U.S. Department
of Transportation

Federal Transit Administration

FOURTH TRANSIT PLANNING AND RESEARCH PRIORITIES WORKSHOP

MARCH 15-16, 1993

Office of Technical Assistance and Safety

TABLE OF CONTENTS

PREFACE

CONTINUING PROGRESS ON THE NATIONAL TRANSIT PLANNING AND RESEARCH AGENDA

The following chapters are synopses of the six sessions of the Fourth Federal Transit Administration Transit Planning and Research Workshop. This workshop was held in Alexandria, VA on March 15 and 16, 1993, hereafter referred as the time of the big snow. The Workshop was divided into six breakout sessions: Advanced Public Transportation Systems, Engineering, Finance, Management, Planning and Services. A number of registrants and beakout session leaders were not able to get to the workshop due to unruly weather conditions.

THE WORKSHOP

The participants at this workshop were charged with examining the entire planning and research program in light of the Administrations' initiatives of insuring safety, promoting economic growth, advancing transportation technology, strengthening the environment and fostering intermodalism. Also, each breakout session was asked to come up with comments on Information Dissemination and Coordination and a strategy for improvements in these areas.

ADVANCED PUBLIC TRANSPORTATION SYSTEMS (APTS)

BREAKOUT SESSION

Chair-person: Ronald Kirby
Director, Transportation Planning
Metropolitan Washington Council of Governments

FTA Co-chair: Ronald Fisher

Facilitator: Ann Fields
National Center for Regional Mobility
George Mason University

Recorder: Littleton MacDorman
MacDorman & Associates, Inc.

A presentation was made of the APTS program that is summarized below.

Goals and Objectives

The APTS program goal is to develop a body of information, readily accessible, on technologies that enhance public transportation and showcase those technologies in operational models. The objectives include:

- increase market share of transit and ridesharing,
- improve safety and security of transit system
- reduce unit operating costs and increase system revenues,
- improve service performance and reliability, and
- assist in response to legislative mandates (i.e., ADA, clean air, energy).

The components of the program are as follows:

- assessments of APTS technologies,
- research on technology adaptations,
- operational tests,
- evaluation,
- technology sharing, and
- development of user requirements and equipment standards.

Program Implementation

The implementation of the program is a cooperative process involving Federal, State, and local governments, private industry, and academe.

The APTS program is guided by a committee of IVHS America chaired by Michael Bolton, Ann Arbor Transit. This committee is divided into the following five task forces:

- smart traveler,
- smart vehicle,
- smart intermodal systems,
- technical standards, and
- policy.

Operational tests are being conducted in sixteen locations and include demonstrations of smart traveler, smart vehicle, and smart intermodal system technologies.

There was concern that the current program is technology-driven. The term "customer" was never used. The sense was that the APTS program may be supporting the notion of technology looking for a market niche in public transportation. The following questions regarding the program were raised.

- Is this program technology-driven rather than needs-driven?
- Does technology alone really solve problems?
- Why should a consumer be interested in the application of APTS technology?

Customer service should be a key goal for this program. The emphasis of the program should be on applying appropriate technologies in order to improve transit services for the customer, not on developing technologies. The program needs to be presented in terms that people can relate to and understand. The stated goal is to look at public transportation systems. The objectives are good but may need to be increased.

It was pointed out that comments haven't been solicited about the program from people outside of the IVHS field. A look should be taken at the broader level of what this program is attempting to accomplish. The is a lot of diversification in the program.

Specific Comments on Goals and Objectives

The concept of helping the entire community, not only transit customers, should be incorporated into the goals since transit is of benefit to all.

The objectives seem appropriate, though perhaps not problem-oriented enough. There may not be enough emphasis on communication. From the customer's prospective, there seems to be no evidence that anyone has addressed their needs. It should continually be emphasized that the program exists to serve the customer.

A new objective was proposed that states that the APTS program should enhance public transportation service to meet customer needs. The primary mission of transportation service should be to provide better service to customers.

An objective should be something that can be accomplished by groups working together. Perhaps, the primary APTS role should be as a change agent.

Revised APTS Goal and Objectives

The following revised program goal and objectives are proposed as they are more succinct and engaging to a general audience.

Revised Program Goal: Apply advanced IVHS technologies to enhance the ability of public transportation systems to effectively satisfy the needs of their customers and contribute to overall community three goals.

Revised Program Objectives:

- Enhance the quality of on-the-street service to customers.
- Improve the quality, timeliness, and availability of information about the system to customers.
- Increase the convenience of fare payments, both within and between modes and operating systems.
- Improve the safety and security of systems.
- Enhance the opportunities for customers to provide feedback to operators on the quality of public transportation services.
- Improve service reliability.
- Improve internal system productivity.
- Improve the ability to locate vehicles in order to monitor their adherence to schedules and respond to congestion and incident problems.
- Improve the timeliness and accuracy of operating and passenger data available for route planning and scheduling.
- Enhance the ability of public transportation managers to plan and operate innovative services.
- Provide public transportation managers with integrated information management systems and promote new management practices.
- Reduce worker stress and increase job satisfaction.
- Enhance the contribution of public transportation systems to overall community goals.
- Provide discounted fares to special user groups.
- Improve the ability of vehicle operators to communicate with users who may have visual or hearing impairments.
- Increase the effectiveness of transportation demand management programs.

Evaluation criteria based on customer feedback should be used to judge a project. Technology adaptation should be weighted equally with technology development. Look for a cost-effective fit without regard for which particular technology is utilized. The applicable technology set may be determined by geographic preference.

There is a smorgasbord of technologies available waiting to be applied to a particular situation. Some people have the idea that all technologies have been developed in Europe and are simply waiting for applications in the U.S. This is not true. New

technologies are being developed here, also. Some European technologies are not appropriate here. New technologies can be developed in addition to those currently available.

APTS has been focused on advanced technology but should be focused on transit problems. What technology really solves the problem? When found this technology should be tested and evaluated. There should be no concern with whether a particular manufacturer's technology is utilized, but whether a problem is being solved.

Operational tests should consider how technology can be transferred to other sites and applications and should not be overly site-specific. One important objective of field operational tests should be to explain how "technology transfer" is supported. APTS-related technology has been around and applied for many years. The slow pace of operational testing causes many people to lose interest in this technology. There needs to be greater emphasis on preliminary design. Also, operational tests should be reviewed sooner.

Evaluation of operations tests should be conducted separately from the tests.

APTS COMPONENT AREAS

There was general agreement on new program components, which are not dissimilar to the original areas. The four suggested component areas are:

- research on user requirements and APTS technologies, adaptations, and systems integration,
- operational tests,
- project evaluations and crosscutting studies, and
- technology sharing and equipment standards.

There were specific issues and emphasis areas that need to be addressed in order to meet the objectives:

- more "front-end" resources for program design to refine program objectives and identify any gaps in program coverage,
- awareness of institutional barriers to the adoption of APTS technology,
- solicitation of new ideas and service concepts from all potential sources,
- more attention to incorporation of APTS requirements into IVHS architecture design,
- increased future funding needed for evaluation, and
- strong consensus that independent and consistent program-wide and site-specific evaluations be conducted.

TECHNOLOGY GROUPING

The APTS technology groupings in the overview presentation were:

- Smart Traveler;
  - smart card,
  - hand held devices,
  - smart kiosk,
  - transit and rideshare information, e.g., at home, at work, on-board, wayside, and
  - communications medium, e.g., audiotex, videotex, telex, intertex, interactive TV, personal computer.

- Smart Vehicle;
  - farebox and smart card reader,
  - automated passenger counter,
  - on-board automated passenger information (voice and visual),
  - route destination display,
  - signal preemption communication with central control (voice and visual),
  - voice communication with passengers,
  - driver information display silent alarm, and
  - vehicle diagnostics.

- Smart Intermodal System;
  - integrated information systems, e.g., vehicle management, traffic management,
  - HOV priority, e.g., signal preemption, automated occupancy validation,
  - priority routes during incident management, and
  - user fee collection, e.g., fares, tolls.

The following is a synthesis of individual comments by technology grouping.

Smart Traveler

- There should be sensitivity regarding incomprehensible messages.
- Can customers understand what's being communicated?
- There is need for consumer education and/or training in the use of new technology.
- Should add regional shopping centers, airports, and other intermodal facilities to transit/ride share information locations?
- Electronic sign boards should be included in communications media.
- There is a need to clarify technology terms, e.g., what's included in hand-held devices? Is smart card technology the same as integrated

fare media or electronic fare media? A one- or two-sentence description of each technology may be helpful.

Smart Vehicles

- Might be helpful to expand automated passenger counter to include trip information, by passenger.
- Automatic vehicle identification should be added.
- Include the means to evaluate driver performance including collision avoidance or curb avoidance.
- Safety insurance devices should be mentioned.
- Consider the creation of a management information system to include the information captured from these devices.
- Emphasize the Intention of these systems to decrease capital expenditures and increase transit use.

Smart Intermodal Systems

- A distinction should be made between HOV and transit; they are not synonymous.
- Where do Transportation Management Centers come in?

FACILITIES AND EQUIPMENT ENGINEERING

BREAKOUT SESSION

Chair-person: Thomas McGean, P.E.
3711 Spicewood Drive
Annandale, Virginia 22003

FTA Co-Chair: Steven Barsony

Recorder: David Spiewak
John A. Volpe National Transportation Systems Center

The primary objective of this breakout session was to evaluate existing Clean Air, Technology Development and Transit Accessibility Programs. A second objective was to offer suggestions for improvements in these programs. Additionally, suggestions were sought for ways to improve upon methods used to set research needs and priorities for the national research program.

Tangentially, there were discussions on how well all the FTA planning and research programs disseminate information and what coordination exists between research program activities. These discussions will be summarized in a later chapter.

To initiate discussion of the three program areas, a presentation was made of ongoing projects. Discussion centered on the amount of funding to be made available for research for the next few years with the consensus reached that funding had to be significantly increased in order to properly complete existing programs and to provide for new research opportunities.

There was a great deal of discussion of defense conversion programs, and the need for transit agencies (Federal, State and local) to become actively involved in this effort. It was agreed upon that those agencies with transit responsibilities would work actively with agencies such as the Advanced Research Projects Agency (ARPA), to assure that any transit research done under the defense conversion program is completely responsive to transit needs. It was generally agreed that the transit industry as a whole would approach ARPA and other Federal agencies that have or will have research and development funding to inform them of important transit research needs.

Optimism was expressed that the new Administration will take a positive attitude towards research and development work, especially as it concerns defense conversion and "dual-use" technologies. It was hoped that the Congress would not dictate the detailed technical aspects of proposed research and development projects. Comments were requested on the three program areas with emphasis on ideas for additional activities within these programs. Each new idea was the subject of a debate.

The following sections summarize the recommendations of the workshop in each of the three program areas.

CLEAN AIR PROGRAMS

Comments on Existing Programs:

- Because of the success in accomplishing the existing goals of the program, new program goals need to be developed.
- Focus should be on reducing bus weight, improving reliability and reducing cost.
- Coordination with the Department of Energy should be improved.

Recommendation for New Activities:

- Should participate in the automotive clean engine task force proposed by the President on his Silicon Valley visit (fuel cell development).
- Carbon dioxide (CO_2) and chloroflourocarbon (CFC) reduction technologies should be pursued.

TECHNOLOGY DEVELOPMENT PROGRAMS

Comments on Existing Programs:

- The Suspended Light Rail Technology Program should be refocused.

New Prgram Recommendations:

Rail and Light Rail Cars

- Study new techniques to reduce rail transit car weight.
- Study safety and cost benefit impacts of U.S. versus European buff loads for light rail cars.

Automatic Train Control

- Expert systems should be developed to assist operators in central control rooms.
- Develop technologies to utilize automatic train control to save energy.
- Study the use of "Fuzzy Logic" for automatic train control.

Track, Bridges and Tunneling

- New methods are needed for track condition measurement, including broken rail detection.
- Utilize the DOD technology transfer for improved diagnostic equipment to check the condition of bridges and tunnels.

Diagnostics and Reliability

- Improved diagnostic equipment, improved "health" monitoring equipment and standardized interfaces for both are needed.
- Develop techniques to improve communication of diagnostic information in real time to assist on-board train operators by utilizing multiplexing of existing train lines.
- Develop solutions to improve train reliability and reduce the number and impact of train delays.

Environmental Issues

- Evaluate means of reducing the visual intrusion of overhead power wires.
- Study how to reduce CFC's in heating, ventilating and air conditioning systems.
- Trolley bus research and development should be integrated with fuel cell research and development.
- Evaluate the relative advantages of active noise cancellation versus passive noise reduction techniques.

TRANSIT ACCESSIBILITY PROGRAMS (ADA)

Comments on Existing Programs:

- Should test and evaluate the adequacy of wheelchairs for use on transit vehicles.

New Program Recommendations:

- Should develop guidelines for wheelchairs that can be safely used on transit facilities.

The following were recommended as priorities for a National Research Program.

- Should be involved in dual-use, defense spin-off technology projects.
- Special attention should be given to defense conversion opportunities.
- Should be involved in discussions of how Federal research and development should be done in the future.
- Should do long-range/strategic planning for Federal transit research and development.
- Should coordinate with other Federal agencies involved in similar research.
- Should be involved in interagency cooperative programs with the National Laboratories.
- Direction is needed as to whether encouragement of a competitive domestic transit supplier industry is appropriate.
- Federal research and development should require industry cost-sharing to ensure that it is realistic.
- Industry matching of funds at the 50% level is highly recommended to assure realistic research.

FINANCE

BREAKOUT SESSION

Chair-person: Thomas McNichols
Chief Financial Officer
PACE Suburban Bus Service

FTA Co-Chair: Richard Steinmann

Recorder: Thomas Luglio
EG&G Dynatrend

The group was charged with defining research priorities in the Finance Program and providing guidance with respect to coordination and information sharing.

A review of existing projects and trends in the Finance Program for fiscal years 1992 and 1993, and proposed projects for 1994 was conducted. A presentation was made on the transit asset book value and funding demands for new starts, rail modernization, and bus and facility replacement. While transit needs exceed $66 billion over ten years, that figure is dwarfed by the funding demands of urban highways over the same period, projected to be over $860 billion. A copy of "Financing the Future: Report of The Commission to Promote Investment in America's Infrastructure," was distributed. It provides up-to-date thinking about infrastructure finance, and encourages consideration of innovative techniques and private funding sources to stretch scarce public resources.

A discussion was held of the four priority areas articulated by the Secretary of Transportation:

- stimulate the economy,
- improve the competitiveness of the transportation industry,
- safety and putting people first, and
- reinventing government through public-private coordination.

A number of financing techniques of assistance to transit operators were discussed. These techniques are as follows:

- utilizing credit enhancements to leverage transit grants to provide adequate cash flows throughout a project's life,
- providing mechanisms to permit smaller transit properties to take advantage of financing techniques,
- considering alternatives to assist contractors in construction financing,
- defining the risks affecting all participants in the transit project development process,
- providing better data, tools and techniques to assist those who develop and oversee project development and related finance plans, and

- developing strategies to provide land use and zoning incentives so private developers will provide transportation facilities and services.

The following projects were suggested to address the various concerns. These projects were organized in one of the three elements of the finance program.

Financing Techniques;

- grant-backed instruments,
- Industry-wide structure for pooled financing,
- financial capacity analysis guidance and training,
- financial management systems for operators and MPOs,
- securitization borrowing,
- standards for dedicated revenue source estimates,
- demonstration of optimum financing package,
- construction financing,
- innovative financing for small operators, and
- methods for validating estimates (MPO Support).

Financial Management;

- cash management guide and training,
- financial aspects of smart cards,
- equipment management systems,
- fare elasticity studies,
- risk measurement, allocation and management,
- investment policy and operations impacts,
- expand internal audit guide,
- transit price index follow-up,
- recapitalization studies,
- accounting practices,
- railcar spare ratios,
- FHWA/FTA approval process comparisons, and
- public transportation maintenance system support.

Public/Private Partnerships;

- land use/zoning incentives for private transportation investment,
- transportation investments as catalyst for development,
- increases in density as by-product of mixed use development,
- sharing infrastructure cost, and capturing value of public transit investment with developers.

This is a large number of potential research topics, well beyond the budget of FTA's in-house program. This is in expectation that other resources would be made available in order to permit sound projects to be advanced.

INFORMATION DISSEMINATION AND COORDINATION

At the plenary session on the first day of the Transit Planning and Research Workshop, each breakout session group was asked to devote a period of time to the subjects of Information Dissemination and Coordination; most particularly, how well are they done now and how they can be done better. When reviewing the comments from the six breakout sessions, it was determined that there was so much duplication in the comments on these two subjects that they should be combined into a single chapter.

INFORMATION DISSEMINATION

There needs to be a good inventory of recently completed and on-going research.

FTA staff and contractors should report research results at transit conferences and other appropriate professional meetings.

Small transit agencies should not be ignored and a method should be found to keep them informed without making them go to conferences; perhaps electronic media is the way.

Databases should be combined in order to have to make only one phone call.

Information from agencies other than FTA should be disseminated when appropriate. This information could be from other modes in DOT, from HHS, DOD, NASA or whomever.

There is a need to identify the various uses of an Information Dissemination system. Will it be used as an:

- outreach and education system,
- clearinghouse system,
- focused problem solving system,
- problem identification system, or
- combinations of all of the above?

Once it is decided what the system is supposed to accomplish, the decision needs to be made on how to accomplish this. Should it be done through:

- workshops and conferences,
- peer-to-peer assistance,
- videos,
- hardcopy in publications and reports,
- electronic media, or
- combinations of all of the above?

Depending on the media chosen for disseminating the information, the following suggestions were made regarding their use and content.

Electronic Media;

- should be user friendly,
- should include bulletin boards,
- could be effected on;
  - floppy disk,
  - CD-ROM,
  - videos,
  - hot lines,
  - fax, or
  - by teleconferencing.

Print Media;

- should be quarterly compilation of all FTA products, and
- should not duplicate RSPA Office of Technology Sharing methods.

Technical Briefs;

- two page case studies,
- one page fact sheet for policy makers, and
- inserts for newsletters of different associations.

Verbal Communications;

- seminars on particular topics,
- co-sponsor conferences, seminars, and training with other, appropriate Federal agencies,
- peer-to-peer contact for implementation and trouble shooting in all areas (an expanded PPTN), and
- FTA information booths at national conferences.

Other Activities

- syntheses in specific areas,
- broad based media such as popular press, cable TV, transportation channel (i.e. similar to CSPAN), taped conferences,
- public service announcements, and
- training materials as part of every research project,

All of the parameters of an information dissemination system should be clearly defined: clearinghouse, outreach and education, focused problem solving and problem identification. Also should determine your audience, should have FTA staff on each of APTA's technical committees, should create a separate information dissemination plan for each type of audience; (i.e. technical, non-technical, consumers, board members, et.al.) and should develop a distribution system.

It was suggested that electronic media should not totally replace hardcopy for all documents. Recognizing that it is labor intensive to maintain hardcopy, it was still suggested that there be one hardcopy of every research report somewhere so it could be loaned or whatever.

COORDINATION

In the opening session of the Workshop, the following chart was used to provide the participants with a guide to the types of research in which FTA engages, and the program under which this research in conducted. One of the breakout session groups commented on this chart (the * indicate that the group endorsed the placement of the research activity).

RESEARCH ORIENTATION

RESEARCH AND DEMONSTRATIONS	NAT'L	TCRP	UTCP	NTI
Applied	X	X*	X*	
Operational Test	X*			
Pilot	X*			
Demonstration	X*			
TRAINING				
Traditional	X		X*	X*
Non-Traditional (neighborhood groups, CEO's, elected officials)	X*			X*
EDUCATION	X		X	X

That there should be coordination among the various programs of FTA was agreed on by all. No suggestions, however, were made on how this could be accomplished. A comment was made that possibly a clearly defined mission statement (no duplication, no overlap) for each of the offices would be helpful in effecting coordination.

It was suggested that a standing committee to advise the Administrator on the various research and training programs might be useful. A variation of this was the suggestion that there be a central policy group. It was also suggested that the governing boards of each of the programs (TCRP, UTCP, and NTI) should be cognizant of what each other are doing.

MANAGEMENT

BREAKOUT SESSION

Chair-person: Michael Townes
General Manager
PENTRAN

FTA Co-chair: Franz Gimmler

Recorder: Dianne Schwager
MacDorman & Associates, Inc.

This breakout session included the Safety and Security and Human Resources programs. Technology, Americans with Disabilities and training were included in the discussions as they relate to management concerns.

Research and Training

The focus of the initial discussion was on research and training, with an emphasis on safety training. There was a strong interest in practical research that can have immediate application to improve transit performance. Research should be proactive rather than reactive and be used as a management tool that helps reduce ad hoc decision-making. Safety, clean air, and implementation of ADA are areas that need further research.

Currently the single greatest resource for problem solving is other transit systems. When a transit system has a problem, contact is made to other transit systems that have had the same or a similar problem. For example, after the World Trade Center was bombed, the New York MTA contacted London Transport to discuss matters related to terrorism and bombings .

Despite budget reductions in a number of areas, training is expanding, in particular in the area of safety training, including safety training in handling alternative fuels. The objective is to increase individual awareness of their responsibilities, reduce accidents, and improve safety of passengers and employees.

A representative from the Transportation Safety Institute (TSI) reviewed its mission and some of its accomplishments. TSI is the primary provider of safety and security training, including training in transit safety and security, for the Department of Transportation. To date, it has trained more than 25,800 people to better perform their jobs to ensure safety of personnel, systems, and functions. An area of increasing interest and expansion is train-the-trainer programs.

It was mentioned that a neglected research area is in employee injuries and claims. A better understanding of this area could result in savings in insurance costs and improvements in productivity.

It was suggested that consideration should be given to requiring certification of transit managers in various disciplines. Training could be required with periodic up-dates in order to maintain the certification.

New technology development and deployment will require additional training in operations, maintenance, planning, customer services, finance, administration and other areas of day-to-day management. Finally, there is a need to consider new training techniques in order to keep the exercises interesting and, not incidentally, cost-effective.

Human Resources

A brief presentation was made on human resources. Three areas of importance were discussed: the changing work force; the need to train employees at all levels; and the need to change how work is done. Human resource concerns need to be addressed at the systems level along with changes in technology.

The work force is changing in a number of respects. First of all, the post Baby Boom work force is smaller, creating more demand for workers. Second, the work force is increasingly more diverse. Historically, transit management was male and white; now there are more women and minorities. In addition, historically the transit industry was authoritarian and hierarchical. Employees increasingly want input and greater flexibility in their work environment.

Total Quality Management (TQM) was discussed as a new area of interest in the public sector in the United States. TQM brings together the priorities of customer, management and employees. Both TCRP and the University Transportation Centers Program have projects in this area so no additional research is necessary. Some discussion followed on whether the federal government should sponsor a Baldrige type award for transit to promote quality management.

ADA

A brief presentation was made on ADA. Currently, FTA is reviewing plans submitted by the transit operators and MPOs to ensure conformance with the ADA regulations. The problems are by-and-large neither technical nor related to vehicle accessibility. Training is needed, in particular, sensitivity training for both operators and users of accessible transit systems. The National Transit Institute plans to address these, and other training needs.

RESEARCH PRIORITIES

The following areas and topics for research were identified:

ADA:
customer relations training,

Civil Rights:
WBE/DBE/MBE,
Title VI, and
EEO,

Human Resources:
employee development for new technology,
training certification,
TQM - worker empowerment,
employee recognition,
diversity management and recruitment,
training pool,
workforce profile, and
employee compensation and benefits,

Safety and Security:
regulatory support,
community support,
OSHA, EPA,
State oversight,
safety and security audits,
system safety and security program plans,
accident investigations, and emergency management,
grade crossing,
door safety,
technology,
fire safety,
alternative fuels,
general manager,
line manager,
terrorism,
new training techniques, and
certification training.

PLANNING AND PROJECT DEVELOPMENT

BREAKOUT SESSION

Chair-person — Daniel Brand, Charles River Associates

FTA Co-Chair: — Samuel Zimmerman

Recorder: — Brian McCollom, MacDorman & Associates

It was agreed that the objective of the planning and project development program, to insure effective government investment in transit services, equipment, and facilities, was appropriate. This objective covers both government capital and operating assistance. It was also agreed that transit planning involved many agencies in addition to the transit agency. Therefore, while the planning needs of transit agencies are very important, the needs of other agencies such as metropolitan planning organizations (MPOs), local governments, and State departments of transportation, must be considered in the development of a planning research agenda.

The following three objectives for the breakout session were established:

- prioritize research activities for the next two fiscal years,
- identify effective methods of information sharing, and
- suggest better ways to coordinate research or training.

There was a review of the research priorities identified in the December 1991 FTA Priorities Workshop. These priorities were discussed in the context of current values and interests. It was continually emphasized that there are many forces that drive local planning efforts including:

- the Clean Air Act,
- the Americans with Disabilities Act (ADA),
- Intermodal Surface Transportation Efficiency Act (ISTEA)
- continued suburban expansion and the decline of central cities, and
- growing recognition that public transportation is a critical element in the social fabric of rural communities.

The research priorities from the 1991 Workshop as well as some new research areas were ranked into four priority areas.

Priority One: The following three research activities received almost universal support.

- Customer Needs and Travel Behavior. Understanding travel behavior is the basis for the planning of new and improved services. The change in passenger use is a key evaluation measure. More research is needed to determine how travelers value and respond to the many attributes of

transit service. These include traditional attributes such as frequency, fares, reliability, and travel time and non-traditional attributes such as cleanliness, level of public information, and comfort.

Also more research is needed on the response of travelers to new transportation demand strategies that many communities are assessing in order to comply with the requirements of the Clean Air Act and other legislation that discourages single-occupant vehicle travel.

The group felt that planners need to better understand travel behavior from two perspectives:

- How different market segments of travelers value different aspects of transit service. These segments include location (urban, suburban, rural) and characteristics (e.g., income).
- How individual travelers value service aspects.

- Operations Planning. This type of planning often is conducted by the transit agency. It is concerned with improving existing transit services in the short term such as routing, schedules, fares, service costing, and patronage estimation.

- Macro Land Use Impacts of Transit. This research would address the large-scale impacts of transit improvements on land use patterns. The research should quantify the land value and physical impacts of transit improvements.

Priority Two - Four research activities received strong support.

- Local and Regional Coordination. There is much concern about the demands that ISTEA places on local inter-governmental coordination, particularly between the MPO and the local transit agency. It is believed that rsearch is needed on improving regional organizational structures in order to improve coordination and information sharing.

- Social Benefits of Transit. Faced by financial problems, some communities are weighing the need for public transportation against the needs of other public services such police and fire protection, roads, and schools. On the other hand, communities without public transportation are considering implementing services in order to meet unmet transportation needs.

  Research which quantifies the benefits of transit for car-less travelers would provide an extremely helpful tool for transit marketeers when justifying transit service costs to a community.

- Transportation Demand Management(TDM) and Transportation Control Measures (TCM) Planning. The Clean Air Act, ISTEA, and other legislation require local governments to consider TDM and TCM alternatives as a means for addressing mobility and air quality problems. Unfortunately, little is known about the effectiveness of these techniques and how they should be best designed. Research should be conducted on the effectiveness of TDM and TCM measures. There is skepticism regarding whether measures can be designed to be painless.

- Site Planning to Improve Transit Access. The zoning and building approval process is a place where transit can have an impact on land use patterns. This is particularly true for major trip generators such as shopping centers and major new suburban developments. The group recommends research of zoning and building approval procedures and design guidelines that have supported transit usage at these sites.

Priority Three. One activity received some support.

- Aggregate Economic Development Impact of Transit Improvements. There was some interest in the economic value of transit improvements. This research could quantify the economic spin-off or multiplier effects of transit investments.

Priority Four. There was virtually no support for these activities .

- Transit Cost Estimation and Construction.
- Improved Design of Physical Facilities.

It was suggested that FTA should fund a full planning research program. Planning is conducted to help local government leaders and transit officials make better transit investment decisions. This is similar to the effort expended by the private sector when it considers investing in new products. There was discussion that there should be a two-pronged research effort. The first prong should focus on developing and improving analytical tools --- data collection and market research methods, analysis procedures, and design approaches. This effort would be devoted to improving the state-of-the-art.

The second prong should focus on improving the skills of local planners in terms of agency coordination, decision making and analytical procedures. This effort would be devoted to improving the state-of-the-practice.

SERVICES

BREAKOUT SESSION

Chair-person:	Sally H. Cooper SHC Consulting
FTA Co-chair:	Walter Kulyk
Recorder:	Peggy Brouse George Mason University

This breakout session dealt primarily with the many facets of the Regional Mobility Program which include transportation demand management, innovative transportation services, entrepreneurial services and rural and specialized transportation. It was mentioned that the Regional Mobility Program is directly in line with the priorities of the new administration, i.e., improving access to health care and human services, improving the environment (by assisting states and localities to comply with the Clean Air Act), relieving traffic congestion (by assisting states and localities to meet the requirements of the congestion management provisions of ISTEA), and economic development.

There was group consensus that the elements of the Regional Mobility Program be given high priority due to their close and positive relationship to advancing Administration goals as well as the goals of other Federal departments. The comment was made that it would make sense for agencies to pool their resources when they have common goals and objectives. More resources should be devoted to evaluation or documentation of the program's successes and to dissemination of that information to user communities in support of the other goals, e.g. improved mobility, decreased air pollution, and decreased congestion.

Program Elements

- Transportation Demand Management (TDM) - TDM as applied today primarily affects short term transportation demand. There must also be changes in development and land use planning which will have a long term and positive effect on transportation demand and congestion. The comment was made that in order for TDM measures to be effective, a significant expansion of the audience of potential users is necessary. This includes State and local governments, MPOs, neighborhood associations and the private sector,such as employers, developers and other businesses. Information of particular interest to the private sector, such as TDM cost effectiveness, should be developed. Information of general public interest could be communicated in public service announcements. It was suggested that TDM research and demonstration

could be done in cooperation with the APTS program; for example, the joint Operational Action Program has projects with elements that use IVHS to support TDM goals

- Entrepreneurial Services Program - It was suggested that streamlining the 13(c) process as well as simplifying the entire grant process would make this a better program. Also, it was suggested that there should be assistance in accessing commercial credit. It was also suggested that it would be helpful to be able to pay interest with federal funds. There should be increased emphasis in the entrepreneurial services and private sector initiatives programs on accessible taxi vehicles and services.

- Rural and Specialized Services - It was suggested that this program element be a separate program of the National Planning and Research Program. It would be helpful if there were information on State practices regarding Section 18(i). It was suggested that assistance be provided to States in implementation of 18(i) programs, thought not necessarily from this element. It was recommended that land grant universities become more involved in rural transportation. It was also recommended that FTA demonstrate more effective methods of coordinating HHS, DOT and other transit related programs.

- Innovative Services - Emphasis should continue to be placed on congestion pricing and telecommuting. It was suggested that caution be used in selecting sites for congestion pricing demonstrations. Some factors to be considered in site selection include vehicle miles traveled, price elasticity, and income of users. There should be additional evaluations of telecommuting projects in order to assess the effectiveness of these projects regarding air quality and reductions in traffic congestion. Consideration should be given to demonstrations of integration of small operators with large transit operators and integration of transit and paratransit services in order to effect economies of scale in fare payment, fare media, technology, support services and so forth. It was suggested that demonstration and evaluation of paratransit eligibility and scheduling should be conducted; this is equally important to small and large systems.

- Private Sector Initiatives -The comment was made that transit should be viewed as a support service for all relevant national initiatives such as economic development and access to health care. Attempts should be made to assist the defense/aerospace industries to turn their attention to transit manufacturing. There should be evaluations of the Competitive Services Program. Consideration should be given to changing the name of this program element to Public/Private Partnerships. This program element could be used as a new entrance to supply, manufacturing and service.

Responsiveness to Research Users

The invitation list to the TP&R Workshops should be broadened to include more diversity; i.e. disabled, the elderly, DBE's, Congressional staffs, and small operators. The suggestion was made the workshop might be teleconferenced, or held in other locations in order to enable participation by persons not able to travel to Washington. It was requested the there be some mechanism within the framework of the workshop to obtain feedback from other groups and agencies. Arrangements should be made to inform Congressional staff as well as staff of NARC, NACO, APWA of ongoing research.

It is important to ensure that research is appropriate and easily accessed. With this point in mind the following suggestions were made:

- Limited Federal transit funds should be used for;
  - research that is not duplicative,
  - research for transit or transit related improvements (including mobility),
  - insure that Federal transit funds are not used for project research that is solely highway related.
- Establish formal mechanism to insure that UTCP research is broadly disseminated.
- All research should be coordinated with FTA training programs.
- Educate governing boards (UTCP, TCRP and others) about what is happening in all other areas.
- Conduct annual internal workshop of who is doing what in research and training.
- Prepare quarterly report on "cross fertilization"

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