All software used in the system is commercially available. The developer and sponsor consider all products to be in the public domain.

CONTACT Ms. Loretta Sharpe
Executive Director
Regional Transportation Program, Inc.
237 Oxford Street
Portland, ME 04101
(207) 774-2666

 Lawrence J. Harman
Micro/Trans Division
Call-A-Ride, Inc.
PO Box 7
Hyannis, MA 02601
(617) 775-2734

™DB Master is a trademark of Stoneware Microcomputer Products

UTILITIES AND MISCELLANEOUS

MICROCOMPUTER SOFTWARE

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Utilities and Miscellaneous

Microcomputer Software

APPLICATION UMTA Screen Manager

DEVELOPER Wilson-Hill Associates, Washington, DC

SPONSOR UMTA, Office of Methods and Support

SUMMARY The UMTA Screen Manager is an interface program which facilitates the processing of interactive input from a keyboard-CRT device into an application program. This is accomplished by the user defining screens (templates or forms) on the CRT device for the data items to be entered and passed along to the applications program. Its major features include:

- Standard interactive screen protocol, commands, and cursor movements
- Data decoding routines for string, Boolean (Y or N), integer (16 bits), and floating point numbers
- Automatic range checking within user defined ranges
- Specification of mandatory or optional responses
- Run time display of text help information keyed to the item/field within a screen
- Data dictionary styled definition of screen input fields
- Retention of data input values between program executions.

The software consists of two programs for creating data screens and a Pascal UNIT for using the screens from within a user-written program.

ENVIRONMENT Operates on the Apple II microcomputer under Apple Pascal, and on the IBM PC under the UCSD p-System. Two disk drives and 64K RAM are required.

AVAILABILITY Available from contact below.

CONTACT MTP Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

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Utilities and Miscellaneous Microcomputer Software

APPLICATION UMTA File Editor

DEVELOPER Wilson-Hill Associates, Washington, D.C.

SPONSOR UMTA, Office of Methods and Support

SUMMARY The UMTA File Editor is a Pascal UNIT which can be used to add interactive data file editing capabilities to a user-written program. Among its features are:

- horizontal and vertical scrolling;
- record editing, insertion and deletion;
- support for string, Boolean (Y/N), integer (16 bit), floating point, and time (transit APX) data types;
- automatic range checking within user-defined limits.

The scope of the File Editor function is limited to retrieval and presentation of data to/from the interactive user and the application program. The File Editor does not interact directly with data files. Instead, the File Editor maintains the status of the records displayed on the screen and exits to the application program at crucial points to allow for the disposition of modified, inserted, or deleted records, and retrieval of old records for display.

ENVIRONMENT Operates on the Apple II microcomputer under Apple Pascal. Two disk drives and 64K RAM are required.

AVAILABILITY Available from contact below.

CONTACT MTP Support Center, DTS-63
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494-2247

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Utilities and Miscellaneous Microcomputer Software

APPLICATION	MDA: General Statistical Analysis
DEVELOPER	Cambridge Information International
SUMMARY	<p>The Micro Data Analyzer (MDA) is an interactive user-friendly package of software tools providing capabilities in general statistical analysis. MDA Release 1.1 offers the following statistical capabilities:</p> <ul style="list-style-type: none">• Stratified statistical breakdowns• Generation of new variables as algebraic functions of existing ones• Data editing and subsampling from large data bases• Printer and console printing• Report generation• Histograms and univariate summary statistics• Two and three-way cross tabulation with chi-square summary• Correlation and covariance analysis (up to 30 variables at a time)• Multiple regression analysis (up to 20 variables)• Multinomial logit analysis (up to 20 variables, 11 alternatives) <p>The MDA package can be used without knowing any programming language.</p>
ENVIRONMENT	MDA currently operates on many CP/M-80 machines and MS-DOS on IBM PC's and compatibles.
STATUS	MDA is fully operational and has been fully tested. In use at the City of Austin, Texas Transportation Department, the Bi-State Development Agency in St. Louis, and many other agencies.
AVAILABILITY	Available for \$199.00.
CONTACT	Roy Skin MDA Programming 5 Emerson Drive Acton, MA 01720 (617) 263-3887

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Utilities and Miscellaneous Microcomputer Software

APPLICATION Multiple Linear Regression

DEVELOPER Pierce Transit, Tacoma, WA

SUMMARY This program, written in IBM BASIC, allows the user to perform simple multiple linear regression analysis using up to ten independent variables. The data input file read by this program is created by using Lotus 1-2-3™, or dBASE II™ or dBASE III™. This input feature was added in order to facilitate data entry and to allow the user an easy method of updating data files.

Program outputs include:

- 1) Equation Coefficients
- 2) The Coefficient of Determination (R^2)
- 3) The Coefficient of Multiple Correlation (R)
- 4) The Standard Error of the Estimate, and
- 5) An F-Test

An additional feature of the program allows the user to interpolate for the dependent variable based on independent variables input by the user.

ENVIRONMENT IBM PC with two drives and 256K RAM.

STATUS Being utilized by Pierce Transit.

CONTACT Rich Olson
Pierce Transit
1235 South Sprague Ave
Tacoma, WA 98405
(206) 593-6276

™Lotus 1-2-3 is a trademark of Lotus Development Corp.
™dBASE II and dBASE III are trademarks of Ashton-Tate

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Utilities and Miscellaneous Microcomputer Software

APPLICATION CHRIS: County Highway Management System

DEVELOPER The MCS Group, Inc.

SUMMARY The County Highway Resource Information System (CHRIS) is a fully-integrated management system designed specifically for County Highway superintendents/managers. It tracks operations by project, phase, fund and other criteria. CHRIS not only automates the department's processes, but also provides the users with the information management tools needed to manage the department better.

The system includes modules for department budgeting, equipment maintenance, resource management, job costing by project, fund, phase, etc., and full-departmental accounting to include parts and material inventory, payroll with voucher reports, general ledger and other standard accounting modules.

The Fleet/Equipment Management modules and the Equipment/Material Inventory modules [outlined separately in this document] are included with the CHRIS system.

The main emphasis of the system is on providing concise management reports that contain understandable information to manage a department. The system is very user-friendly, and provides full accounting information and reports, resource management information and budgeting.

ENVIRONMENT Operates on IBM PC and compatibles that use MS-DOS and the BI-286 BASIC Interpreter. Requires at least 256K RAM and a 10MB hard disk system for sufficient storage.

STATUS Fully operational at the Pennington County Highway Department, Rapid City, South Dakota.

AVAILABILITY Available from contact for \$9,950.00.

CONTACT The MCS Group
2465 West Chicago
Rapid City, SD 57702
(605) 341-6755

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Utilities and Miscellaneous Microcomputer Software

APPLICATION SADISTIC STATISTICS: General Statistical Analysis

DEVELOPER Kenneth Cypra Ph.D., P.E.

SUMMARY SADISTIC STATISTICS is an integrated set of statistical analysis tools which is supported by a database in which data may be edited, printed and transformed. Among the statistical programs are:

- Straight and cross tabulations
- One and two way ANOVA
- Scatter diagram
- Product-moment correlation
- Function grapher
- Matrix operations
- Data transformations
- Student's t and chi-square tests

ENVIRONMENT Apple II+, IIe, IIc and compatibles (DOS 3.3).

STATUS Operational. Used by author and others.

AVAILABILITY Available. Please send a 5 1/4-inch floppy disk and a self-addressed, stamped disk mailer. In return you will receive the program and documentation. For a nominal donation, the author will keep the recipient apprised of updates and modifications.

CONTACT Kenneth Cypra
932 Braemar Road
Flossmoor, IL 60422

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Utilities and Miscellaneous

Microcomputer Software

APPLICATION SPSS/PC: General Statistical Analysis

DEVELOPER SPSS Inc., Chicago, IL

SUMMARY SPSS/PC is a comprehensive statistics and reporting package. The system will handle up to 200 variables. The number of cases is limited only by disk space available.

With extensive online help and output specially formatted for the IBM PC screen, SPSS/PC will simultaneously write the results of your analyses to the screen, a disk file, or directly to a printer. SPSS/PC provides a complete set of commands for data definition and management. Users may read portable system files previously created by SPSS/PC or SPSS-X.

Full facilities are provided to title output, label variables and values of variables, and select formatting options. SPSS/PC users may recode, compute, lag and perform conditional transformations on variables. Other data management options will permanently select, randomly sample, or weight cases for your reports and analyses. Users may write values for variables to an ASCII file that can be used by other programs.

SPSS/PC includes a complete set of statistical procedures that use double precision floating point arithmetic. Descriptive statistical procedures, categorical statistics, log linear analysis, factor analysis and multiple regression analysis with stepwise variable selection methods and extensive residuals are just a few of SPSS/PC procedures.

ENVIRONMENT IBM PC/XT or PC/AT, 10MB hard disk, double-sided drive; 8087 chip recommended; minimum of 320K RAM.

STATUS SPSS/PC proprietary software is used at more than 40 federal, state, and local government agencies. A list of agencies using the software can be obtained from the contact below.

AVAILABILITY Worldwide. SPSS/PC includes documentation, on-line tutorial and KERMIT file transfer software. Introductory price \$795.00. Quantity discounts are available.

CONTACT Marketing Department
SPSS Inc.
444 N. Michigan Avenue
Suite 3000
Chicago, IL 60611
(312) 329-2400

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Utilities and Miscellaneous Microcomputer Software

APPLICATION	QUEUE-2: General Purpose Queueing Model
DEVELOPER	Rick Kuner and Marilyn F. Gardner, New Alternatives Software, a division of New Alternatives, Inc., Chicago, IL
SUMMARY	QUEUE-2 is a general-purpose queuing model for any number of single-channel, single-phase facilities, such as parking gates, cashiers, toll booths, garage entrances/exits, or intersection approaches. The major inputs to QUEUE-2 are the mean arrival rate and mean service rate. The major outputs are the mean number of units in the system, mean queue length, mean time in the system, mean waiting time, percent that the facility is used, and percent that the facility is idle.
ENVIRONMENT	IBM PC or XT. The program is written in Advanced BASIC and requires one disk drive.
STATUS	The program is fully operational and has been used by Sundstrand Corp. at their main headquarters and Plant 6 in Rockford, Illinois.
AVAILABILITY	The software on a floppy disk is distributed with a User's Manual as a proprietary package for \$18.00.
CONTACT	Rick Kuner President New Alternatives, Inc. 8 South Michigan Avenue, Suite 610 Chicago, IL 60603 (312) 263-2808

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Utilities and Miscellaneous Microcomputer Software

APPLICATION Hydraulic Design

DEVELOPER Minnesota Department of Transportation

SUMMARY This system consists of hydraulic programs to do design and analysis of waterways and storm sewers using the following programs:

- Arch Culverts
- Circular Culverts
- Superspan
- Irregular Channel
- Trapezoidal Channel
- Gutter Flow
- Flood Routing

Most of these programs are menu-driven. Arch, Trapezoidal, and Circular Culvert calculate the span, rise, normal and critical flow, and surface profiles. Superspan does the same, plus additional headwater calculations for horizontal ellipses, low and high profile arches, pear shapes, and circular shapes. Gutter Flow outputs maximum depth, flow width, area, hydraulic radius, velocity and discharge for the gutter, lane and total. Irregular Channel will give up to 20 output stages and includes means for modifying and storing cross-sections.

ENVIRONMENT IBM PC with 256K RAM, two disk drives and BASICA.

STATUS Used by Minnesota DOT hydraulics in the central office and most of the nine districts.

AVAILABILITY Available from contact below.

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Utilities and Miscellaneous Microcomputer Software

APPLICATION Materials System

DEVELOPER Minnesota Department of Transportation

SUMMARY This system consists of materials programs to do soils and pavements calculations and reports. CLASS classifies soils based on gradation and limits data. PROCTOR determines optimum moisture content and maximum dry density of soils based on AASHTO test 99-74. RVALUE is designed to use and store data on resistance and expansion of soils. REPORT accesses the data files associated with the above soil tests and creates the final report on the soil samples. TONN is a program to do calculations and graphics on pavement ratings based on spring axle loads. WHEN10 manipulates road information and a standard road rater to output time of year when 10-ton strength is reached.

ENVIRONMENT IBM PC with 256K RAM, two disk drives, BASICA, and attached printer.

STATUS Used by Minnesota DOT materials units in the central office and most of the nine districts.

AVAILABILITY Available from contact below.

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APPLICATION Geometric and Survey System

DEVELOPER Minnesota Department of Transportation

SUMMARY This system consists of geometric and survey programs to compute vertical curves, horizontal curve offsets, radial distance and azimuths, and radial coordinates with position check. Other geometric programs do line/line, line/circle, circle/circle, and angle/circle intersection computations.

ENVIRONMENT IBM PC with 256K RAM, two disk drives and BASICA.

STATUS Used by Minnesota DOT survey and design units in the central office and most of the nine districts.

AVAILABILITY Available from contact below.

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APPLICATION Time Management and Reporting System

DEVELOPER Upstate Metropolitan Planning Section, New York State
Department of Transportation

SUMMARY This program is an automated accounting and reporting system which keeps track of charges by personnel of a work unit to the various sources that fund that unit. Each member of the unit may charge hours worked to various grants (e.g. UMTA, PL, or HP&R) for different task groups (e.g. study areas), and to miscellaneous categories such as sick time, vacation and personal leave. Reports are generated each pay period and quarterly which track balances and utilization (task and area breakdowns) for unit personnel bi-weekly, quarterly, and cumulatively through the present pay period. The program is designed to be user-friendly (menu-driven) so that clerical staff with little or no computing experience should have no problem running it.

Initial setup by the programmer requires specifying codes for the various grants and funding sources, and compensation rates for the personnel. Once setup, hours charged by unit personnel and the tasks to which the charges should be debited are required.

ENVIRONMENT Runs on IBM PC with two disk drives and 256K RAM under DOS 2.0, and Lotus 1-2-3™.

STATUS Operational.

AVAILABILITY Free from contact.

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microcomputers in transportation

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APPLICATION TIPS: Transportation Interactive Planning System

DEVELOPER Stanley C. Yutkins, Burlington, MA

SUMMARY TIPS performs all the functions of the mainframe UTPS programs UMATRIX, MBUILD, UMCON, and USQUEX on your IBM PC. TIPS supports zonal, node and link records (LAVs in UTPS jargon) from 1 to 8192 cells; matrices from 1 row by 1 column up to 512 rows by 512 columns; expand equivalence tables for matrix expansion; squeeze equivalence tables for matrix squeezing; Range Lookup tables; Interpolation Lookup tables; Positional Lookup tables; Numeric Match Lookup tables; Character Match Lookup tables, as well as the normal arithmetic operations and special functions (e.g. matrix transposition) available in UMATRIX.

The dynamically growing TIPS database can hold up to 64 entries (LAVs or matrices) and can reference a full 30MB of disk space. Up to three databases can be loaded into TIPS and manipulated at any time with the capability of unloading and loading new databases. With TIPS' interactive directive display, any selected LAV or matrix can be easily viewed and rapidly computed or modified. A History Option provides information on how an entry was created, complete with Error Log.

TIPS can import ASCII LAVs and Matrices downloaded from the IBM 370, or created by some other PC-DOS program such as TRANSPLAN or MINUTP. Conversely, TIPS can export LAVs and Matrices into an ASCII data file for use in other programs. For batch processing, an Overnight Option verifies and stores up to 64 requests for later (overnight) processing.

TIPS can be used in smaller municipalities for street inventories where reduction of data by ward or neighborhood is desired, as well as in large urban areas where volumes of transportation data must be processed.

ENVIRONMENT IBM PC or compatible with 320K memory; MS-DOS or PC-DOS; hard disk desirable.

STATUS Program is fully operational and documented.

AVAILABILITY For sale from contact.

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