U.S. Department of Transportation

μtps Microcomputers in transportation

SOFTWARE AND SOURCE BOOK

MARCH 1983

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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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Eguipment; Information Sources; Microcomputers; Software; Transportation Applications	**Available to the Public through the National Technical Information Service, Springfield, Virginia 22161.**

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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. Previous publications of this information have been published for the months of June, August, and November of 1982 and January 1983. All information in these previous volumes has been updated and new material added to in this issue.

The first section 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 distinguished by having the label "In Development" in the right-hand side of its heading information. Section 7 lists companies which provide microcomputer services and software. Finally, Section 8 is a list of books and periodicals on microcomputers.

Another reference in this series of publications, "Selected Readings,"is a continuing source of readings on microcomputers. Each volume contains information focused on a particular subject area. Copies are available from UMTA or FHWA at the addresses below.

The information provided here is the best available to UMTA and FHWA at time of publication. Should you have updates, corrections, or additions to what is contained here, please contact us. Descriptions of new transportation software are particularly welcome.

The information is this publication changes rapidly. If the date on this cover is more than 6 months old, the user should obtain an updated version from one of the offices listed below.

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

Federal Highway Administration
Urban Planning and Transportation
Management Division (HHP-22)
Washington, D.C. 20590
(202) 426-0182

CONTENTS

MICROCOMPUTER INFORMATION AND TRAINING

Miscellaneous Sources

1) Subscribe to:

   a) Monthly Magazine ($19 per year)

      BYTE
      Subscription Department
      P.O. Box 590
      Martinsville, New Jersey 08836
      (800) 258-5485

   b) Weekly Newspaper ($25 per year)

      INFO WORLD
      Circulation Department
      375 Cochituate Road
      P.O. Box 880
      Framingham, Massachusetts 01701-9987
      (800) 343-6474

   c) Monthly Magazine ($11.97 per year)

      PERSONAL COMPUTING
      P.O. Box 2941
      Boulder, Colorado 80321

2) Many local educational facilities now present courses. Look into these.

3) MIT has a microcomputer in transportation short course. Write:

      Professor Marvin L. Manheim
      Department of Civil Engineering
      Room I-181
      Massachusetts Institute of Technology
      Cambridge, Massachusetts 02139
      (617) 253-1627

4) Local public libraries now have excellent introductory books on microcomputers.

5) For Apple Users, a good catalog of software is:

      "THE BOOK" of Apple Computer Software
      16720 Hawthorne Blvd.
      Lawndale, California 90260
      (213) 371-4012

      Approx. Cost $20.00

Good references that present and explain example programs are:

Apple II User's Guide (Basic)
Lon Poole (Author)
Osborne/McGraw Hill
Berkeley, CA
Approx. Price $15.00

Apple Basic: Datafile Programming (Basic)
Leroy Finkel
Gerald Brown (Author)
John Wiley & Sons
Approx. Price $15.00

Apple Pascal
Lehrman (Author)
McGraw Hill
(Other information lacking)

6) The "Data Pro" Manual has a series on micros. This is kept up-to-date and is very informative for comparison of equipment but expensive ($350 per year). Data Pro also teaches courses on micros. Call toll free (800) 257-9406.

7) Many areas have microcomputer users groups. Could join one. One group oriented to business computer systems publishes monthly newsletters of general interest and two books, "How to Select Your Small Computer...Without Frustration," and "How to Manage Your Small Computer...Without Frustration." Cost is $65.00 per year. Contact

Association of Computer Users
P.O. Box 9003
Boulder, Colorado 80301
(303) 443-3600

8) If you are interested in microcomputer applications for transit operations, contact the "Transit Industry Microcomputer Exchange". The exchange is composed of members who share microcomputer information and software. The chairman of the exchange is Jack Reilly of the Capital District Transportation Authority in Albany, NY, while technical support is provided by Rensselaer Polytechnic Institute. Should you wish technical assistance or further information about the exchange, contact Clark Semon at 518-270-6227

9) If you are interested in traffic engineering user activities, contact:

Ken Courage
University of Florida
346 Weil Hall
Gainesville, Florida 32611
(904) 392-0378

10) If you are interested in transportation or other planning activities, contact:

Mike Couture
Transportation Systems Center
DTS-62
Kendall Square
Cambridge, MA 02142
(617) 494-2086

Bob Stockman
10748 100th Street, S. E.
Alto, MI 49302
(616) 454-9375

11) The Transportation Research Board has established a Task Force on Microcomputer Applications in Transportation. For further information contact Howard Simkowitz at (202) 727-5843, at Washington, D.C. Department of Transportation or Campbell Graeub at TRB.

12) If you know BASIC and want to graduate to Pascal:

Pascal Primer (a reference book)
David Fox & Mitchell Waite
Howard W. Sams & Co., Inc.

Apple Pascal: A Hands-On Approach
Arthur Luehrman and Herbert Peckham
Order No. 49171-2
Price: $16.95

13) Article in "High Technology" Magazine Microcomputers; The Second Wave, by Cary Lu. A superb review of capacity, compatibility and support problems and potentials in emerging microcomputer systems. Reprints available for $1.00. Send check or money order to Randi Straus, High Technology, 38 Commercial Wharf, Boston, MA. 02110, (617) 227-4700. Quantity discounts available.

TRANSIT OPERATIONS

APPLICATIONS

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Transit Operations Applications

Scheduling And Run Cutting

APPLICATION — Bus Schedule Timing

DEVELOPER — Berkshire County Regional Planning Commission
Pittsfield, Massachusetts

SUMMARY — For individual routes of a simple fixed-route transit system, headways, running time between stops, and layover times can be input. 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 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 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

microcomputers in transportation

Transit Operations Applications

Scheduling And Run Cutting

PROJECT "microRUCUS" - a microcomputer version of RUCUS

DEVELOPER COMSIS Corporation

SUMMARY COMSIS has completed the development of a microcomputer based version of RUCUS to be used for creating or modifying driver run assignment for surface transit. MicroRUCUS is a a significant improvement over previous versions of RUCUS in the ease of use and the minimal requirement for set-up time and effort. Other system features include both manual and automatic mode of operation, a fully person/computer interactive procedure that allows for the application of human "insight," immediate system feedback to guide the schedule development process, and the capability to display, print, and plot statistics and MIS information. MicroRUCUS allows for the creation of 1,2,3 and more peice runs, multiple relief points, and interlining.

ENVIRONMENT CP/M compatible microcomputer, IBM PC, Molecular Computer - multi-user microcomputer

AVAILABILITY The software is distributed as a proprietary package by below firm

STATUS Complete

CONTACTS
Bruce Robinson
Manager, Scheduling Systems
COMSIS Corporation
The 1200 Building
2685 Marine Way
Mountain View, CA 94043
(415) 964-5911

microcomputers in transportation

Transit Operations Applications

Scheduling And Run Cutting

PROJECT	Development of RUCUS Capabilities on a Microcomputer
DEVELOPER	VISTA Systems
SPONSOR	San Diego Transit Corporation
SUMMARY	The project involves acquisition of a microcomputer system and development of software which replicates the functions of San Diego's current RUCUS system. The capabilities include runcutting, and printing of driver schedules, headway sheets, and operating statistics.
ENVIRONMENT	Computhink Hawk 32, 512K, Motorola 68000, 40 MB hard disk, UNIX, 3 terminals
AVAILABILITY	For sale from VISTA Systems
STATUS	The code is being customized to the San Diego System on a PRIME, and will be downloaded to the Computhink.
SCHEDULE	Completion by March 1983
CONTACT	Mr. Ken Mead (San Diego Contact) P.O. Box 2511 San Diego, CA 92112 (619) 238-0100 Mr. Phil Durant (Contractor Rep.) VISTA SYSTEMS 900 State Road Princeton, NJ 68540 (609) 921-0065 Mr. Jim Fennessy (Contractor Rep.) VISTA SYSTEMS Suite 201 1301 Ygnacio Valley Road Walnut Creek, CA 94598 (415) 943-6610

microcomputers in transportation

Transit Operations Applications

Scheduling And Run Cutting — In Development

APPLICATION Transit Trip Scheduler

DEVELOPER Chapel Hill Transit

SPONSOR UMTA, Office of Methods and Support

SUMMARY For individual routes of a fixed route transit system, running times between time points and layover times can be input. With start times for each bus, a schedule can be built up by trip or by block (bus). Individual trips may be changed to meet certain timepoint arrival times. Running times may vary for 4 times of day.

ENVIRONMENT The program is written in UCSD Pascal to operate under the UCSD p-system operating system on the Apple II computer with 2 disk drives and a printer. Documentation is complete and clear.

STATUS The program has been used to build schedules and develop timetables for Chapel Hill Transit. Major Improvements are underway with UMTA Section 8 funding to make the program more general purpose and distributable.

AVAILABILITY Not yet available for general use. Will be distributed by UMTA when complete.

CONTACTS

Bob Godding
Chapel Hill Transit
306 North Columbia
Chapel Hill, NC 25714
(919) 929-1111

Tom Hillegass
UMTA (URT-41)
Washington, DC 20590
(202) 426-9271

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Transit Operations Applications

Scheduling And Run Cutting — In Development

PROJECT	Interactive Microcomputer Run Cutter
DEVELOPER	West Virginia University Department of Industrial Engineering, VISTA Systems Inc., COMSIS Corporation. Testing by Chapel Hill Transit
SPONSOR	UMTA, Office of Methods and Support
SUMMARY	Project is to produce an Apple II UCSD microcomputer run cutter for small transit operations. Procedure is to develop major types of work (e.g., AM straights, PM straights, etc.) in a non-optional fashion and to allow the scheduler to intervene and modify runs.
ENVIRONMENT	Apple II UCSD microcomputer
AVAILABILITY	Not available until project is completed.
STATUS	Final development is near completion, testing underway at Chapel Hill Transit
SCHEDULE	Expected to be completed by June 1983.
CONTACTS	Mr. Tom Hillegass (UMTA Contact) UMTA/URT-41 400 7th Street, S.W. Washington, DC 20590 (202) 426-9271

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Transit Operations Applications

Scheduling And Run Cutting — In Development

PROJECT	Microcomputer Software for Transit Scheduling and Analysis
DEVELOPER	North Central Texas Council of Governments (NCTCOG) and ATE Management and Service Co., Inc.
SUMMARY	Dallas Transit System and its ATE contractor are designing, developing and implementing a scheduling package which aids the scheduler in building and blocking trips. The software generates route headways based on load count checks and load standards. All the time points for a trip are generated based on a single time per trip. Capability to add, change, or delete trips is supported.
ENVIRONMENT	The software is being written in UCSD Pascal. It is being developed on an Apple II and on an IBM PC using a hard disk drive (10 MBYTES)
AVAILABILITY	Not available until project is completed.
STATUS	Testing of the system in Dallas has begun.
SCHEDULE	Expected to be completed by April 1983.
CONTACTS	Mr. David Kirk (Grant Manager) NCTCOG P.O. Drawer COG Arlington, TX 76011 (817) 640-3300 Roger Mitchell (Contractor Rep.) ATE Suite 705 1911 N. Fort Meyer Drive Arlington, VA 22209 (703) 528-6302 Mr. James Wiesehuegel (Operator Rep.) Dallas Transit System 101 N. Peak Dallas, TX 75226 (214) 837-3400 ext. 246 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 Applications

Scheduling And Run Cutting — In Development

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 - this uses the Ford-Fulkerson Technique included with the RUCUS I package; and 3) Manual - This 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, 1 MB memory, 40 MB hard disk; UNIX System III and FORTRAN

SCHEDULE Completion by June 1983

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

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Transit Operations Applications

Maintenance

APPLICATION — Fleet Maintenance System - A preventive maintenance system for transit properties of any size.

DEVELOPER — DDS, Incorporated, San Diego, CA - in conjunction with San Diego Transit Corporation.

SUMMARY — FMS utilizes a vehicle inventory and status file to maintain and automatically update the history of each revenue and non-revenue vehicle and their components. A "dictionary" of all maintenance activities performed in the facility is developed by the user. These two files are then merged in a file called Preventive Maintenance Recommendations. A time and/or mileage recommendation is developed for each maintenance activity according to the needs of the individual series of vehicles. Daily consumables information updates each vehicle mileage and is used to generate repair orders for those vehicles that are in need of PM inspections. The foreman can also request repair orders for buses requiring specific action. Road calls, accident, component rebuild (on or off property) and non-maintenance service are the other types of repair orders generated by the system. All activities and their related information is maintained by the system and management reports are printed on demand.

ENVIRONMENT — The program is written in BASIC using a data base manager and runs under UNIX Version 7, on 16-bit microcomputers with a Winchester style hard disk. This configuration provides the capability of operating on a single user desktop system or in a multi-user/multi-tasking environment with remote work stations and printers. These stations can be direct connection or utilize tele-communications.

STATUS — The prototype Fleet Maintenance System is being installed at the San Diego Transit Corporation in March 1983 and should be in a production mode by June 1983.

AVAILABILITY — The FMS program (with or without hardware) will be available as a proprietary system from the below listed company.

CONTACT — Dwain S. Lott
Product Manager/FMS
DDS, Incorporated
5155 Mercury Point
San Diego, CA 92111
(619) 565-9166

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Transit Operations Applications

Maintenance

APPLICATION "The Fleet Controller" - A Maintenance Management System for Microcomputers

DEVELOPER Mr. Paul Setne

SUMMARY An existing data base 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 a bus-adapted American Trucking Association's coding system for vehicle repairs.

ENVIRONMENT Package is available for the IBM personal computer with floppy or hard disk storage.

STATUS Complete.

AVAILABILITY The software is distributed as a proprietary package by the below firm.

CONTACT Fleet Tech International
P.O. Box 1070
Minnetonka, MN 55343
(612) 938-8861

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Transit Operations Applications

Maintenance

APPLICATION — Equipment Management Information System (EMIS)

DEVELOPER — Public Technology, Inc.

SUMMARY — The rapidly escalating costs of energy, mechanics of labor and equipment are forcing governments to re-examine the manner in which their fleets are being managed. Micro EMIS provides a turnkey, 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.

ENVIRONMENT — Apple II Plus
48K (RAM)
132 character printer, four 5 1/4 inch disk drives or two 8 inch double density, double side disk drives

STATUS — The system is currently being installed in Rock Hill, South Carolina.

AVAILABILITY — The cost of the hardware, software, and on-site support to install the system and train users is $17,000 for members of PTI and $25,000 to non-members.

CONTACT — Decision Support Systems Staff
Public Technology, Inc.
1301 Pennsylvania Avenue, N.W.
Washington, D.C. 20004
(202) 626-2426

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Transit Operations Applications

Maintenance

APPLICATION Transit Master

DEVELOPER Innovative Engineering

SUMMARY Transit Master contains modules relating to daily route level performance reporting, vehicle maintenance history and preventive maintenance reporting, accounting functions, operator and route assignments, and Section 15 reporting. The program is written using dBaseII and can be used by transit systems ranging in size from 4 to 200 vehicles.

ENVIRONMENT CP/M with 2 disk drives and 64K (RAM)

AVAILABILITY For sale from contact below.

CONTACT
Mr. Chris Kayes
Innovative Engineering
South Stream Road
RFD 2
Bennington, VT 05201
(802) 442-6163

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Transit Operations Applications

Maintenance

APPLICATION HERCULES Vehicle Maintenance Reporting System

DEVELOPER Computer Task Group

SUMMARY Fleet maintenance information system. Includes:

- o Vehicle maintenance history
- o Consumables tracking
- o Preventive maintenance sheduling
- o Up to 200 vehicles

ENVIRONMENT APPLE II+, 64K, 2 disk drives

AVAILABILITY Available for purchase. Approximately $1,600 fir software only.

CONTACT
Walter Lopus
Computer Task Group, Inc.
800 Delaware Avenue
Buffalo, NY 14209
(716) 882-8000

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Transit Operations Applications

Maintenance — In Development

APPLICATION: Equipment Maintenance/Parts Inventory

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

SUMMARY: EQUIPMENT MAINTENANCE: P. M. 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 (1 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 for each part - system keeps track of preferred vendor or manufacturer. Pricing under control of 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, 1 MB RAM, 40 MB hard disk: UNIX System III and FORTRAN

STATUS 1 June 1983

CONTACT Mr. Charles Richard, Michigan Department of Transportation
P.O. Box 30050
Lansing, Michigan 48909
(517) 373-7666

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Transit Operations Applications

Maintenance — In Development

APPLICATION Transit Maintenance Management

DEVELOPER Western Transit Maintenance Consortorium (Contractor - Arthur Anderson)

SUMMARY A consortium of 5 western transit properties are developing a maintenance management information system designed to the common requirements of all 5 properties and intended to be easily transferred to other transit operations. Functions include:

- parts inventory
- work order processing
- failure monitoring
- consumable tracking
- preventive maintenance scheduling
- warranty tracking

The package will be based upon existing software developed by Glen Gary Transport of Montreal and will be modified by the contractor Arthur Anderson to meet consortium specifications.

ENVIRONMENT The software is to operate on the PRIME, Hewlitt Packard and Digital minicomputers as a minimum. Through use of the software interface program TAPS, a product of INFORMATICS, the maintenance package should be transferrable to a wide range of mini and microcomputers.

STATUS Finished package expected by late 1983

AVAILABILITY Current arrangements are for Seattle Metro, one of the consortium properties, to have distribution rights to distribute the (modified) Glen Gary software to transit properties (only) in the U.S. (only). A $2,000 license fee will be payable to Glen Gary for each copy distributed.

CONTACT

Stu Bothwell
Seattle Metro
821 Second Avenue
Seattle, WA 98104
(206) 447-6829

A.B. Hallman (UMTA Contact)
UMTA, URT-32
Wasington, DC 20590
(202) 426-9274

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Transit Operations Applications

Ridership/Revenue Estimation

APPLICATION — Impact of Transit Fare Changes

DEVELOPER — Berkshire County Regional Planning Commission
Pittsfield, Massachusetts

SUMMARY — The existing distribution of transit passengers by fare level (based on zones travelled 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 Applications

Ridership/Revenue Estimation

APPLICATION Fare Revenue Projections

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

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, local employment and unemployment levels, and parking costs in the Central Business District. 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 microcomputer with 64K of memory and two disk drives.

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

AVAILABILITY Although the procedure could readily be transferred to another operator, it has not been completely documented.

CONTACT Bruce Bernhard
Bureau of Finance
San Francisco Municipal Railway
949 Presido Avenue
San Francisco, California 94115
(415) 558-5346

microcomputers in transportation

Transit Operations Applications

Ridership/Revenue Estimation

APPLICATION Ridership and Revenue Projections

DEVELOPER Old Colony Planning Council, Brockton, Massachusetts

SUMMARY Two procedures have been developed to project annual transit ridership and revenue by market segment (by origin/destination within route and by fare class) under alternate assumptions of how ridership will change in response to fare changes. Input required for both procedures includes existing annual ridership, existing fares, and new fares for each market segment. One procedure assumes stable ridership, the other assumes a fare elasticity of -0.33 (the Simpson-Curtin rule). Both procedures provide changes in revenue and revised revenue by market segment and totaled over the entire system. The procedure applying the Simpson-Curtin rule also provides new ridership estimates by market segment and in total.

ENVIRONMENT The procedures are implemented in VISICALC under the 3.0 DOS operating system on a Commodore 8032 microcomputer with 32K of memory and two disk drives.

STATUS The procedures 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. They would require modifications to incorporate another operator's relevant market segments.

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

microcomputers in transportation

Transit Operations Applications

Route Performance

APPLICATION — Route Performance and Cost Analysis

DEVELOPER — Capital District Transportation Authority, Albany, New York

SUMMARY — 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.

The second program performs route analyses. Inputs include the passenger count file, 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.

ENVIRONMENT — The programs are written in Pascal under the UCSD operating system on an APPLE II microcomputer with 64K RAM and one disk.

STATUS — The programs have been in use for six months by CDTA.

AVAILABLITY — 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 program are now available from CDTA but will eventually be distributed by the Microcomputer User Group being operated under contract to CDTA.

CONTACT — Jack Reilly
Manager of Planning & Development
Capital District Transportation Authority
110 Watervliet Avenue
Albany, New York 12206
(518) 457-1283

microcomputers in transportation

Transit Operations Applications

Route Performance

APPLICATION — Ridership Reporting

DEVELOPER — Old Colony Planning Council, Brockton, Massachusetts

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.

AVAILABILTY — 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 — William Steffens
Old Colony Planning Council
Nine Belmont Street
Brockton, MA 02401
(617) 583-1833

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Transit Operations Applications

Route Performance

APPLICATION Section 15 Ridership Survey Processing

DEVELOPER Old Colony Planning Council, Brockton, Massachusetts

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), 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
William Steffens
Old Colony Planning Council
Nine Belmont Street
Brockton, MA 02401
(617) 583-1833

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Transit Operations Applications

Route Performance — In Development

PROJECT	Transit Data Management System
DEVELOPER	Multisystems, Inc., Cambridge, MA
SPONSOR	UMTA, Office of Methods and Support, Grant No. DOT-UT-9005
SUMMARY	This project is developing microcomputer software which reports transit route performance indicators. Data obtained from load checks, ride checks, and driver counts can be stored in the data base historically, and retrieved at a variety of levels of detail, e.g. by route, date, time of day, or day of week. Flexibility of reporting is enhanced because a commercial data base manager ("MDBS") is being used in the software development.
ENVIRONMENT	A preliminary decision has been made to use the commercial data base manager, "MDBS", and the Pascal MT+ language.
AVAILABILITY	Not available until project is completed.
STATUS	Functional specs have been written and the technical specs are underway.
SCHEDULE	The project should be completed in mid 1983.
CONTACTS	Mr. John Attanucci (Contract Manager) Multisystems, Inc. 1050 Massachusetts Ave. Cambridge, MA 02138 (617) 864-5810 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 Applications

Cost Estimation

APPLICATION — Five-year Cost Projections

DEVELOPER — Bureau of Finance, San Francisco Muncipal Railway (MUNI), San Francisco, California

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 microcomputer with 64K of memory and two disk drives.

STATUS — The program has been used by the MUNI Bureau of Finance for 1 1/2 years to assist in financial planning.

AVAILABILITY — As it stands, the program is specific to MUNI's organizational structure, accounting system, and cost structure. Program revisions are being made as these underlying factors are changing at MUNI. After these changes have been made and the revised procedure has been fully tested MUNI will consider making the procedure available for distribution to others.

CONTACT — Bruce Bernhard
Bureau of Finance
San Francisco Municipal Railway
949 Presido Avenue
San Francisco, California 94115
(415) 558-5346

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Transit Operations Applications

Cost Estimation

APPLICATION Revenue and Cost Forecasting

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 with 64K (RAM), one disk drive, program uses VISICALC

AVAILABILITY Available from contact below.

CONTACT TIME Support Center
Department of Civil Engineering
Rensselaer Polytechnic Institute
Troy, NY 12181
(518) 270-6227 between 1-4 pm EST

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Transit Operations Applications

Cost Estimation — In Development

PROJECT	Financial Forecasting for Transit Operations (UBUCKS)
DEVELOPER	Tri-Met, Portland, OR, and Booz-Allen.
SPONSOR	UMTA, Office of Methods and Support, OR-06-0006
SUMMARY	UBUCKS contains models which can be used to forecast; (1) bus operator costs; (2) extra board costs; (3) maintenance costs; (4) other operations costs; (5) general administrative costs; (6) ridership and revenues; and (7) cash flow. The models will be calibrated on real data drawn from the Tri-Met operations, then tested in Albany, NY and Portland, ME.
ENVIRONMENT	All UBUCKS software is coded in UCSD Pascal and will operate on microcomputers having 64K of memory and the UCSD Pascal operating system.
AVAILABILITY	Not available until project is completed.
STATUS	The operator and extra board cost model will be coded by April 1983.
SCHEDULE	Software development should be completed by the Summer of 1983.
CONTACTS	Mr. Douglas Wentworth (Grant Manager) Director, Management Information and Analysis Tri-Met 4012 S.E. 17th Avenue Portland, OR 97202 (503) 238-4972 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 Applications

PROJECT	Transit Industry Microcomputer Exchange (TIME)
DEVELOPER	Capital District Transportation Authority (CDTA) and Rensselaer Polytechnic Institute
SPONSOR	UMTA, Office of Methods and Support, Grant No. NY-06-0090(1)
SUMMARY	CDTA along with their contractor, Rensselaer Polytechnic Institute, collects and disseminates information on microcomputer software and hardware for transit operators. The center distributes a newsletter which describes software in both the private and public sectors which is useful within transit agencies. It tests, applies, and minimally cleans up code and documentation of public domain software. The center serves as a focal point for users wishing to share software and experiences with microcomputer technology.
ENVIRONMENT	Potentially all microcomputer environments could be addressed by the user group.
STATUS	TIME has been in operation since September. The second newsletter should be available by late January.
SCHEDULE	The project will last until August 1983.
CONTACTS	Jack Reilly (Grantee) Manager of Planning and Development Capital District Transportation Authority 110 Watervliet Ave. Albany, NY 12206 Mark Abkowitz (Contractor) Rensselaer Polytechnic Institute Civil Engineering Dept. Room 4049 Troy, NY 12181 (518) 270-6360 Ron Jensen-Fisher (UMTA Contact) UMTA/URT-41 400 7th Street, S.W. Washington, DC 20590 (202) 426-9271

microcomputers in transportation

Transit Operations Applications

PROJECT	Parts Inventory System
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 data base file manager for a microcomputer, TSC used DB Master™ to create a very simple parts inventory system. Although it was not directly intended for application, this system can be used to manage a small parts inventory or to become familiar with some features of parts inventory systems, with data base 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
AVAILABILITY	Free from Transit Industry Microcomputer Exchange Support Center
STATUS	Demonstration version is available with documentation
CONTACTS	TIME Support Center Rensselaer Polytechnic Institute Department of Civil Engineering Troy NY 12181 (518) 270-6227 between 1:00 and 4:00 PM (EST)

™DB Master is a trademark of Stoneware Microcomputer Products

microcomputers in transportation

Transit Operations Applications

APPLICATION — Transit Operations Planning (TOP) Model

DEVELOPER — Mark Turnquist

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 — Apple III, 128K (RAM), 1 disk, written in UCSD Pascal to operate under the UCSD P-system.

AVAILABILITY — See contact below

CONTACT —
Mark Turnquist
School of Civil and
Environmental Engineering
Hollister Hall
Cornell University
Ithica, NY 14853
(607) 256-1000

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Transit Operations Applications

APPLICATION	Garage Information Management System (GIMS)
DEVELOPER	Center for Urban Analysis
SUMMARY	The program produces operating cost billing information for departments sharing different types of vehicles in a fleet. The cost is calculated on mileage input by department users. It was built using Informix, a relational data base system.
ENVIRONMENT	Onyx C8002 with 2 disk drives and 64K (RAM),UNIX operating system
STATUS	Program is being used by Santa Clara County.
AVAILABILITY	Only documented within the program, see contact below.
CONTACT	Mr. 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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Transit Operations Applications

APPLICATION — Computerized Driver Pick System

DEVELOPER — Seattle Metro, Seattle, Washington

SUMMARY — The results of run cutting are maintained as a data base to which is appended additonal information on whether or not each run has been picked by a driver, and the driver's name. This data base provides the initial listing of runs which is distributed to the drivers each time new picks are to be made. Then, as the drivers make their picks in order of seniority, they are able to query the data base (through a clerk/computer terminal operator) to determine which picks remain. As selections are made, the data base is updated.

As used in Seattle, the driver pick system incorporates straight runs, combinations, and part time work. The system has also been used to allow mechanics to select specific maintenance assignments.

ENVIRONMENT — The system is implemented using Ashton-Tate's dBase II data base management system on an 8-bit ALTOS microcomputer with two disk drives.

STATUS — The system has been used successfully through one driver pick cycle at the Seattle Metro. Another cycle is planned to begin soon.

AVAILABILTY — The system will not be available for distribution until additional experience in its use is gained in Seattle. Its transferability to other operators may be affected by differences in work rules.

CONTACT — James Keller
Seattle Metro
821 Second Avenue
Seattle, Washington 98104
(206) 447-6320

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Transit Operations Applications

APPLICATION — Analysis of Vehicle Rehabilitation and Replacement Plans

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

SUMMARY — The costs of alternative vehicle rehabilitation and replacement plans are evaluated, based on the costs of new vehicle purchase and of vehicle rehabilitation, as well as the variation in maintenance costs by vehicle age for rehabilitated and unrehabilitated vehicles. Present conditions are reflected by providing inputs describing the distribution of vehicles in the existing fleet by age.

ENVIRONMENT — The program is set up as a VISICALC procedure which runs on an Apple 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 maintenance strategies.

AVAILABILITY — Although the procedure could readily be transferred to another operator, it has not been completely documented.

CONTACT — Bruce Bernhard
Bureau of Finance
San Francisco Municipal Railway
949 Presido Avenue
San Francisco, California 94115
(415) 558-5346

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Transit Operations Applications

APPLICATION: Transit Analysis Modules--Ridership, cost, revenue and performance indicators analysis

DEVELOPER: Responsive Analysis Methods Project, Center for Transportation Studies, Massachusetts Institute of Technology, Cambridge, MA

SPONSOR: UMTA, Office of Methods and Support, Grant NO. MA-06-0092

SUMMARY: A library of Transit Analysis models and analysis procedures has been developed for use in predicting ridership, costs, revenues, and performance indicators. The library is provided in DODOTRANS II, and exploits the features of that system (see separate description). The user can choose which specific models to use for a particular analysis, and at what level of detail--route, corridor, or system. No programming knowledge is required.

ENVIRONMENT: The Transit Analysis modules are provided in DODOTRANS II and are programmed in USCD Pascal for the Apple II with 64K bytes of memory.

AVAILABILITY: The Transit Analysis modules are completed in prototype form and are being revised and documented.

CONTACT: Prof. Marvin L. Manheim (Grant Manager)
Department of Civil Engineering
Room I-181
Massachusetts Institute of Technology
Cambridge, MA 02139
(617) 253-1627

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Transit Operations Applications

In Development

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 that could be programmed to fulfill other functions within the transit agency if they are not being used to collect counts or if automatic on-board collectors are acquired later. They have a full system of "prompts" to lead the collector 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 2 lbs and are easily held in one hand. 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, 1 MB memory, 40 MB hard disk; UNIX System III and FORTRAN

SCHEDULE Completion by June 1983

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, New York 13205-0820
(315) 470-0206

microcomputers in transportation

Transit Operations Applications

In Development

APPLICATION: Bus Stop/Activity Center Telephone Information System

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

SUMMARY: GENERAL SYSTEM FEATURES: Schedule information software can be interfaced with RUCUS and a real-time monitoring system to report actual rather than schedule data. System-wide or line-specific messages can be inserted in the outgoing message, e.g., "ALL LINES ARE 5-10 MINUTES LATE DUE TO INCLEMENT WEATHER." Output is via telephone for dial-up requests. CRT's or monitors can be installed at key loctions (Portland Transit Mall Technique). Hard copy at downtown transit information office is available to supplement timetables. ACTIVITY CENTER INFORMATION: 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 REQUESTS: 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 3 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."

ENVIRONMENT: Altos 68000, 1 MB RAM, 40 MB hard disk; UNIX System III and FORTRAN

STATUS: Under development

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

microcomputers in transportation

Transit Operations Applications

In Development

APPLICATION: General Ledger/Payroll/Payables 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, 1 MB memory, 40 MB hard disk; UNIX System III and FORTRAN

STATUS Under development

CONTACT Mr. Charles Richard
Michigan Department of Transportation
P.O. Box 30050
Lansing, Michigan 48909
(517) 373-7666

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Transit Operations Applications

In Development

APPLICATION: Transit Agency Payroll System

DEVELOPER: South Bend Public Transportation Corporation, South Bend, Indiana

SUMMARY: A payroll system oriented to the small to medium transit operator is being developed.

ENVIRONMENT: The system is being developed in BASIC on the TRS-80 Model II microcomputer. South Bend's system has 64K of memory and three disk drives.

STATUS: Completion of the system is scheduled for April, 1983.

AVAILABILITY: There are presently no distribution plans.

CONTACT: Arturo Garcia
South Bend Public Transportation
901 East Northside Boulevard
South Bend, Indiana 46624
(219) 233-2131

microcomputers in transportation

Transit Operations Applications

In Development

PROJECT	Microcomputer Software for Transit Service Analysis
DEVELOPER	Thayer School of Engineering, Dartmouth College, Hanover, NH
SPONSOR	UMTA, Office of Methods and Support, Grant No. DC-06-0372
SUMMARY	The objective of this project is to develop a policy guide and microcomputer program to apply basic relationships in trading off fixed route service parameters. Both service parameters (e.g., route spacing, frequency and fare) and location parameters (e.g., population density and geographical barriers) are included.
ENVIRONMENT	All software will be written in UCSD Pascal to operate on an Apple II microcomputer.
STATUS	Policy and technical guides are complete in draft and microcomputer programming is underway.
SCHEDULE	All work should be complete in the Winter of 1983.
CONTACTS	Dr. Thomas Adler (Grant Manager) Thayer School of Engineering Dartmouth College Hanover, NH 03755 (603) 646-3551 Mr. Thomas Hillegass (UMTA Contact) UMTA/URT-41 400 7th Street, S.W. Washington, DC 20590 (202) 426-9271

TRANSPORTATION PLANNING

SOFTWARE

microcomputers in transportation

Transportation Planning Software

PROJECT MINUTP

DEVELOPER COMSIS Corporation

SUMMARY COMSIS Corporation has developed a computer model system to aid the planner/analyst in the area of transportation planning and traffic assignment. It is similar in nature and function to the larger, more complicated, systems such as UTPS, PLANPAC, TRANPLAN, etc., but is simpler to use.

The system contains modules for:

- Network Building
- Impedance Matrix Development
- Trip Generation
- Trip Distribution
- Matrix Manipulation
- Matrix Balancing
- Traffic Assignment with Capacity Restraint
- Network Reporting

All routines are written in FORTRAN allowing the system to be installed on many different types and sizes of computers. It also allows for quick, easy customizing.

ENVIRONMENT Operates under CP/M on a Molecular microcomputer, and under DOS on the IBM PC with at least 128k RAM.

AVAILABILITY For sale by contact below.

STATUS A production version of the software is currently available on the Molecular, and will be available on the IBM PC by the end of 1982.

CONTACT Mr. Lawrence Seiders
COMSIS Corporation
2483 Old Middlefield Way
Mountain View, CA 94043
(415) 964-5911

microcomputers in transportation

Transportation Planning Software

APPLICATION Transportation Planning - MTPS

DEVELOPERS Roger CREIGHTON ASSOCIATES Incorporated

SUMMARY MTPS is similar to standard traffic simulation models on large computers. The system consists of seven progrms described briefly below:

- NETWORK: Interactive program used to enter information defining the highway network.
- SHORTPATH: Finds the shortest path between all zonal pairs in the system.
- TRIPPUR: Sets up the purpose categories of trips that will be used in the assignment
- TRIPGEN: Interactive program for inputting trip productions and attractions for each zone by trip purpose.
- ASSIGN: Uses a standard gravity model formulation to develop a trip table. The user can change the overall expected trip length and the expontential within the gravity formula.
- ADDER: Combines all the data from different trip purposes to produce total volumes.
- LINKVOL: Prints out traffic volumes on individual links.
- TRIPTAB: Prints out the zone trip table by trip purpose and for all trip purposes combined.

ENVIRONMENT Apple II, Apple II Plus; 64K (RAM); 2 disk drives; Apple Pascal.

STATUS Operational

AVAILABILITY For sale by contact

CONTACT Charles Manning
Roger CREIGHTON ASSOCIATES Incorporated
274 Delaware Avenue
Delmar, New York 12054
(518) 439-4991

microcomputers in transportation

Transportation Planning Software

APPLICATION "MicroTRIPS", "MicroSURVEY", "IMPAX", "CRIT1/CRIT2"

DEVELOPER PRC Voorhees

SUMMARY "MicroTRIPS" is a comprehensive package paralleling UTPS in functional capability for systems up to 150 zones, 2000 links. Interactive demand estimation and network assignment for highway and transit systems plus generalized matrix manipulation and summarization.

"MicroSURVEY" is an interactive survey analysis package designed for up to three levels of hierarchy. It includes generalized edit manipulation, cross-tabulation and regression programs.

"IMPAX" is an interactive traffic impact analysis program incorporating trip generation, distribution and assignment in single easy-to-use program. Output includes turning movements, link profiles by generation source and level of service measures.

"CRIT1/CRIT2" are interactive programs for intersection level of service analysis based on "CRITICAL MOVEMENT" procedure. Incorporates estimation of vehicle delays for both unsaturated and saturated conditions. CRIT2 is a simplified version of CRIT1.

ENVIRONMENT CP/M Operating System, 64K, 2 Disks

AVAILABILITY For sale from contact below:

CONTACT Pat Costinett or
Bob Stribling
1500 Planning Research Drive
McLean, VA 22102
(703) 556-2400
TLX 248372 PRC

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Transportation Planning Software

APPLICATION 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, and traffic is distributed to internal zones through use of a gravity model. The program allows for either an all-or-nothing or an incremental capacity-restrained assignment to be performed. Turn penalties can also be specified for any intersection movement in the network. Output capabilities include link volumes, turning movements at pre-selected intersections, and select link analyses. In addition, the user has the option to review the results of the assignment process for any pair of origin and destination zones. A system of up 150 zones and 1500 links can be accomodated.

ENVIRONMENT The program is operational on an Apple II Plus with 48K (RAM) and one disk drive.

STATUS The program has been used for studies in Eugene, OR, Sacramento, CA, and Richland, WA.

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

APPLICATION Transportation Planning - System

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

SUMMARY SMALL METRO AREAS: Solver for regression equations to quickly generate P's and A's as well as adjust for special generators (including balancing). All print-out can be suppressed with CRT used for complete projection including verification of results and adjustments keyed on-line. Gravity model or Fratar available. Network changes and updates made on-line with CRT. All output on CRT for posting and analysis. Screen line crossing program available for modal validation. Matrix adjustment, add or delete (External-External modifications). LARGE METRO AREAS: Up to 1,000 zone and 8,000 nodes. Modal split and Gravity model concurrent application. Car ownership probability vs. income spread. Vehicle miles and hours by ten jurisdictions automatically. Cross-class solver. Select area trip tables (for "micro" corridor analysis). Diversion assignment (toll/cost ratio or other). Calculated accessibiltiy indices. Tree skim/Time or cost or both. List links by V/C ratio. Turns. Capacity restraint. Select link. Peak-hour model. All necessary utility manipulation and conversion programs.

ENVIRONMENT Altos 68000, 1 MB RAM, 40 MB hard disk; UNIX System III and FORTRAN

STATUS Operational

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

microcomputers in transportation

Transportation Planning Software

DEVELOPER — Center De Recherche sur les Transports, Universite de Montreal

SUMMARY — 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

The system contains about 50 modules that are grouped as follows:
- Utilities
- Network Editor
- Matrix Editor
- Function Editor
- Assignment Procedures
- Results

The assignment procedures include the following features:
- equilibrium road assignment
- transit assignment
- multimodal equilibrium assignment
- variable or fixed demand

The system handles problems of up to 400 zones, 2000 nodes, 8000 links, 15000 transit line segments.

All the modules are written in FORTRAN.

ENVIRONMENT — Operates on a Pixel 100/AP computer with minimum 512K RAM and 40 Mb Winchester hard disk. Graphic terminals supported are Tektronix 4010 series and Chromatics CGC7900.

AVAILABILITY — For sale as object code for installation on Pixel 100/AP under Unix.

CONTACT — INRO Systems Inc.
279 e 44th St., Suite 14J
New York, N.Y. 10017

Or call Dr. M. Florian at (514) 343-7575

microcomputers in transportation

Transportation Planning Software

APPLICATION: Pivot Point Mode Choice Model

DEVELOPER: Association of Central Oklahoma Governments, Oklahoma City, Oklahoma

SUMMARY: The manual worksheet version of a pivot point mode choice model included in "Sketch Planning Methods for Short-Range Transportation and Air Quality Planning," published by EPA, has been implemented as a microcomputer program. Given base period work trip mode shares and changes in travel times and costs by traveller market segment, the program predicts revised mode shares. The results for the various market segments are summed to obtain an estimate of the total ridership and VMT impact of the transportation system change.

ENVIRONMENT: The program is implemented in BASIC on an Ohio Scientific microomputer with as little as 4K of memory. No disk files are required. The program is thus compatible, after very minor or no changes, with any computer on which BASIC is available. The program has all of the generality in application of the worksheets on which it is based.

STATUS: The program has been used over a period of two years in a number of cities to conduct air quality sketch planning.

AVAILABILITY: The program is available in source listing form, or on an Ohio Scientific-compatible diskette or cassette.

CONTACT: Michael Waller
Little Rock Metroplan
Wallace Building--8th Floor
105 Main Street
Little Rock, Arkansas 72201
(501) 372-3300

microcomputers in transportation

Transportation Planning Software

APPLICATION 'UMOT' DAILY TRAVEL MODEL

DEVELOPERS Mobility Systems, Inc.

SUMMARY A multi-loop feedback travel model based on accessibility maximization under explicit constraints of travel time and money budgets. Medium to long term model especially suitable for travel policy evaluation and alternative plans analysis. It is an operational and expanded version of the UMOT model sponsored by the U.S. DOT.

The outputs include: (i) car ownership levels, (ii) daily travel distance by mode, and modal splits, (iii) network and door-to-door speeds, by mode, (iv) minimum and maximum road network sizes for which the travel budgets are fully utilized, (v) daily travel time and money expenditures per traveler/household, by mode, and hence also the expected revenues from taxes, or for public transport operators, and (vi) fuel consumption and emmissions, by mode.

No calibrations to observed travel choices are required. Transparency and user interaction are provided by self-contained instructions, graphic displays of the iterations, and alphanumeric readouts and hardcopies. Fully interactive with the UMOT Hourly, Distribution/Assignment and Urban Structure models.

Comprehensive manuals, periodic program updating and extensions, and a quarterly Users' Newsletter, are all part of the package.

ENVIRONMENT The program operates on an Apple II+ with a 16K card, or IIe. Program written in Applesoft and Machine Language with DOS 3.3 operating system. One or two disk drives and a printer are required.

AVAILABILITY Under a yearly leasing license.

CONTACT Dr. Yacov Zahavi
Mobility Systems, Inc.
7304 Broxburn Court.
Bethesda, Maryland 20817
(301) 229-7762

microcomputers in transportation

Transportation Planning Software

APPLICATION UMOT HOURLY TRAVEL MODEL

DEVELOPERS Mobility Systems, Inc.

SUMMARY The second program in the UMOT travel models family. The UMOT Hourly model distributes the daily travel, by mode and purpose, over 24 hours, subject to the travel time and money budgets. The Hourly model can be run either separately or interactively with the UMOT Daily model (see preceding description of the Daily model), the Distribution/Assignment model, and the Urban Structure model.

The outputs include: (i) daily trip rates, distances and times, by mode, purpose and direction (i.e., outbound, inbound, and total), (ii) daily and hourly passenger and vehicle travel distance, hours of travel and trips by mode, purpose, and direction and (iii) daily and hourly network speeds, by mode, purpose and direction.

No calibration to observed travel choices are required. The assignment of travel over 24 hours is based uniquely on the daily travel time and money budgets of travelers. When travel congestion during peak hours develops, the algorithm spreads the activities, by purpose, over the hours, until equilibrium under the travel time budget is reached, or approached. Thus, the possible spread of peak hour into peak period travel is an output of the model.

Display and hardcopies of the outputs, by graphs and tables, are provided for report preparation and slide show. Comprehensive manuals, periodic program updating and extensions, and a quarterly Users' Newsletter, are all part of the package.

ENVIRONMENT The program operates on an Apple II+ with a 16K card, or IIe. Program written in Applesoft and Machine Language with DOS 3.3 operating system. One or two disk drives and a printer are required.

AVAILABILITY Under a yearly leasing license.

CONTACT Dr. Yacov Zahavi
Mobility Systems, Inc.
7304 Broxburn Court.
Bethesda, Maryland 20817
(301) 229-7762

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Transportation Planning Software

In Development

APPLICATION "UMOT' Distribution/Assignment and Urban Structure Models

DEVELOPER Mobility Systems, Inc.

SUMMARY 'UMOT' DISTRIBUTION/ASSIGNMENT MODEL: The third program in the UMOT travel models family. The program's algorithm maximizes the daily access to the spatial distribution of opportunities along the transport networks, by feedback with travel distance and speed under the constraints of the households' travel time and money budgets.

The outputs, by mode and link, are: (i) passenger and vehicle travel distance, (ii) passenger and vehicle hours of travel, (iii) travel speeds, (iv) unit costs and total costs, and (v) fuel consumption and emmissions.

'UMOT' URBAN STRUCTURE MODEL: The fourth program in the UMOT travel models family. The Urban Structure model is based on accessibility maximization under explicit constraints of travel time and money budgets, where all principal travel components and urban structure interact simultaneously.

The outputs include the expected shifts in land uses in response to changes in endogenous and exogenous factors. Furthermore, the effects of alternative inputs of reaction/relaxation times on urban structure can be assessed.

ENVIRONMENT Programs to operate on an Apple II+ with a 16K card, or IIe. One or two disk drives and a printer are required.

SCHEDULE The two programs should be available for distribution by second part of 1983.

CONTACT Dr. Yacov Zahavi
Mobility Systems, Inc.
7304 Broxburn Ct.
Bethesda, MD 20817
(301) 229-7762

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Transportation Planning Software

APPLICATION: TMODEL: Trip Distribution and Traffic Assignment

DEVELOPER: Professional Solutions, Beaverton, Oregon

SUMMARY: TMODEL uses a gravity model/skim tree/capacity restraint technique to analyze peak hour travel demands. This model is somewhat unique in that both link and intersection capacities and delays are used to calculate travel times in defining the gravity model for application each iteration. TMODEL uses many parameters and assumptions of NCHRP Report 187, "Quick Response Urban Travel Estimation Techniques and Transferable Parameters," Transportation Research Board, 1978.

Model output shows traffic volumes on each link and identifies links and nodes with capacity problems (V/C ratio greater than 0.9). A select zone analysis is possible which details link volumes and percents attributable to selected zones. Model outputs can be modified as desired. Compatible products are planned for specific capacity analysis, energy consumption and auto emissions, queueing analysis, and intersection simulation.

ENVIRONMENT: The current configuration in compiled BASIC on the Apple II+ permits in excess of 75 zones and 350 links. Versions will also soon be available for the IBM PC and CP/M computers.

STATUS: The TMODEL system has been successfully used in Washington County, Oregon to test land development/network alternatives. A recent analysis involved more than 30 combinations of land use and networks. Initial set-up takes less than eight hours. Revision to test subsequent alternatives takes less than 15 minutes.

AVAILABILITY: For sale from contact below.

CONTACT: Robert M. Shull
Professional solutions
3765 NW 173rd Place
Beaverton, Oregon 97006

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Transportation Planning Software

APPLICATION	Urban/Regional Planning
DEVELOPERS	M.M. Dillon Limited
SUMMARY	"The Opportunity Model" Builds interzonal network, computes zone, sector or study area opportunity accessibilities for each locational or land use strategy.
ENVIRONMENT	CP/M Operating System, 64K (RAM), 1 disk, Microsoft BASIC
STATUS	Operational
AVAILABILITY	Available from contact below.
CONTACT	Bob Lewis M.M Dillon Limited 47 Sheppard Avenue East Toronto, M2N 6H5 (416) 229-4646

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Transportation Planning Software

APPLICATION	Project Level Highway Condition Energy Analysis
DEVELOPERS	NEW YORK STATE DEPARTMENT OF TRANSPORTATION
SUMMARY	Program PROLEV.HICOND calculates energy impact associated with pavement rehabilitation improvements. Program works in conjunction with PROLEV data.
ENVIRONMENT	Apple I or Apple II plus, 48k (RAM), 1 disk, Apple BASIC
STATUS	Operational
AVAILABILITY	Free from Contact
CONTACT	David, T. Hartgen, Ph.D, Director, Transportation Statistics and Analysis Section NEW YORK STATE DEPARTMENT OF TRANSPORTATION 1220 Washington Avenue State Campus Albany, New York 12232

microcomputers in transportation

Transportation Planning Software

APPLICATION	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 System." (NCHRP Project 20-7, Task 8 or as FHWA workshop notes with the same title)
ENVIRONMENT	Apple I or Apple II plus, 48k (RAM), 1 disk, Apple BASIC
STATUS	Operational
AVAILABILITY	Free from Contact
CONTACT	David, T. Hartgen, Ph.D, Director, Transportation Statistics and Analysis Section NEW YORK STATE DEPARTMENT OF TRANSPORTATION 1220 Washington Avenue State Campus Albany, New York 12232

microcomputers in transportation

Transportation Planning Software

DEVELOPERS CALIFORNIA AIR RESOURCES BOARD (ARB)

SUMMARY Estimates the emissions resulting from land-use projects such as new shopping centers, condominium developements, and single-family housing subdivision. It allows comparisons of CO, HC, and NOx emissions as a function of the type of land use being considered, the type and number of vehicle trips associated with it, and the total vehicle miles of travel produced. The URBEMIS #1 program will also serve as the main body to other sub-programs being developed. Among them are those to quantify emission reductions due to various mitigation measures, including appropriate transportation control measures, that may be applied to such projects.

ENVIRONMENT Apple II

STATUS Operational

AVAILABILITY Free from Contact

CONTACT Patrick C. Randall
ARB
P.O. Box 2815
Sacramento, California 95812
(916) 445-3187

microcomputers in transportation

Transportation Planning Software

APPLICATION: Transportation Program Management--Multimodal Priority System (MPS)

DEVELOPER: Responsive Analysis Methods Project, Center for Transportation Studies, Massachusetts Institute of Technology, Cambridge, MA

SPONSOR: UMTA, Office of Methods and Support, Grant No. MA-06-0092

SUMMARY: A library of models and analysis procedures has been developed for use in multimodal program management. The library is provided in DODOTRANS II and exploits the features of that system (see separate description). No programming knowledge is required. The MPS system, version 1.0, was developed in cooperation with Florida DOT and is being tested by them in a prototype application

ENVIRONMENT: MPS 1.0 is programmed in UCSD Pascal for microcomputers with 64K bytes of memory. It currently operates on the Apple II.

STATUS: MPS is being field tested at the Florida DOT.

CONTACTS: Dr. Marvin L. Manheim (Grant Manager)
Department of Civil Engineering
Room I-181
Massachusetts Institute of Technology
Cambridge, MA 02139
(617) 253-1627

Mr. Joseph Gerry (Florida DOT contact)
Manager Multimodal Research and Development
Florida Department of Transportation
605 Swannee Street
Burns Building MS-21
Tallahassee, Florida 32304

Mr. Larry Quillian (UMTA Contact)
UMTA/URT-41
US Department of Transportation
Washington, DC 20590
(202) 426-9271

microcomputers in transportation

Transportation Planning Software

DEVELOPER William G. Barker & Associates

SUMMARY "EXTRA" calculates modal split, operating ratios, emissions and other impacts associated with a planned express bus route. A single destination for the route is assumed with impedances for auto and transit input manually.

ENVIRONMENT IBM PC, 64K (RAM), DOS Operating System, 1-2 disks

AVAILABILITY For sale from contact below

CONTACT
William G. Barker
William G. Barker & Associates
1009 W. Randol Mill Rd.
Arlington, Texas 76012
817-265-0794

microcomputers in transportation

Transportation Planning Software

APPLICATION Editing of Route Cards for INET

DEVELOPER Wilson-Hill Associates, Washington, DC

SPONSOR UMTA, Office of Methods and Support

SUMMARY A major portion of the runs of UTPS program INET are to detect errors in the route cards. This software allows for the input and editting of the route cards using virtually all of the editing features available in INET. Optional transit links can also be input. Route card data are validated against a highway network created by HNET and downloaded from the mainframe. The corrected route card data can be uploaded to the mainframe for processing by INET.

ENVIRONMENT The software is written in UCSD Pascal and can be run on any microcomputer with the P-System and two floppy disk drives, and at least 64K (RAM).

AVAILABILITY Available January 1983 from User Support Center contact below.

CONTACT

Mike Couture (User Support Center Contact)
Transportation Systems Center/DTS-62
Kendall Square
Cambridge, MA 02142
(617) 494-2086

Fred Dickson (Contractor)
Wilson-Hill Associates
1025 Vermont Ave., NW
Suite 900
Washingtion, DC 20005
(202) 842-7789

microcomputers in transportation

Transportation Planning Software

APPLICATION Census Data Processing

DEVELOPERS Sammamish Data Systems

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 powerful, relational Data Base Management System (dBaseII) with allows the retrieval and display of any data files in 10 seconds or less. The user can display the desired data in one of 19 "preprogrammed" displays or write the data out to a separate disk file for further processing or to a special text file. Individual data items or structured sets or related data items can be retrieved with equal ease.

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. Also, data can 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 not their census codes. Finally, the Census Data System identifies any variable for which the data has been suppressed.

ENVIRONMENT The system is available on any machine supporting CP/M, and on the IBM PC with CP/M-86 or MS-DOS. Storage of at least 2.0 Megabytes and 64K (RAM) is required.

STATUS Operational

AVAILABILITY For sale form contact below.

CONTACT Mr. Richard Schweitzer
Sammamish Data Systems
1413 177thh Avenue, NE
Bellevue, Washington 98008
(206) 644-2442

microcomputers in transportation

Transportation Planning Software

APPLICATION — Processing of Census Data

DEVELOPER — Vistar Enterprises

SUMMARY — OCTAGON and OCTAGON II allow access to data from census tapes and have flexible report writing capabilities. OCTAGON is a modification of a hierarchical system called CENSPAK developed by the Bureau of the Census. OCTAGON II has relational data base capabilities and allows more flexibility in data comparison than OCTAGON.

ENVIRONMENT — The programs operate on CP/M and many other operating systems. OCTAGON II requires a hard disk drive (min. 5 MBytes)

AVAILABILITY — OCTAGON is for sale from the contact below. OCTAGON II will be available in the winter of 1983.

CONTACT — Nancy Herbert
Vistar Enterprises
659 West 61st Terrace
Kansas City, MO 64113
(816) 361-0169

microcomputers in transportation

Transportation Planning Software

APPLICATION: Digitizer Interface Program

DEVELOPER: Little Rock Metroplan, Little Rock, Arkansas

SUMMARY: A program has been developed to provide the interface between a digitizer and microcomputer and to use the resulting geo-coded data in a number of planning applications. Major capabilities include:

- o using digitizer input to create a land use file on disk
- o computing areas by land use type and by zone
- o computing run-offs into bodies of water
- o printing and plotting geo-coded data

ENVIRONMENT: The program is implemented in BASIC on the TI99/4A microcomputer, coupled with a Houston Instruments Hi-Pas Digitizer via an RS-232 Interface. The program is readily transferable to other users with equivalent hardware, and the bulk of the computer code is transferable to other BASIC systems, but the program is relatively interface-dependent.

STATUS: The program is being used extensively for "production" planning activities, while at the same time its capabilities are being expanded. Plans presently exist to add highway and transit network development features to the program.

AVAILABILITY: The program is available in source form on a TI99-compatible diskette or cassette.

CONTACT: Michael Waller
Little Rock Metroplan
Wallace Building--8th Floor
105 Main Street
Little Rock, Arkansas 72201
(501) 372-3300

microcomputers in transportation

Transportation Planning Software

APPLICATION Fuel Managment and Allocation Progam (FMAP)

DEVELOPER Public Technology, Inc.

SUMMARY The times for unlimited fuel supplies for municipal use are gone: higher prices, the uncertainty of adequate global supplies and the possibility of reduced regional stocks of fuel all mandate a capability of implementing an allocation and monitoring system which could assist officials in the difficult task of establishing and managing a fuel allocation program in each local agency. FMAP provides the tools to identify fuel usage by vehicle and department, establish alternate fuel allocation scenarios and track the implementation of a fuel cutback strategy against actual use.

ENVIRONMENT Apple II Plus, 48K (RAM), 132 character printer, four 5 1/4 inch disk drive

STATUS Pilot testing is underway.

AVAILABILITY See contact below.

CONTACT Decision Support Systems Staff
Public Technology, Inc.
1301 Pennsylvania Ave., N.W.
Washington, DC 20004
(202) 626-2426

microcomputers in transportation

Transportation Planning Software

In Development

APPLICATION — Quick-Response Travel Estimation Techniques on a Microcomputer

DEVELOPER — The Comsis Corporation, Wheaton, MD

SPONSOR — UMTA, Office of Methods & Support, and 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. This project will relieve this tedium by installing these same quick-response travel estimation techniques on a microcomputer and providing access to them by means of an interactive dialogue.

The development of the microcomputer software will proceed in two phases: the traditional four-step (generation, distribution, mode split and assignment) techniques will be implemented first, followed by the implementation of other techniques (traffic smoothing, corridor diversion, intersection capacity analysis, incremental mode choice, etc.).

ENVIRONMENT — The software will be written under the p-System Version IV.

STATUS — The technical specifications for the first phase software have been written and are being reviewed. The first phase of the software is being pilot tested. The second phase is being developed.

SCHEDULE — All software should be available for distribution by early 1983.

CONTACTS

Mr. Mark Roskin (Contract Manager)
Comsis Corporation
11501 Georgia Avenue
Wheaton, MD 20902
(301) 933-9211

Mr. William Martin (FHWA Contact)
FHWA/HHP-22
400 7th Street, S.W.
Wahington, DC 20590
(202) 426-0182

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

microcomputers in transportation

Transportation Planning Software

In Development

APPLICATION — Microcomputer Software for Transportation Systems Management

DEVELOPER — Arizona Department of Transportation and PRC/Voorhees

SPONSOR — UMTA, Office of Methods and Support, Grant No. AZ-06-0015

SUMMARY — This project will produce a package of computerized techniques to solve frequently-encountered urban traffic and transit management problems. These techniques will be packaged in an easy-to-use "turnkey" form. The basic goals are to apply low-cost microcomputer technology to a variety of transportation systems management (TSM) problems and to demonstrate the use of the UTPS package in developing TSM strategies.

The development will proceed in two phases. In the first phase, typical TSM problems will be identified, common TSM practices will be reviewed and appropriate methodologies for solving common problems will be selected. In the second phase, these selected methodologies will be incorporated into a turnkey system of microcomputer software. Existing microcomputer software will be adapted for use in this system whenever possible. The use of this sytem in the TSM planning process will be demonstrated.

ENVIRONMENT — All software produced in this project will operate on a microcomputer. However, neither the machine nor the primary programming language has yet been specified.

STATUS — Consultant selection for the second phase is underway.

SCHEDULE — The first phase of the project was completed in August 1982. The turnkey system should be available for general use by the end of 1983.

CONTACTS

Mr. Mark Danelowitz (Grant Mgr)
Arizona DOT
Transportation Planning Division
206 S. 17th Avenue
Phoenix, AZ 85007
(602) 261-7562

Mr. Jim Ryan (UMTA Contact)
UMTA/URT-41, Rm. 6107
400 7th Street, S.W.
Washington, DC 20590
(202) 426-9271

Mr. Pat Costinett (Contract Rep.)
PRC/Voorhees
1500 Planning Research Drive
McLean, VA 22102
(703) 556-2486

TRAFFIC ENGINEERING

SOFTWARE

microcomputers in transportation

Traffic Engineering Software

APPLICATION	Program for Optimization of Signalized Intersection Timing (POSIT)
DEVELOPER	Hobih Chen
SUMMARY	POSIT optimizes individual intersections of both cycling and phasing systems using an interactive technique. Outputs include timing, splits, fuel consumption, stops, and delay.
ENVIRONMENT	Currently runs under UCSD Operating System on IBM PC and Apple II with one disk drive.
AVAILABILITY	For sale for $50.00. NOTE: Those who have already purchased POSIT, please contact Mr. Chen for a copy of the revised program.
CONTACT	Hobih Chen Transportation Center 2011E, Learned Hall University of Kansas Lawrence, KS 66045 (913) 864-5658

microcomputers in transportation

Traffic Engineering Software

APPLICATION	Microcomputers in Traffic Engineering
DEVELOPER	Demonstration Projects Division
SUMMARY	This demonstration project will provide an introduction to microcomputer systems and programs and will demonstrate the use of microcomputer programs for traffic engineering tasks and problems through hands-on workshops. Sample specifications and sample justifications for procuring an appropriate microcomputer will be provided.
ENVIRONMENT	The software used in the workshop will generally be written in a high-level programming language (BASIC, FORTRAN or Pascal) for a widely used operating system (e.g., CPM, UCSD, UNIX). The microcomputers used in the workshop will also be provided.
STATUS	Procurement of the equipment and development of the project is currently underway.
SCHEDULE	Pilot workshops have been given in February and March. Regular workshops begin in May.
CONTACTS	Mr. King Gee FHWA/HDP-15 1000 North Glebe Road Arlington, VA 22201 (703) 557-9080

microcomputers in transportation

Traffic Engineering Software

APPLICATION	Time-Space Diagram
DEVELOPER	MICROTRANS Associates
SUMMARY	This program produces an enhanced time-space diagram which in addition to the signal progression, illustrates the platooning of vehicles along the arterial. Works with the progrtam TRANSYT.
ENVIRONMENT	48K Apple II PLUS Applesoft Basic, development underway for other microcomputers.
STATUS	Apple II Plus version operational
AVAILABILITY	Apple II Plus version for sale by contact, cost $250
CONTACT	MICROTRANS ASSOCIATES 325 NW 28th Street Gainsville, FL 32607 (904) 374-4807

microcomputers in transportation

Traffic Engineering Software

APPLICATION	McTRANS package for Traffic Engineering
DEVELOPERS	University of Florida Transportation Research Center
SUMMARY	A four volume package of problems for traffic engineering
	Vol I - Traffic Signal Optimization
	Vol II - Traffic Data Analysis
	Vol III - Utility Programs
	Vol IV - Traffic Counting
ENVIRONMENT	48K Apple II, program written in Applesoft BASIC
STATUS	Operational
AVAILABILITY	From Contact $35 per vol to cover copying expenses
CONTACT	Ken Courage Department of Civil Engineering University of Florida Gainsville, FL 32611 (904) 392-0378

microcomputers in transportation

Traffic Engineering Software

APPLICATION Traffic Engineering--ATEMS

DEVELOPERS ATEMS COMPUTER SYSTEMS

SUMMARY The ATEMS (Automated Traffic Engineering Management System) programs are designed to increase the productivity of the traffic engineering function. The programs are designed to provide powerful traffic engineering related analysis capabilities in a simplified form and at a price low enough to encourage "distributed processing" at the local traffic engineering functions level. Software is furnished under license agreement.

SOFTWARE AVAILABLE
CAPSSI (Comprehensive Analysis Program for Single Signalized Intersections)
PASSNER (Progression Analysis and Signal System Evaluation Routine
TRANSYT/7 (Traffic Network Study Tool)
SPEED (Speed Data Reduction Program)
TARP (Traffic Accident Analysis Program)
TAAP(Traffic Accident Analysis Program)
TARPLOT (Subprogram of TARP that Provides Collision Diagrams)
COUNT (Traffice Count Reduction Program)
TCD Inventory Program (Available for SIGNs, CURB Markings, Street STRiPing and pavement MARKings)

ENVIRONMENT CP/M operating systems, dual floppy disk drives (5 1/4" or 8") and 64K of RAM

STATUS Operational

AVAILABILITY For sale by contact

CONTACT
R. Henry Mohle
Vice President
ATEMS COMPUTER SYSTEMS
901 East Imperial Highway
Suite A
La Habra, California
(714) 738-3471

microcomputers in transportation

Traffic Engineering Software

APPLICATION — Traffic Engineering Application Package

DEVELOPERS — Barton-Aschman Associates, Inc.

SUMMARY — TEAPAC, a comprehensive, fully-integrated system of 20 traffic engineering programs as follows:

Traffic Operations
SIGNAL: Signalized Intersection
NOSTOP: Bandwith 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*
TURNS: Manual Counts
SITE: Generation, Distribution, and Assignment

Survey Analysis
TED: TEAPAC Editor
TABS: Tabulation
DTABS: Dynamic Tabulation
FACTOR: Survey Adjustment
PLOT: Curve/Histograms
PAGE: Output Numbering

Transit
SCHEDULE: Bus Schedule Preparation

Air Quality
COERP: CO Emission Rates
HIWAYI/II: Dispersion Model
CALINE 3: California Disoersion Model*

ENVIRONMENT — 64k CP/M systems

STATUS — Program SIGNAL currently available, others available soon.

AVAILABILITY — For sale by contact

CONTACT — Dennis W. Strong, P.E.
BARTON-ASCHMAN ASSOCIATES, INC.
820 Davis Street
Evanston, Illinois 60201
(312) 491-1000

microcomputers in transportation

Traffic Engineering Software

APPLICATION — Integrated Traffic Data Base System

DEVELOPERS — Wilbur Smith and Associates

SUMMARY — A battery of programs has been developed which has the following characteristics:

- o Inventory Management of street geometric features, traffic signals, and other devices (signage)
- o Traffic speed information storage and reports
- o Traffic count information storage and reports
- o Accident information storage and reports

ENVIRONMENT — This battery of programs has been written in the BASIC language for MICRODATA minicomputers with 64k of RAM storage or more. However, it could be adapted to operated on microcomputer. Disk storage requirements depend on the size of the city and number of data items collected; most users would probably want a minimum of 300k bytes on-line, with 1-2Mb desirable.

STATUS — The battery is operational and currently in use.

AVAILABILITY — For sale by contact

CONTACT — Steven B. Colman
WILBUR SMITH AND ASSOCIATES, INC.
282 Second Street
2nd Floor
San Francisco, Calkifornia 94105
(415) 896-0670

microcomputers in transportation

Traffic Engineering Software

APPLICATION Traffic Engineering

DEVELOPERS BATHER BELROSE BOJE, INC./TIMELAPSE, INC.

SUMMARY A battery of programs for doing independent signalized intersection analyses/timing, time-space diagrams, traffic signal grids, and TRANSYT/7 analysis. Also available is software for automatic data input form a TMC/48 (traffic counting board) through a RS-232C interface with the output of a turning movement table and a peak period analysis.

ENVIRONMENT OSBORNE 1 Apple II and CP/M based system

STATUS Operational

AVAILABILITY For sale by contact

CONTACT Mike Belrose
Vice President
BATHER BELROSE BOJE, INC.
7101 York Avenue, South
Minneapolis, Minnesota 55435
(612) 831-8611

TIMELAPSE
250 Polaris Avenue
Mountain View, California 94043
(413) 968--2240

microcomputers in transportation

Traffic Engineering Software

APPLICATION — Traffic Engineering and Transportation Planning - IRAP 3.0

DEVELOPERS — Roger CREIGHTON ASSOCIATES Incorporated.

SUMMARY — Interactive Routing Assignment Procedure -- Version 3.0 (IRAP 3.0) is an assignment package useful in situations where standard traffic assignment models and computer programs are insufficiently detailed and flexible. IRAP 3.0 has the following capabilities:

- IRAP 3.0 is a planning tool, designed to evaluate multiple circulation schemes in compact areas (micro-areas).
- IRAP 3.0 is realistic: it allows assignments to be made to multiple paths when distance/time differentials by alternate routes are small.
- IRAP 3.0 permits alternative trip tables (e.g., the Friday peak hour and Saturday peak hour) to be assigned quickly over a given network.
- IRAP 3.0 permits network changes to be entered quickly.
- IRAP 3.0 outputs are organized for computing intersection capacities via CAPCALC.
- IRAP 3.0 can accommodate multiple on-site parking lots and internal driveway systems, as in campuses, industrial districts, and shopping centers.
- IRAP 3.0 has a minimum-path algorithm built-in to reduce operator time when multiple path designation is not appropriate.

ENVIRONMENT — Apple I and Apple II Plus, or IBM PC; 64K (RAM); 2 disk drives; Apple Pascal or UCSD p-System. Also available on other microcomputers.

STATUS — Operational

AVAILABILITY — For sale by contact

CONTACT — Charles Manning
Roger CREIGHTON ASSOCIATES Incorporated
274 Delaware Avenue
Delmar, New York 12054
(518) 439-4991

microcomputers in transportation

Traffic Engineering Software

APPLICATION Traffic Engineering - CAPCALC

DEVELOPERS Roger CREIGHTON ASSOCIATES Incorporated

SUMMARY CAPCALC fully automates 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 also are automated. Selected portions of Circular 212 have been included, with permission, as an appendix to the CAPCALC Manual. Revisions to CAPCALC will be made available periodically to keep it consistent with the latest procedures.

CAPALC prints out all significant, entered data in convenient formats. Intermediate and final outputs also are printed. When the user is planning improvements, changed input assumptions can be made quickly (after examining initial results) so that all reasonable alternatives can be evaluated.

ENVIRONMENT Apple II and Apple II Plus, or IBM Personal Computer ; 64K (RAM); 2 disk drives; Apple Pascal or UCSD p-System. "Turnkey" versions are available for the preceding machines. Also available on other microcomputers.

STATUS Operational

AVAILABILITY For sale by contact

CONTACT Charles Manning
Roger CREIGHTON ASSOCIATES Incorporated
274 Delaware Avenue
Delmar, New York 12054
(518) 439-4991

microcomputers in transportation

Traffic Engineering Software

In Development

APPLICATION Integrated Traffic Data System

DEVELOPER Oak Ridge National Laboratory (ORNL)

SUMMARY ORNL will develop a microcomputer-based distributed processing system which will allow the following: (1) storage of network-wide traffic data on a Winchester disk, (2) maintenance fo the traffic data base via a data base 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 mainframe 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 DBMS to be selected and other microcomputer software to be developed will be written in a high-level programming language (BASIC, FORTRAN, or Pascal) for a widely used operating system (e.g., CPM, UCSD, UNIX) in order to ensure portability to different microcomputers.

STATUS Work on the project began in September 1982.

SCHEDULE An initial system which can produce input for one simulation and one optimization program (yet to be selected) will be ready in the fall of 1983. The remainder of the simulation and optimization programs will be integrated with the system in the next 12 months.

CONTACTS

Mr. Glenn Roberts
Oak Ridge National Laboratory
Transportation Energy Group
Oak Ridge, TN 37830
(615) 574-2718

Mr. Alberto Santiago
FHWA/HSR-40
400 7th Street, SW
Washington, DC 20590
(703) 285-2024

microcomputers in transportation

Traffic Engineering Software

In Development

APPLICATION — Portable Microcomputer SOAP Program

DEVELOPER — To be selected.

SUMMARY — The SOAP program, which develops optimal signal timing plans for single intersections, was originally written in FORTRAN for mainframe computers. A version of SOAP has also been developed for an 8-bit Apple microcomputer (written in APPLESOFT (BASIC)). This study will reprogram SOAP in a high-level programming language (BASIC, FORTRAN, or Pascal) for a widely used operating system (e.g., CPM, UCSD, UNIX) in order to ensure its portability to different microcomputers.

ENVIRONMENT — See above.

STATUS — RFP is scheduled to be released in the fall of 1982.

SCHEDULE — Work on the project is scheduled to be completed 6 months after it begins (summer of 1983).

CONTACT — Mr. David Gibson
FHWA/HDV-21
400 7th Street, SW
Washington, DC 20590
(202) 426-9211

microcomputers in transportation

Traffic Engineering Software

In Development

APPLICATION — Portable Microcomputer Traffic Engineering Programs

DEVELOPER — To be selected.

SUMMARY — Various traffic engineering applications programs have been written for microcomputers. These programs, which include traffic signal timing optimization and traffic data analysis programs, have been included in a library of programs known as McTRANS. These programs are written in APPLESOFT (BASIC) for an Apple microcomputer. This study will reprogram these programs in a high-level programming language (BASIC, FORTRAN or Pascal) for a widely used operating system (e.g., CPM, UCSD, UNIX) in order to ensure their portability to different microcomputers.

ENVIRONMENT — See above.

STATUS — RFP is scheduled to be released in the winter of 1982-1983

SCHEDULE — Work on the project is scheduled to be completed 12 months after it begins (spring 1984).

CONTACT — Mr. David Gibson
FHWA/HDV-21
400 7th Street, SW
Washington, DC 20590
(202) 426-9211

MICROCOMPUTER SOFTWARE FOR

PARATRANSIT PLANNING AND OPERATIONS

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Microcomputer Software For Paratransit Planning And Operations

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APPLICATION	Carpool, Vanpool and Bus Matching
SUMMARY	The Ridesharing System (RSS) matches commuters with similar residence and work locations and working hours for carpooling, vanpooling or buspooling. : RSS produces match letters, mailing labels, and statistical analyses for individual companies.
ENVIRONMENT	The program operates on a TRS-80, Model II with a Corvas hard disk (5meg.).
STATUS	Knoxville has used the system continually since Fall 1981.
AVAILABILITY	The software is in the public domain. However, hardware, system installation, and training are available from Knoxville Commuter Pool for approximately $20,000.
CONTACT	John Beeson Knoxville Commuter Pool Transportation Center University of Tennessee Knoxville, TN 37996 (615) 637-7433

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Microcomputer Software For Paratransit Planning And Operations

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APPLICATION	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), 2 double-sided double-density disks.
AVAILABILITY	For sale from contact below.
CONTACT	William G. Barker Transportation Computer Group 1009 W. Randel Mill Road Arlington, TX 76012 (817) 265-0764

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Microcomputer Software For Paratransit Planning And Operations

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APPLICATION Ridesharing System (MicroCRIS)

DEVELOPER COMSIS Corp.

SUMMARY The MicroCRIS package consists of a database management system coupled with a state-of-the art, multi-user microprocessor. The result is a user-oriented system which performs all the basic functions typically required by a ridesharing agency. These capabilities include,

- creating a database of commuters interested in receiving rideshare matching information.
- producing "match" or "no-match" reports for any or all commuters in the database.
- providing match or no-match information on demand for call-in inquiries.
- adding or deleting records from the database.
- searching the database for various commuter groups (i.e., buspools, vanpools, etc.) using user-specified parameters.
- printing vanpool and other group listings unformatted or using user-developed report formats.

ENVIRONMENT Operates on the Molecular computer.

AVAILABILITY For Sale from contact below.

CONTACT Martin J. Fertal
COMSIS
1225 Washington Pike, Suite 417
Bridgeville, PA 15017
(412) 257-0466

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Microcomputer Software For Paratransit Planning And Operations

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APPLICATION: Carpool Matching Program

DEVELOPER: Little Rock Metroplan, Little Rock, Arkansas

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 for each selected commuter: the matches found by the program, a request for updated information, and other instructions.

ENVIRONMENT: The program is implemented in BASIC on the TI99/4A microcomputer. The program is readily transferable to other users with equivalent hardware, and the bulk of the computer code is transferable to other BASIC systems.

STATUS: The program is being used daily to add new potential carpoolers, to update old entries and to prepare mailing forms with matches for selected entries.

AVAILABILITY: The program is available in source form on a TI99-compatible diskette or cassette.

CONTACT: Michael Waller
Little Rock Metroplan
Wallace Building--8th Floor
105 Main Street
Little Rock, Arkansas 72201
(501) 372-3300

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APPLICATION: Ridesharing Program Software

DEVELOPER: Larimer-Weld Regional Council of Governments

SPONSOR: UMTA, Intermodal Planning Group

SUMMARY: The ridesharing package consists of two major portions. The first portion of software was written to develop an address coding guide file for address matching. The second portion is the matching software itself.

ENVIRONMENT: All programs are written in MBASIC and will operate on microcomputers running under CPM or MPM having 64K RAM. At least 1M BYTE of disk storage is needed for areas of 100,000 or more.

STATUS: Available now in operational form. Some improvements planning in the future to speed up matching time.

AVAILABILITY: Available at cost of reproduction

CONTACT: Paul Rochette
Data Services Director
LWRCOG
201 E. 4th Street
Loveland, CO 80537
(303) 532-4503

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APPLICATION: Carshare/Vanpool/Transit Information System

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

SPONSOR: Michigan Department of Transportation
County Transportation Commission (Mount Pleasant)

SUMMARY: CARSHARE: Either interactive or batch with a "hold" provision for activity center campaigns. Hard-copy output is "personalized" with appropriate letterhead 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 at the top. VANPOOL: 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. Pending or tentative Vanpools can be designated and the deficiencies noted, e.g., "There are X people in your area who could form a Vanpool and if you recruit Y more, we can start up." TRANSIT INFORMATION: 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 Altos 68000, I MB RAM, 40 MB hard disk; UNIX System III and FORTRAN.

STATUS Operational

CONTACT Mr. Charles Richard
Michigan Department of Transportation
P.O. Box 30050
Lansing, Michigan 48909
(517) 373-7666

microcomputers in transportation

Microcomputer Software For Paratransit Planning And Operations

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PROJECT — Richmond Ridesharing System

DEVELOPER — Crain & Associates, Inc.

SPONSOR — COMPOOL (the areawide ridesharing program in Richmond, VA)

SUMMARY — The primary function performed by the new system include:

Carpool matching can be done in either iteractive or batch modes. For employer-generated applications, the data can be entered and held for batch processing once all applications are received. For call-in applications, a match list can be produced immediately on the video screen and/or on the printer. The match list will appear to be a personnally-addressed letter to applicant, printed on COMPOOL stationary by a typewriter-quality printer. All of the carpool matching capabilities of the FHWA batch-mode version of CIS will be available in the new COMPOOL system.

Vanpool planning and matching can be done in several ways. The several types of "Density Matrices" available in the batch version of CIS are available, and can be used interactively. New features added are: A listing of all available vanpools will appear on the match lists; and a vanpool driver can request a special match list of prospective vanpool riders.

COMPOOL system features include:

- o selective rematch capabilities,
- o printing of form letters and mail labels,
- o ability to support 999 x 999 grid map,
- o ability to print master lists and alphabetic lists,
- o ability to SELECT any portion of the file for processing,
- o ability to control the carpool matching parameters,

ENVIRONMENT — Altos 8600, 512K, UNIX Operating System

AVAILABILITY — See Contact below.

SCHEDULE — Completion expected at end of March 1983.

CONTACT — Linda Jensen
Information Coordinator
Compool, Inc.
P.O. Box 12182
Richmond, VA 23241
(804) 643-7433

microcomputers in transportation

Microcomputer Software For Paratransit Planning And Operations

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APPLICATION: Handicapped & Elderly Mobility & Registration System

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

SPONSOR: CNY CENTRO, Inc., Syracuse, New York

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. Trips can be billed partially or wholly to a sponsoring agency, or "third party." 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 showing numbers of one-way trips by zone, type of trip, and run number.

ENVIRONMENT: Altos 68000, 1 MB memory, 40 MB hard disk; UNIX System III and FORTRAN

SCHEDULE Completion by April, 1983

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, New York 13205-0820
(315) 470-0206

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

In Development

PROJECT — Special Services Transit Management Information

DEVELOPER — DYNATREND INC. with Lawrence Harmon

SPONSOR — Regional Transportation Program Inc., Portland, Maine

SUMMARY — A microcomputer record keeping system is being installed for a fleet of 16 special service, door-to-door vehicles of varying size. Records include a vehicle file and a client file. The vehicle file includes information on vehicle usage and maintenance. The client file includes identification and eligibility information on each client carried by the system.

ENVIRONMENT — A 5 user-system is built around a Corvus 30 megabyte hard disk with Omninet local area network. Each of the 5 user "work stations" is equipped with an Apple II microcomputer, single floppy disk drive and video monitor. Both dot matrix and letter quality printers are available centrally as part of the network. Each Apple II has the DBMASTER file manager installed and the entire record keeping system is being built upon DBMASTER.

STATUS — Hardware is installed, work on software is just beginning.

AVAIALBILITY — DBMASTER is a file manager available commercially. The templates particular to this application will be public domain. Date unknown.

CONTACT — Ms Loretta Sharp, Director
Regional Transportation Program Inc.
127 St. John Street
Portland, ME 04102
(207) 774-2666

Robert Roblin
DYNATREND INC.
21 Cabot Road
Woburn, MA 01801
(617) 935-3960

microcomputers in transportation

Microcomputer Software For Paratransit Planning And Operations

In Development

PROJECT	Microcomputer Software for Paratransit Planning
DEVELOPER	Thayer School of Engineering, Dartmouth College, Hanover, NH
SPONSOR	UMTA, Office of Methods and Support, Grant No. NH-06-0002
SUMMARY	This project will produce a system of computerized paratransit planning modules that will allow local paratransit operators to assess the effectiveness of alternative services, pricing policies, and vehicle assignments. Each module will estimate the ridership to be expected and the costs to be incurred in providing a specific type of service (e.g., dial-a-ride, subscription, charter, fixed-route, taxi or checkpoint) to a specific market (e.g., work, nonwork, elderly, handicapped, social agency or rural). The user of the system will be able to specify a mix of markets to be served and any constraints under which the service must operate (e.g., the number of vehicles, driver shift assignments, etc.). The system will be able to select a feasible fleet assignment to serve the projected ridership volumes.
ENVIRONMENT	All software will be written in UCSD Pascal and will be implemented on an Apple III microcomputer.
AVAILABILITY	Not available until project is completed.
STATUS	Work is underway.
SCHEDULE	All work should be completed by the end of August 1983.
CONTACTS	Dr. Thomas Adler (Grant Manager) Thayer School of Engineering Dartmouth College Hanover, NH 03755 (603) 646-3551 Mr. Thomas Hillegass (UMTA Contact) UMTA/URT-41 400 7th Street, SW Washington, DC 20590 (202) 426-9271

UTILITIES AND MISCELLANEOUS

MICROCOMPUTER SOFTWARE

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

APPLICATION Parking Meter Control System (PMCS)

DEVELOPER Public Technology, Inc.

SUMMARY Parking meters have two major function: effective traffic control, and revenue generation (many times upawards of $1,000 a year for each meter!). PMCS gives an effective tool to create an inventory of meters, to provide categories (such as geographic area and meter time limit) and to give projected revenue yield figures for each meter collection route. Comparison of yield projections against actual collections can pinpoint mechanical failures or collector fraud so quick corrective action can be initiated and revenue maximized.

ENVIRONMENT Apple II Plus, 48K (RAM), 132 character printer, one 5 1/4 inch disk drive

AVAILABILITY For sale from contact below

CONTACT Transportation Staff
Public Technology, Inc.
1301 Pennsylvania, Avenue N.W.
Washington, DC 20004
(202) 626-2400 or 2465

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

APPLICATION General Statistical Analysis

DEVELOPER Cambridge Systematics, Inc.

SUMMARY The Micro Data Analyzer (MDA) is an interactive user-friendly package of software tools providing capabilities in general statistical analysis. MDA Release 1.0 contains the following features:

- o data entry from keyboard, tapes, disks or diskettes
- o generation of new variables as algebraic functions of existing ones
- o data editing and subsampling from large data bases
- o plotting
- o report generation
- o histograms and univariate summary statistics
- o two and three-way cross tabulation with chi-square summary
- o correlation and covariance analysis (up to 30 variables at a time)
- o multiple regression analysis (up to 20 variables)
- o logit analysis (up to 20 variables, 11 alternatives)

The MDA package can be used without knowing any programming language.

ENVIRONMENT MDA currently operates on Tandy/Radio Shack TRS-80 Models II and 16, Osborne 1, Data General minicomputers using the AOS or MP operating systems. MDA will soon (early 1983) be released in versions for the IBM-PC, and all other CP/M machines (e.g., Northstar, Apple II with Z80 board, etc.). One hard disk or two floppy disk drives and 64K of RAM are required. MDA is written in FORTRAN 77, although a FORTRAN compiler is not necessary to run it.

AVAILABILITY MDA is currently available.

STATUS MDA is fully operational and has been fully tested.

CONTACT Kenneth L. Sobel
Cambridge Systematics, Inc.
238 Main Street
Cambridge, MA 02142
(617) 354-0167

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

APPLICATION UMTA Screen Editor

DEVELOPER Wilson-Hill Associates, Washington, DC

SPONSOR UMTA, Office of Methods and Support

SUMMARY The UMTA Screen Editor 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 (1) Standard interactive screen protocol, commands, and cursor movements, (2) Data decoding routines for string, boolean (Y or N), integer (16 bits), and floating point numbers, (3) Automatic range checking within user defined ranges, (4) Specification of mandatory or optional responses, (5) Run time display of text help information keyed to the item/field withing a screen, (6) Data dictionary styled definition of screen input fields, and (7) Retention of data input values between program executions.

The UMTA Screen Editor is programmed in UCSD Pascal and was written to provide an interactive interface to other transportation planning and transit operations software being developed for microcomputers by UMTA and FHWA.

ENVIRONMENT The UMTA Screen Editor is programmed in UCSD Pascal and is designed for use on microcomputers having at least 64K bytes of memory and the UCSD operating system. It is implemented on Apple II and IBM PC microcomputers, and should operate on any UCSD-P system machine.

AVAILABILITY Available from contact below.

CONTACT Mike Couture (User Support Center Contact)
Transportation Systems Center/ DTS-62
Kendall Square
Cambridge, MA 02142
(617) 494-2086

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

PROJECT — UMTA File Editor

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

SPONSOR — UMTA, Office of Methods and Support

SUMMARY — The UMTA File Editor is a procedure Unit which facilitates the interactive interrogation, modification, and updating of PASCAL structured files. The File Editor provides:

- ° Standard Interactive screen protocol, commands, and cursor movement;
- ° Efficient and effective data encoding and decoding routines for string, boolean (Y or N), integer (16 bit), time (transit APX) and floating point numbers:
- ° Automatic range checking within user-provided ranges;
- ° Horizontal windowing of files data which includes continguous or noncontiguous subsets of the file:
- ° Movement through files that includes forward a specified number of records, backward a specified number, and forward scrolling;
- ° Insertion and deletion of records.

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 PASCAL 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 — Programmed in UCSD Pascal for microcomputer with 64K bytes of memory and UCSD operating system

CONTACTS — Mike Couture (User Support Center Contact)
Transportation Systems
Center/DTS-62
Kendall Square
Cambridge, MA 02142
(617) 494-2086

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

APPLICATION: All Aspects of Transportation and Management

DEVELOPER: Center for Transportation Studies, MIT, Cambridge, MA

SPONSOR: UMTA, Office of Methods and Support, Grant No. MA-06-0092

SUMMARY: DODOTRANS II is a software system for a microcomputer in which managers, engineers, and planners, can conduct analyses using models and other procedures appropriate to their own areas of interest. Major features of DODOTRANS II are:

- o it provides a library environment containing
  - data files
  - utility capabilities provided in the system for inputting and editing data, for defining data structures, for moving data around between files, and for input and output; in both report and graphic forms
  - "application modules," or functional procedures such as models or submodels, provided either by the user or by some application developer;
- o the environment allows the user to define a very large number of "analysis sequences," which:
  - string together models and utilities in any desired way to do analysis, including producing graphic and tabular outputs and entering data as needed;
  - the analysis sequences are executed by user defined commands;

ENVIRONMENT: DODOTRANS II is programmed in UCSD Pascal for microcomputers with 64K bytes memory. It currently operates on the Apple II.

STATUS: DODOTRANS II is being field tested at the Florida DOT.

CONTACTS:

Dr. Marvin L. Manheim (Grant Manager)
Department of Civil Engineering
Room I-181
Massachusetts Institute of Technology
Cambridge, MA 02139
(617) 253-1627

Joseph Gerry (FL DOT)
605 Suwanee Street
Burns Building, MS-21
Tallahassee, FL 32304

Mr. Larry Quillian (UMTA Contact)
UMTA/URT-41
Washington, DC 20590
(202) 426-9271

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

APPLICATION The Prime Plotter

DEVELOPER PrimeSoft Corp.
Studies, Massachusetts Institute of Technology, Cambridge, MA

SUMMARY A comprehensive data analysis and statistics/graphics package especially suitable for traffic and transportation research and planning applications. Designed as a modular system with powerful capabilities for customization and add-on applications.

The initial package includes X-Y and Pie plotting, Curvefit regressions, Distribution and Trend analysis. User defined functions and subroutines can be plotted. The package has built-in capabilities for producing slide-show/replay files for demonstrations. The program accepts DIF files created with Visicalc or compatible programs.

Output of data, statistics and graphics can be done directly to a printer or to a plotter. Additional plotting modules are being developed, including 3-D, Mapping, and Organizational Charts. Statistical modules can be customized for user needs.

ENVIRONMENT The program has been written in Applesoft and Machine Language with DOS 3.3 operating system. It operates on the Apple II+ with a 16K card in slot 0, and the Apple IIe. Printer interface with graphic capabilities and one or two disk drives are recommended.

AVAILABILITY For sale ($239.95) from contact below. Demo disk with an hour-long show of program capabilities ($15.00, refundable with purchase) is available.

CONTACT Eli Argon
PrimeSoft Corp.
P.O. Box 40
Cabin John, Maryland 20818
(301) 229-4229

microcomputers in transportation

Utilities And Miscellaneous Microcomputer Software

PROJECT — Microcomputer Data Base Management System Review

DEVELOPER — Transportation Systems Center, U.S. Department of Transportation, Cambridge, MA

SPONSOR — UMTA, Office of Methods and Support

SUMMARY — This project's goal is to systematically review and evaluate microcomputer data base management systems (DBMSs) for potential use in other UMTA-sponsored projects. This is expected to be a continuous activity which will subject new DBMSs to review as they appear on the commercial market.

All commercially promising or publically available microcomputer DBMS products will be candidates for review. Each review will consist of an extensive literature search of other reviews of the product, plus a description of the performance of the DBMS in a series of standardized tests based on transportation-related data base problems.

ENVIRONMENT — The goal is to eventually evaluate all DBMSs operating on inexpensive machines.

STATUS — Development of the standard tests and testing procedures should be completed by the end of this year. A review of a minicomputer DBMS called "RIM" will be available at the end of this year.

SCHEDULE — A review of "MDBS" should be available by April, 1983. No other schedule has been established.

CONTACTS —

Mr. Richard Albright (TSC Contact)
Transportation Systems
Center/DTS-62
Kendall Square
Cambridge, MA 02142
(617) 494-2086

Mr. Ron Jensen-Fisher (UMTA Contact)
UMTA/URT-41
400 7th Street, S.W.
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1 Market Plaza
San Francisco, CA 94105
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617 Vine Street, Suite 800
Cincinnati, OH 45202

William G. Barker & Associates
1009 W. Randol Mill Road
Arlington, TX 76012
(817) 255 0794

BARTON-ASCHMAN ASSOC., INC.
820 Davis Street
Evanston, IL 60201

CALCSTAR, WORDSTAR
MicroPro
1299 Fourth Street
San Rafael, CA 94901
(415) 457 8990

CHASE ROSEN WALLACE
Stan Rosen WALLACE
(703) 836 7120

COMSIS CORPORATION
11501 Georgia Avenue
Wheaton, MD 20902
(301) 933-9211

CONDOR
P.O. Box 8310
Ann Arbor, MI 48104

CONSORTIUM
2643 - 151st Place, N.E.
Redmond, WA 98052

Roger CREIGHTON Associates
274 Delaware Avenue
Delmar, NY 12054
(518) 439-4991

DBASE II
9929 Jefferson
Los Angeles, CA 90230
(213) 204 5570

DBMASTER
Stoneware
50 Belvedere Street
San Rafael, CA 94901
(415) 454 6500

DELOITTE, HASKINS, SELLS
Tom Rubin
(202) 862 3537

DESKTOP/PLAN Street
(See VISI FILE)

DSS/F
Ferox Microsystems
1701 N. Fort Meyer, Suite 611
Rossylyn, VA 22209

ECOSOMETRICS, INC.
4715 Cordell Avenue
Bethesda, MD 20014

EXDATA & BUS SCHED
ATE Management & Service Co.
1911 Fort Meyer Dr., Suite 306
Arlington, VA 22209

EXECUPLAN
Vector Graphic
31364 Via Colinas
Westlake Village, CA 91362

GANNETT FLEMMING
Jim Herendeen
(717) 763 7211

HOWARDSOFT
8008 Girad Ave.,, Suite 310
La Jolla, CA 92037
(714) 454 0121

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INSOFT
10175 S.W. Barbur Blvd., Suite 20
Portland, OR 97219
(503) 244 4181

Ketron Inc.
Hickory Hill Plaza
151 S. Warner Rd.
Wayne, PA 19087
(215) 964 3300

MICROSOFT CONSUMER PRODUCTS
10700 Northup Way
Bellevue, WA 98004
(206) 828 8080

MDBS III
Micro Data Base Systems, Inc.
Box 248
Lafayette, IN 47902

MINISCHEDULER
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THE MITRE CORPORATION
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MULTI SYSTEMS
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Cambridge, MA 02139

PEAT, MARWICK, MITCHELL & CO.
1990 K Street, N.W.
Washington, DC 20060

PRC VOORHEES
2150 Shattuck Avenue
Berkeley, CA 94111

RUCUS, RUCUS II & SIMS
Mr. Dennis Goeddel (DTS-42)
Transportation Systems Center
Kendall Square
Cambridge, MA 02142
(617) 494 2462

SCHIMPELER-CORRADINO ASSOC.
1429 South Third Street
Louisville, KY 40205

S/G ASSOCIATES, INC.
Marvin Golenberg
316 Stuart Street
Boston, MA 02116
(617) 542 1416

SIMS
(See RUCUS)

SIMPSON & CURTIN
1346 Chestnut Street
Philadelphia, PA 19107

SUPERSCRIBE (Formerly
SUPERSCRIPT)On-Lone Systems
36575 Mudge Ranch Road
Coarsegold, CA 93614
(209) 683 6858

SUPERTEXT
The Muse Co.
330 N. Charles Street
Baltimore, MD 21201
(301) 659 7212

SYSTAN, INC.
P.O. Box U
Los Altos, CA 94022

SYSTRANS
1911 N. Ft. Meyer Dr., Suite 705
Arlington, VA 22209

TARGET
Advanced Management Strategies
P.O. Box 95130
Atlanta, GA 30347

TRANS-PAC
MDS Quantel Business Computers
4142 Point Eden Way
Box 3517
Hayward, CA 94545

TRANSMAX, INC.
2121 W. Crescent Ave., Suite
Anaheim, CA
(714) 956 9940

TOUCHE ROSS
Rob Hampton
(202) 452 1200

UCSD-P SYSTEM
SOFTECH Micro Systems
9494 Black Mountain Road
San Diego, CA 92126
(714) 578 6105

UTPS
Urban Mass Transportation Admin.
URT-41
U.S. Department of Transportation
Washington, D.C. 20590
(2020 426 9271

VISIFILE, VISICALC, VISITREND
VISIPLOT, DESKTOP/PLAN
VISICORP
1330 Bordeaux Drive
Sunnyvale, CA 94086
(408) 745 7841

VISTA SYSTEMS, INC.
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BIBLIOGRAPHY OF BOOKS AND PUBLICATIONS

BIBLIOGRAPHY OF BOOKS AND PERIODICALS ON MICROCOMPUTERS

1. General Introductory Texts

1.1 "Business Systems Buyer's Guide:, Adam Osborne and Steven Cook, Osborn/McGraw Hill, 1981.

Excellent nontechnical introductions. Good advice on software, consulting. Tables are already dated.

1.2 "An Introduction to Microcomputers: Volume 0 - The Beginner's Book", Adam Osborne and David Bunnell, Osborne/McGraw Hill, 3rd Edition, 1982.

The fact that this is the 3rd edition indicates its popularity. Chapters 1-3 are a good general introduction; Chapters 4-6 are intended for a newcomer to computers but are technically oriented (even have hardware timing!).

1.3 "The Howard W. Sams Crash Course in Microcomputers", Louis E. Frenzel, Jr., Howard W. Sams & Co., Inc., 1980

Excellent technical introduction to micros. Tends more to explain the how and why of hardware, less oriented toward explaining where to find the right application software.

1.4 "A Consumer's Guide to Personal Computing and Microcomputing", Stephen J. Frieberger and Paul Chew Jr., Hayden Book Co., Inc., 2nd Edition, 1980.

The aim is laudible, but the field is changing too rapidly, and is too diverse. Presents a lot of material, some of it already obsolete. The comparative significance of various items is not particularly well brought out.

1.5 "Computer Power for the Small Business", By Charles J. Sippl and Fred Dahl, Pentice Hall, Inc., 1979.

Not particularly helpful even when it came out. Now the information is very dated. Not recommended.

1.6 "Small Business Computers - A Guide to Evaluation and Selection", Koichiro R. Isshiki, Prentice Hall, Inc., 1982.

Looks at computers and computer selection as a business investment decision, i.e., purchase, lease, hiring of consultants, etc. Solid advice. Extensive table has machines which are much too big to be considered micros. Even though it is very recent, does not have IBM PC, Tandy Model 16, etc.

1.7 "So You are Thinking About a Small Business Computer", Richard G. Canning and Nancy C. Leeper, Canning Publications, Inc., 1980.

General introduction with some good advice regarding software and consultants. Not much specifically useful information.

1.8 "Business Computers: A Guide to Selecting Hardware, Software, and Services", Dick H. Brandon and Sidney Segelstern, Boardroom Books, 1981.

Similar to 1.6 above, but really looks at bigger applications, i.e., minis, not micros. Book price ($50.00) is geared to same audience..

2. User's Guides and Primers

2.1 CP/M

2.1.1 "Inside CP/M, A Guide for Users and Programmer with CP/M-86 and MP/M2", David E. Cortesi, Holt, Rinehart and Winston, 1982.

An unusual book: well written and organized, with general information for the absolute novice, easily found information for the user, and enough details of the CP/M internals to satisfy any hacker. Excellent introduction to computers in general, not just CP/M.

2.1.2 "The CP/M Handbook with MP/M", Rodney Zaks, Sybex, Inc., 1980.

Good middle ground tutorial and guide to the use of CP/M and the programs that come with it. Chapter 6 (Reference Guide to Commands and Programs) and Appendices are well organized and very helpful.

2.1.3 "Osborne CP/M User Guide", Thomas Hogan, Osborne/McGraw Hill, 1981.

Good guide and bibliography. But 2.1.2 above is better as a tutorial.

2.1.4 "CP/M Primer" by Stephen M. Muretha and Mitchell Waite, Howard W. Sams & Co., Inc., 1980.

Loses out by comparison with above books.

2.2 UCSD Pascal and Pascal

2.2.1 "UCSD p-System Version IV.0 User's Manual", Softech Microsystems, Inc., 2nd Edition, 1981.

Everything on the p-System by the authorized distributor. The sections on the Pascal language itself assumes a knowledge of Pascal and deals mostly with differences from "standard" Pascal.

2.2.2 "Pascal User Manual and Report" by K. Jensen and N. Wirth, Springer-Verlag, New York, 2nd Edition, 1978.

Until there is an ISO on ANSI definition, this is the reference which best defines "standard" Pascal. It is a reference not a tutorial or guide.

2.2.3 "The USCD Pascal Handbook", Randy Clark and Stephen Koehler, Prentice Hall Inc., 1982.

Well organized and directed to the Pascal programmer - i.e., gives definitions and points out typical pitfalls (and workaround methods!). The first half gives the language defintion, the second goes into structures with small, but typical and non-trivial examples.

2.2.4 "Pascal Programming Structures", George W. Cherry, Reston Publishing Co., Inc. 1980.

Programming instructions for "standard" Pascal.

2.2.5 "Pascal Programming Structures for Motorola Microprocessors", George W. Cherny, Reston Publishing Co., Inc., 1981.

Same book as above, but with two extra chapters and several appendices, covering the Motorola extensions/differences from "standard" Pascal.

2.2.6 "Microcomputer Problem Solving Using Pascal", Kenneth L. Bowles, Springer-Verlag, NY, 1977.

An introduction to programming, and to the then evolving UCSD Pascal. Introduces concepts well, but it cannot be used as a reference or user guide for either the language or the p-System, because of its organization and index.

2.2.7 "Beginner's Guide to the UCSD Pascal System," Kenneth L. Bowles, Byte Publications, Inc., 1980.

An intoductory text for the p-system user.

2.2.8 "Introduction to Pascal, (Including UCSD Pascal)" Rodney Zaks, Sybex, Inc., 2nd Edition, 1981.

A good introduction to the standard language. UCSD variants are covered in one chapter and in appendices.

2.3 UNIX

2.3.1 "A User Guide to the UNIX System", Rebecca Thomas and Jean Yates, Osborne/McGraw Hill, 1982.

Introductory and reference manual.

3. Periodicals

3.1 "Byte (The Small System Journal)", Byte Publications Inc., $19 - 12 issues/year.

Small business, education, "hackers", product reviews, and games. Has been published since 1975, issues are now running 500 pages each.

3.2 "Interface Age", Mcpheters, Wolfe and Jones, $21 - 12 issues/year.

For the small business using microcomputers. Hardware/software reviews.

3.3 "Business Computer Systems", Cahners Publishing Co., $35 - 12 issues/year.

Started in September 1982, aimed at (small) business computer users.

3.4 "Small Business Computers", Ahl Computing Inc., $12 - 6 issues/year.

3.5 "Datamation", Technical Publishing, $40 - 13 issues/year.

Covers the computer industry and its practices. Hardware/software/salary scale reviews. Non-technical, directed at managers.

3.6 "Personal Computing", Hayden Publishing Co., $18 - 12 issues/year.

The emphasis has changed from the home P.C. to the business applications of micros.

3.7 "PC (The Independent Guide to IBM Personal Computers)", Software Communications Inc., $14.50 - 6 issues/year.

Started in 1982, seems to be growing as well as the IBM PC and its hardware/software market.

3.8 "Microsystems (The CP/M User Journal)", Ahl Computing, Inc., $24.97 for 2 years - 6 issues/year.

For the more serious CP/M, S-100 bus (now IEEE-696) users. Has published patches to CP/M in the past.

4. Reviews

4.1 "Datapro Directory of Small Computers", Datapro Reseach Corp.

Describes available hardware and software from small micros to minicomputers, lists vendors, etc. Monthly updates.

4.2 "Auerbach Applications Software Reports", Auerbach Publishers, Inc.

Guide to proprietary software packages.

Note: Both Datapro and Auerbach have a number of other reviews on different aspects of computer hardware, software and services.

5. Publishers

Publishers have catalogs for the trade and/or consumers, which usually have brief descriptions of the scope and the intended audience of their books. The CBE/Professional Book Center covers publications from many publishers.

6. References

Addison Wesley Publishing, Co.
Jacob Way
Reading, MA 01867
617/944-3700

Ahl Computing, Inc.
Division of Ziff-Davis Pub., Co.
P.O. Box 789-M
Morristown, NJ 07960
800/631-8112 or 201/540-0445

Ahl Computing, Inc.
Micro Systems
P.O. Box 1987
Morristown, NJ 07960
212/725-6856

Auerbach Publisher, Inc.
6560 North Park Drive
Pennsauken, NJ 08109

Boardroom Books
500 5th Avenue
New York, NY 10110
212/354-0005

Byte Publications, Inc.
Division of McGraw Hill
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Petersborough, NH 03458
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Boston, MA 02116
617/536-7780

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Vista, CA 92083

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Hawthorne, NY 10532
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Cherry Hill, NJ 08034
609/429-7100

Holt, Rinehart and Winston
383 Madison Avenue.
New York, NY 10017
212/872-2000

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16704 Marquardt Avenue
Cerritos, CA 90701
800/423-6665 or 213/926-4862

Osborne/McGraw Hill
630 Bancroft Way
Berkeley, CA 94710
800/227-2895 or 415/548-2805

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P.O. Box 500
Englewood Cliffs, NJ 07632
201/592-2000

Reston Publishing Co., Inc.
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11480, Sunset Hills Road
Reston, VA 22090
703/437-8900

Howard W. Sams & Co., Inc.
4300 West 42nd Street
P.O. Box 7092
Indianapolis, IN 46206
800/428-3696 or 317/298-5400

Softech MicroSystems, Inc.
9494 Black Mountain Road
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619/451-1230

Software Communications Inc.
1528 Irving Street
San Francisco, CA 94122
415/753-8088

Springer-Verlag NY Inc.
175 Fifth Avenue
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212/477-8200

Sybex, Inc.
2344 Sixth Street
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Datapro Research Corp.
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Tab Books, Inc.
Blue Ridge Summit, PA 17214
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Technical Publishing Co.
A Company of Dun and Bradstreet, Corp.
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605 Third Avenue
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