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TRANSPORTATION TECHNICAL ASSISTANCE NEEDS AND REQUIREMENTS ANALYSIS



SEPTEMBER 1976

FINAL REPORT

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Office of R & D Policy
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16. Abstract As part of the continuing reevaluation of the priorities of transportation decision-makers, the Office of R&D Policy (OST) has undertaken a study to determine the transportation technical assistance needs of the various user groups in the infrastructure. This determination was based on four independent studies: (1) TSC Technology Sharing surveys, (2) the report of the OMB Study Committee on Policy Management Assistance, (3) Urban Consortium for Technology Initiatives needs determination, and (4) the National Conference of State Legislatures survey. The analysis of these needs determinations was stratified to identify those needs peculiar to each of three user groups: (1) policy, (2) planning and evaluation, and (3) operations. The relationship of the needs to both the public management processes and Federal transportation policy are presented.					
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1. BACKGROUND

1.1 INTRODUCTION

The Federal legislation establishing the Department of Transportation (DOT) directed the Secretary to "...promote and undertake development, collection, and dissemination of technological, statistical, economic, and other information ... [and to] consult and cooperate with state and local governments ..." Technical assistance is thus integral to the Department's responsibilities. As part of this mandate, the Department is continually reevaluating the information needs and priorities of transportation decision-makers to refine the Department's efforts to effectively meet these needs.

Departmental Technology Sharing activity has been a prime mission of the Office of R&D Policy of the Office of the Secretary. This contract (DOT-OS-60500) is part of this continuing reevaluation process.

1.2 METHODOLOGY

To determine the information needs of transportation decision-makers and other users, it was necessary to determine the extent and applicability of the existing needs analyses in those areas. Four primary resources were identified: (1) the Technology Sharing Needs Studies of the DOT Transportation Systems Center, (2) the Urban Consortium for Technology Initiatives needs determination, (3) the survey of the National Conference of State Legislatures, and (4) the report of the Office of Management and Budget (OMB) Study Committee on Policy Management Assistance. The first three items identify needs topics of their constituencies, while the last item investigates needs in the broader context of the public management processes.

Three user groups were identified: (1) policy level, (2) planning and evaluation level, and (3) operations level. An analysis of the data items was performed and information needs topics were identified for each of the user groups. These information needs requirements will be used as a basis for a DOT program analysis to be performed as a subsequent effort to this task.

1.3 REPORT ORGANIZATION

The results of this analysis are presented in Chapters 2 through 4 of this report. Chapter 2, "Data Base", summarizes those elements of each of the above resources that are crucial to the development of the theme of this study. Chapter 3, "Needs and Requirements Analysis", relates the various data base elements, user groups, and elements of the public management process. Chapter 4, "Conclusions", presents those specific information requirements identified for each of the user groups. Discussions of (1) the role of public management processes in the transportation infrastructure and (2) information needs and Federal policy are also presented in this final chapter.

2. DATA BASE

2.1 SOURCE MATERIALS

The data base for the needs analysis consists of four major items:

- (1) the Technology Sharing Needs Studies,
- (2) the report by the OMB Study Committee on Policy Management Assistance,
- (3) the Urban Consortium for Technology Initiatives needs determination, and
- (4) the National Conference of State Legislatures survey.

The studies present the perceived information needs of the three identified user groups: policy, planning and evaluation, and operations. The data elements present the transportation information requirements of the aforementioned groups and a parallel discussion of public management by the OMB Study Committee. The public management discussion relates the three management areas highlighted by the OMB Study Committee: policy management, resource management, and program management.

2.1.1 Technology Sharing Needs Studies

Technology Sharing Needs Studies encompass the results of two separate analyses: the Workshop/Seminar Requirements Study and the Transportation Community Institutional Infrastructure Study. This latter study includes a mail survey, a case study of an UMTA/FHWA Joint Training Program, and an institutional infrastructure study.

2.1.1.1 Workshop/Seminar Requirements Study

This study presents the results of personal interviews with more than 100 selected persons: 19 Federal DOT personnel and 83 persons representing 55 state, local, and other transportation agencies. The Federal employees were asked about technologies that are available now and in the near future, what experiences they have had with technology sharing, and the use of workshop/seminars for technology sharing.

The non-Federal interviewees were asked about the transportation areas of interest and concern to them, the interrelationships in these areas with other governmental elements, and the effectiveness of workshop/seminars for the sharing of technology. These persons suggested over 100 transportation related areas for use as potential workshops/seminars.

These areas of interest were correlated with the opinions of the Federal personnel, and the following 10 potential workshop/seminar topics were derived: (1) the transportation planning process, (2) technology review, (3) bus systems, (4) management systems, (5) demand-responsive systems, (6) marketing techniques, (7) elderly and handicapped transportation, (8) rail systems, (9) procurement, and (10) rural public transportation.

2.1.1.2 Transportation Community Institutional Infrastructure Study

This three volume study comprises the mail survey, the training program case study, and the institutional infrastructure study.

The mail survey (Volume 1) sampled 438 state, regional, and local transportation personnel about their perceived feelings concerning workshop/seminars as a technology sharing tool and the priority of topics to be addressed.

The 292 respondents (66.6 percent) ranked the 10 workshop/seminar candidate topics in terms of their individual priority. The resultant list is:

- (1) Transportation System Planning Process,
- (2) Bus Systems,
- (3) Technology Review,
- (4) Elderly and Handicapped Transportation Systems,
- (5) Management Systems,
- (6) Marketing Techniques,
- (7) Demand-Responsive Systems,
- (8) Rural Public Transportation,
- (9) Rail System, and
- (10) Procurement Procedures.

These needs were analyzed to determine regional, governmental, or population biases. The analysis showed that the overall rankings remained constant, with small changes of priorities in isolated instances. Thus the rankings are representative of a broad base of transportation personnel at the time of the survey.

Respondents were asked to react to a list of institutional and intergovernmental problem areas that they individually have encountered. The most frequently encountered problem was inadequate funding. Other problems added by respondents were: (1) conflicting goals, (2) excessive and unwarranted Federal procedures, (3) inadequate state policy, (4) funding flexibility, (5) interstate jurisdiction, (5) insufficient local responsibility, (7) time delay in approval funding, and (8) lack of cooperation among local governments.

Respondents were also asked to indicate the level of information desired for the listed candidate workshop/seminar topics or their suggestions under the "other" category. The levels presented on the survey were: general overview, detailed information, and experiences of others. Generally, higher priority topics were accompanied by requests for details and experiences, while a general overview

sufficed for the lower priority topics. In most cases more than one type of content was checked.

While general comments were not solicited, some respondents did provide an additional insight into their attitude and views regarding the workshop/seminar concept. The comments reflected: (1) the use of a workshop/seminar as a "sounding board" for new Federal directives, (2) the workshop/seminar's need to recognize the potential audience mix between technical and management personnel, (3) the workshop/seminar as a forum for the transition of new transportation systems from prototype to general applications, including funding sources, (4) the workshop/seminar as a tool to bring transportation information to rural areas, and (5) the use of the workshop/seminar as "problem solving" sessions. The consensus of these comments was overwhelmingly in favor of the workshop/seminar concept as a Technology Sharing tool.

The second volume of this study presents the background for the award of two contracts for the development of training programs for professionals transitioning from highway oriented responsibilities to more mass transportation oriented duties. The two programs are (1) Management of Low-Capital Transportation Improvements (Contract DOT-FH-11-8878) and (2) Public Transportation, an Element of the Urban Transportation System (Contract DOT-FH-11-9024).

As part of this study extensive telephone interviews were made with selected transportation decision-makers from 21 state transportation agencies. The purpose of the interviews was (1) to validate the mail survey results and (2) to determine the training requirements of the state transportation personnel who would be transitioning from highway to mass transportation orientation in light of the changing Federal emphasis. The survey resulted in an average of 32 personnel per state amenable to training for a period of about 2 weeks per session.

The third volume of the Transportation Community Institutional Infrastructure Study presents a study of the transportation infrastructure,

itself, developing the various interfaces in the transportation decision-making process.

2.1.2 Report of the OMB Study Committee on Policy Management Assistance

This three volume report consists of "Volume I: A Framework of a Strategy for Policy Management Assistance to State and Local Government", "Volume II: Strengthening Public Management in the Intergovernmental System", and "Volume III: Background Papers and Resource Materials". A video tape entitled "Intergovernmental Management: The Task Ahead" has also been produced, consisting of interviews with state and local officials with regard to the issues investigated by the OMB Study Committee.

Based on the interviews with state and local officials, on a series of issue papers commissioned for the committee, and on a series of working papers drafted by committee members, three primary areas for Federal action were determined. The three process-oriented areas were:

- (1) Reorient Federal programs to minimize burdens on state and local governments due to administrative requirements or conflicts with local policy;

- (2) Expand and coordinate Federal management assistance aimed at strengthening the overall management capacity of state and local governments; and

- (3) Improve the machinery for the resolution of intergovernmental issues, especially state and local participation in program reorientation and management assistance.

The committee emphasized that much of the machinery for meeting these needs was already in place in the form of existing grant and financial assistance programs, management research and demonstrations, onsite technical assistance through field staffs or mobility assignments, and

Federal training programs. Also emphasized was the potential of some existing Executive agencies, notably the Office of Management and Budget and the Domestic Council, for providing a policy focal point on inter-governmental issues.

As far as the role of mission agencies (such as DOT) was concerned, the study stressed the following processes:

(1) Providing state and local inputs in agency program development;

(2) Integrating the planning, management, and assessment of agency capacity building programs;

(3) Promoting integrated and effective Research and Development utilization, technical assistance, and training; and

(4) Providing a single contact point for state and local officials.

A number of near-term approaches to such processes were presented.

2.1.3 Urban Consortium for Technology Initiatives Needs Determination

The Urban Consortium for Technology Initiatives was formed in the early part of this decade to provide a cooperative means of identifying and addressing technology-oriented urban needs. The Consortium includes representatives of the 28 largest cities and 6 major urban counties with populations greater than one-half million. These Consortium representatives establish general policy. PTI (Public Technology, Inc.), a non-profit, tax-exempt, public interest organization, acts as a secretariat to conduct the day-to-day operations of the Consortium.

Needs were identified by the Consortium in response to 1,131 needs statements developed by representatives of member jurisdictions. These needs statements were then assigned to one of the eight functional

Task Forces (community and economic development; environmental services and energy; health; human resources; public safety; management, financial, and personnel; transportation; and public works and public utilities) for evaluation. The Task Forces consisted of local government practitioners who are specialists in each functional area.

Upon receipt of the various needs statements, the individual Task Forces initiated a two-phased needs selection process. Phase I activities involved prioritization of those needs statements which deserve further research. Ongoing Phase II activities include further evaluation of high-priority problems to select those needs to be explored and potential solutions to be disseminated by Information Bulletins.

The determination of priorities in Phase I was a complex procedure. Upon receipt of the 1,131 jurisdictional needs statements, the Transportation Task Force categorized the 94 transportation related statements into 58 concise topics. A statement was initiated by PTI when the Task Force felt that a need existed but had not been addressed by a jurisdictional need statement. Ultimately, the highest priority topics became the Consortium's needs list.

These topics were each represented by a needs abstract. These 58 abstracts were circulated to the Task Force members who individually listed their top 10 categories from the four overall groups (Highway, Transportation Systems Management, Mass Transit, and Aviation). This process then identified the most important abstracts, which were then further evaluated at the Task Force meeting.

Each of the most important topics was then discussed by the Task Force and evaluated by means of a standardized scoring mechanism (decision table). Four evaluation criteria were used: commonality, magnitude, community impact, and financial impact. These criteria were assigned weights at the Task Force's discretion to be applied uniformly to all topics considered. Each evaluation criterion was then quantified as to high, medium, or low impact.

The score for a given topic was then computed as the sum of the number of votes for each criterion multiplied by the degree of impact, this sum being multiplied by the weight of the topic. For example, if commonality were given a weight of 25 points and the degree of impact was scored as 5-high, 3-medium, and 1-low, six votes evenly distributed (2,2,2) would yield a "commonality" score of 450 (i.e., $[(2 \times 5) + (2 \times 3) + (2 \times 1)] \times 25 = 450$). This process was repeated for each of the other three criteria as they applied to the topic. The topic score was then calculated as the sum of the four criteria scores. The prioritized listing was then made by sequencing all the topics, with the highest scoring topic first and the lowest scoring topic last.

The final priority list was then determined by deciding on the minimum acceptable score for further consideration (cutoff value). This procedure resulted in the identification of 10 topics. These top 10 were (in order of decreasing score):

- (1) Preferential and Exclusive Lanes,
- (2) Accelerated Implementation Procedures,
- (3) Management Systems and Productivity Measures,
- (4) Transportation Impact Forecasting,
- (5) New Standard Transit Equipment,
- (6) Transportation of Elderly and Handicapped,
- (7) Asphalt,
- (8) Para-Transit Options,
- (9) Traffic Signalization Systems, and
- (10) Integrated Highway and Transit Planning.

The determination of these 10 priority topics climaxed the Consortium's Phase I efforts. Ongoing Phase II activities involve the development of information packages suitable for use by the users identifying the need. To further evaluate these priority needs, the PTI staff assist the specifically established User Design Committees to define the research parameters and evaluate the final information packages that are to be developed for distribution.

The Consortium has already selected the first two topics for special project, and draft information bulletins have been prepared for the remaining eight by PTI. If any of these eight remaining topics are chosen by the Task Force as a final project, a complete "technology transfer package" will be designed by PTI for distribution by the Consortium. For all areas, Information Bulletins are being refined, as directed by the Task Force, and distributed to local governments.

2.1.4 National Conference of State Legislatures Survey

In early 1976 the National Conference of State Legislatures (NCSL), Office of Science and Technology, undertook a survey of 222 members of four Intergovernmental Relations Committee Task Forces (Commerce and Transportation, Energy, National Resources, and Food Supply and Agriculture). An overall response of 31 percent (68 responses) was experienced. These responses were evenly divided among the four Task Forces. The 17 respondents to the Commerce and Transportation survey represented 4 transportation committee chairmen and 9 legislative leaders from 14 states.

The survey requested an indication of the type of assistance needed (general information, Federal activity, other states' activities, key personnel contacts, or other), and the time frame (current, near future, or long range future) for each listed issue. Space was also provided to indicate items that were not an issue in the respondent's state, and miscellaneous comments.

Five areas with specific issues in each area were presented. The issue areas were transportation systems, transportation planning, environmental impacts, commerce, and energy conservation.

The top five overall issues were:

- (1) Regional Mass Transportation Planning,
- (2) Transportation for the Handicapped,

(3) Pollution Abatement Programs for Industrial and Commercial Facilities (Environmental Impacts Issue Area),

(4) Rural Transportation Planning, and

(5) Land Use and Transportation Needs.

Regional mass transportation planning, land use and transportation needs, and state auto emission regulation were the top "general information" issues. Railroad development was the top "Federal activity" issue and transportation for the handicapped was the top "other states' activities" issue. Regional mass transportation planning and transportation for the handicapped were the top "key personnel contacts" issues.

Most respondents wanted general information on the issues presented. Generally, issues ranking high for "other states' activities" were not ranked high for "federal activities". "Personnel contacts" were least often chosen.

This survey has one major limitation aside from its apparently small return rate and sample population: the issues presented on the survey form were not generated in a systematic manner. These issues were identified through informal analyses of NCSL information requests, miscellaneous non-staff inputs, and personal insights by the NCSL staff. These caveats do not, however, compromise the value of the survey in this analysis, since correlations with the other data bases will substantiate the NCSL results. This survey was performed under the auspices of MISTIC (Model Interstate Scientific and Technical Clearinghouse), of which DOT is a co-sponsor.

2.2 USER IDENTIFICATION

In any viable needs analysis, two issues must always be considered: (1) the prioritized needs or problems, and (2) the ultimate users of the information or solution. The data in the previous sections attempt

to identify the transportation information needs of each of their respective constituencies. This section attempts to stratify the information users into groups amenable to similar information presentation. These groups are commonly referred to as functional levels. One of the working papers prepared for the OMB Study Committee on Policy Management Assistance presents three functional user levels: policy, planning and evaluations, and operations. The DOT's Technology Sharing Program Office also uses three levels to describe the types of publications distributed -- level 1: overview; level 2: technical data; and level 3: highly technical and specific data. Table 1 compares these three user groups and their respective information needs as defined in this report.

TABLE 1. INFORMATION NEEDS BY USER CATEGORY.

User Category	Information Needs
<p><u>Policy level.</u> Top-level administrators, elected officials, and the support staffs involved in the decision-making process. They weigh priorities in one area against the needs in others, considering total resource availability from all sources and then set out the overall guidelines for budget and program development.</p>	<p>Overview publications, introductory in nature, designed to aid in gaining basic familiarity with and understanding of the subject area.</p>
<p><u>Planning and evaluation level.</u> Mid-level administrators providing ongoing policy development support by formulating and evaluating recommendations for future actions and determining the impacts of alternative decisions.</p>	<p>Publications providing technical and related information to augment understanding and decision-making.</p>
<p><u>Operations level.</u> Program managers responsible for the implementation of decisions and the conduct of ongoing services. Many operational organizations have developed mechanisms to promote full cooperation and support of top management in the executive organizations and to develop a constituency for needed courses of action. This level becomes especially apparent when operational problems large enough to require executive action occur.</p>	<p>Highly technically oriented publications, specific and detailed in nature, designed for authoritative reference by transportation technical specialists.</p>

3. NEEDS AND REQUIREMENTS ANALYSIS

This chapter integrates the four major data base elements (Technology Sharing Needs Studies, the report by the OMB Study Committee on Policy Management Assistance, the Urban Consortium needs determination, and the National Conference of State Legislatures survey) and the three identified user groups (policy level, planning and evaluation level, and operations level), discussed individually in the previous chapter. The chapter is organized by user group, referencing the various data base elements as appropriate.

Table 2 presents the user groups as constituencies of the various data base elements representing the users' needs. This analysis was derived from the functional descriptions of the respondents of each independent needs determination.

3.1 POLICY LEVEL USERS

This user group consists of elected officials and their support staffs. These people are immediately involved in the highest level decision-making and priority-setting of their respective organizations. Their primary mission is the consideration of total resource availability and the overall guidelines for budget and program development. This level of decision-maker requires information on many alternative transportation projects, and must be able to assimilate the core issues of each to make a rational decision. At this level, technical details are unnecessary, and concise overview documents are the best suited for the information needs of policy level personnel.

Those responding to the NCSL survey included legislative transportation committee chairmen and committee members. All are active in the transportation decision-making process. While the response ratio was low

TABLE 2. DATA BASE CONSTITUENCIES.

Data Base Source	User Groups		
	Policy Level	Planning and Evaluation Level	Operations Level
National Conference of State Legislatures Survey	X	X	
Urban Consortium for Technology Initiative Needs Determination	X	X	X
Technology Sharing Needs Studies Surveys		X	X

(31 percent), the issues highlighted correlate with the major issues of the other referenced studies and surveys. Also, by being a member of a popularly elected body, these respondents presumably reflect the needs and priorities of their own electorate, the general public.

The Urban Consortium's study also interfaced with policy level users. The Consortium's needs establishment process provided the needs to be generated by "line" personnel, aggregated by the Task Force members, and validated by the jurisdictional decision-makers, prior to final prioritizing by the Task Force. Although the policy level users do not originate the needs statements, their inputs in the verification process reflect their priorities.

Policy level users had the broadest definition of needs, according to the OMB Study Committee on Policy Management Assistance Report. While not reflecting specific items, the OMB Study Committee Report identified four areas of policy management needs:

- (1) funds for supplementing salaries of part-time officials to make them full-time and for administrative aides and planning staff;

- (2) guidance on how to manage organizational change, such as advice on needed changes in legislation, regulation, or procedures;

- (3) training, fellowships, and intensive problem-solving institutes dealing with broad jurisdictional problems, such as energy, transportation, and land use planning; and

- (4) research and evaluation capabilities, either in-house or under contract, to provide timely information for decision-making.

3.2 PLANNING AND EVALUATION LEVEL USERS

This group focuses on personnel engaged in policy development support. They evaluate recommendations for future actions and determine the impacts of alternative decisions.

Their information needs are more technical in nature than those of policy personnel. The types of documents required for this user group consist of technical and related information to augment understanding and decision-making.

The Urban Consortium also represents the planning and evaluation personnel in the transportation decision-making process. The Consortium responds to statements of need submitted by member jurisdictions. These needs, as well as those identified by the PTI staff, represent specific local needs as viewed by the individual local transportation planning and coordinating agency.

Through the Consortium's systematic approach, a prioritized, concise delineation of needs was made from a broad range of topics. The previously described analysis process of the Task Force filtered the identified needs and focused on the issues deemed important by both the Task Force and PTI staff. Thus, the individual biases reflected by a single jurisdictional needs statement were deemphasized through aggregation with other presentations of the same, or a similar, problem statement.

The NCSL, whose constituency is intimately involved in planning and budgeting cycles, also deals with the needs of planning and evaluation level users. One of the primary functions of most state legislatures is policy development and the evaluation of alternative political decisions.

The Technology Sharing Needs Studies represent this user group, as well. The surveys conducted under this study were responded to by a number of personnel involved in resource-oriented planning and evaluation of transportation alternatives.

The planning and evaluation users' primary administrative responsibility is centered about resource management. Thus, the OMB Study Committee's Report focused on two needs for improved resource management:

(1) funds for developing and analyzing management information, program budgeting systems, optimization of data automation equipment, and personnel systems; and

(2) selected training, technical assistance, personnel and executive workshops, and institutes to provide guidance for organizing these functions.

3.3 OPERATIONS LEVEL USERS

Operations level users are responsible for the implementation of decisions and the conduct of ongoing programs. With the growing complexity of transportation services, there has developed more of an interrelationship between these operators and the "managers/administrators" described by the other user categories. The information needs of operations level personnel can be characterized by highly technically oriented publications, designed for authoritative reference by transportation technical specialists.

Typical of this user group were those people surveyed by the multiple Technology Sharing Needs Studies surveys. While the broadest based of all the data elements documented above, the Mail Survey especially elicited responses from personnel whose primary daily activity is the operation of transportation systems on a statewide, regional, or local level. These persons are coping with day-to-day operational problems, and require specific, and sometimes innovative, solutions to technically complicated need areas. These problems may involve policy interpretation, internal management reporting requirements, or hardware applications. The respondents to these Technology Sharing Needs Studies are diffuse in both professional skill, geographic location, and political jurisdiction.

Through its iterative review process, the Urban Consortium's needs determination also includes operations personnel. The Consortium's needs identification process begins with needs statements articulated by operations personnel and transmitted to the Consortium for review and evaluation. These needs are then iterated through the other levels of the transportation decision-making process for the Consortium's final prioritization and definition.

The public management needs of operations level personnel can be characterized by those levels identified by the OMB Study Committee in the area of program management. These three needs were stated as:

(1) funds for developing program information required by elected officials and chief administrative officers to exercise policy and resource management,

(2) training and personnel exchanges for department and agency heads and their staff to open up their perspectives to jurisdiction-wide and cross-program implications, and

(3) technical assistance in joint funding arrangements and the use of research and technology.

3.4 FEDERAL PUBLIC MANAGEMENT ISSUES

The issue of public management in state and local governments was addressed specifically by the OMB Study Committee on Policy Management Assistance. The OMB Study Committee addressed transportation issues in the context of broad policy choices that must be made between functional areas by state, county, or city governments.

The issues treated by the study were determined by a series of interviews with elected officials in state, county, regional, and local governments. The crux of the analysis by the OMB Study Committee was that the public management function in any government body has

three constituent elements: (1) policy management, (2) resource management, and (3) program management.

These processes impact to some degree on all three user groups discussed earlier. Policy management involves the identification of needs, analysis of options, selection of programs, and allocation of resources on a jurisdiction-wide basis. Resource management involves the establishment of basic administrative support systems such as budgeting, financing management, procurement and supply, and personnel administration. Program management involves the implementation of policy, or the daily operation of agencies carrying out policy, along functional lines.

The OMB Study Committee's report focused on those areas of Federal/state/local interface that could be made more sensitive to the varying needs and requirements of users of Federally developed technologies. Specifically explored was the dichotomy between Federal technology transfer and the limits, administrative or otherwise, of the capability of state/local users to assimilate the data as presented. The summary of the OMB Study Committee's findings is the premise for this study: How do the users of Federally sponsored technology and the developers and sponsors of the technology share their technology, and in what forum?

4. CONCLUSIONS

This final chapter refines the analysis presented in Chapter 3 and presents the conclusions made on the basis of these refinements. Discussion includes an overall topic priority based on the data elements analyzed in the previous chapter, the role of information in the decision-making process, and finally the interrelationship of information needs and Federal transportation policy.

4.1 OVERALL TOPIC PRIORITIES

4.1.1 Methodology

The previous chapter presented the relationship between the three transportation user groups and the three issues oriented data bases (Technology Sharing Needs Studies, Urban Consortium needs determination, and the National Conference of State Legislatures survey). It was shown that each data element had its own constituency made up of members of each of the user groups (see Table 2).

Conversely, each of the user groups is represented by one or more of the data elements. Specifically, policy level users were represented by the Urban Consortium and National Conference of State Legislatures needs lists. Planning and evaluation level users were represented by all three data elements. Operations level users were represented by the Urban Consortium and the Technology Sharing needs lists. The combined needs represented by all three data elements are shown in Table 3. The needs are listed alphabetically with a designation of their source. In a few cases the statement of the need was interpreted to allow for the inclusion of more than one under a single heading. This did not impact the results below. In these cases care

TABLE 3. INFORMATION NEEDS TOPICS BY DATA BASE ELEMENT.

Data Base Need	Data Base Element		
	TSC ¹	UC ²	NCSL ³
Administrative Simplification		X	
Asphalt		X	
Bus Priorities		X	
Bus Systems/Equipment	X	X	
Demand Responsive Transportation / Paratransit	X	X	
Elderly and Handicapped Transportation	X	X	X
Impact Forecasting		X	
Land Use			X
Management Systems	X	X	
Marketing Techniques	X		
Pollution			X
Procurement	X		
Rail Systems	X		
Rural Public Transportation	X		X
Technology Review	X		
Traffic Signals		X	
Transportation Planning Process	X	X	X

- Notes: 1. Technology Sharing Needs Studies.
 2. Urban Consortium for Technology Initiatives Needs Determination.
 3. National Conference of State Legislatures Survey.

was taken to assure compatible needs definitions, even though the phrases describing the need were different. The specific needs presented in the following section were derived independently of the various public management process issues discussed in the previous chapter. The interactions of the public management processes are discussed below.

4.1.2 Results

From the above constituency designations, the needs topics for each user group can be identified. As shown in Table 4, the transportation planning process and elderly and handicapped transportation are the most pertinent issues to both policy level and planning and evaluation level users. Operations level users exhibited information needs relevant to bus systems and equipment, demand-responsive transportation/ paratransit, and management systems, as well as to the transportation planning process and elderly and handicapped transportation.

TABLE 4. INFORMATION NEEDS TOPICS BY USER GROUP.

User Group	Information Needs Topics
Policy Level	<ul style="list-style-type: none"> ● Elderly and Handicapped Transportation ● Transportation Planning Process
Planning and Evaluation Level	<ul style="list-style-type: none"> ● Elderly and Handicapped Transportation ● Transportation Planning Process
Operation's Level	<ul style="list-style-type: none"> ● Bus Systems and Equipment ● Demand-Responsive Transportation/ Paratransit ● Elderly and Handicapped Transportation ● Management Systems ● Transportation Planning Process

4.2 INFORMATION NEEDS AND PUBLIC MANAGEMENT PROCESSES

4.2.1 Role of Information Needs in the Transportation Decision-Making Process

Three categories of information needs have been identified by the Technology Sharing program as guidance for the distribution and production of documents. The three levels of documentation provide an overview, general technical information, or highly technical details. These information needs and their concomitant public management processes are described in Table 5.

Policy management information needs require a document with a minimum of technical details and an emphasis on overviews and general data. The information needs of program management personnel are more detailed. Highly technical, detailed publications are necessary to make programmatic decisions. Resource management requires a combination of the documentation requirements of the above two management processes. These requirements include mid-level technical documents to assist the transportation decision-maker.

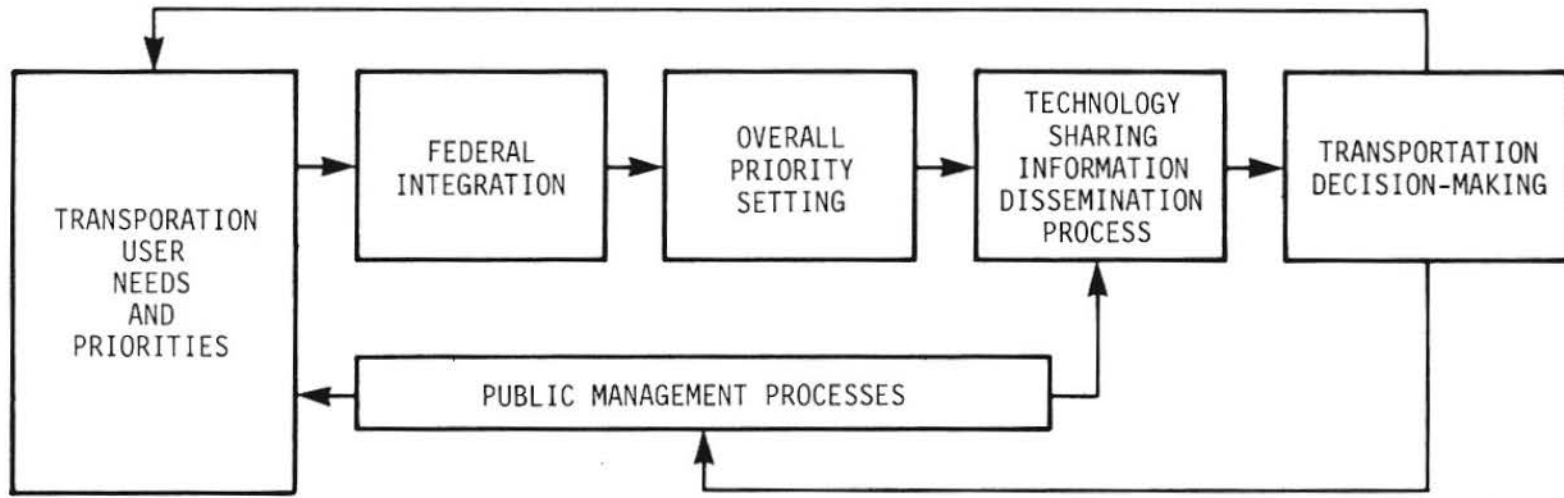
4.2.2 Public Management Processes and the Transportation Infrastructure

The three public management processes described above permeate all levels of the transportation decision-making community: policymakers, planners and evaluators, and operators. The transportation infrastructure thus may be described as transportation decision-makers involved in public management processes.

In the infrastructure, two parallel actions are taking place: (1) transportation needs and priorities are being determined, and (2) the public management processes are interacting with this needs determination. In the assessment of user needs, conscious decisions must be made pertaining to each need and its policy, resource, and programmatic impact. These interactions are illustrated in Figure 1, describing transportation information needs determinations and the public management processes.

TABLE 5. INFORMATION NEEDS OF THE PUBLIC MANAGEMENT PROCESS.

Public Management Processes	Information Needs
<p>Policy management is the performance on an integrated, cross-cutting basis of the needs assessment, goal setting, and evaluation functions of management; the establishment of priorities; the mobilization and allocation of resources; and the initiation and guidance of the planning, development, and implementation of policies, strategies, and programs that are related to sustaining or improving the physical, socio-economic, or political well being of citizens.</p>	<p>Overview publications, introductory in nature, designed to aid in gaining basic familiarity with and understanding of the subject area.</p>
<p>Resource management is the creation and support of the basic administrative tools or support functions which constitute an organization's basic capabilities and bottom line assets. Resource management cross-cuts functional departments and units and includes personnel administration; property management -- including real property, facilities, equipment, insurance, and materials and supplies; information management -- including manual and computer-based record-keeping systems and management information systems; and financial management -- including capital budgeting, cash management, and revenue forecasting.</p>	<p>Publications providing technical and related information to augment understanding and decision-making.</p>
<p>Program management is the performance of the administrative functions and tactical requirements of executing specific policy by undertaking programs, activities, or services. These requirements include the classical management functions of planning, organizing and staffing, directing and controlling, budgeting, and reviewing and reporting within a functional program area.</p>	<p>Highly technically oriented publications, specific and detailed in nature, designed for authoritative reference by transportation technical specialists.</p>



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FIGURE 1. TRANSPORTATION INFORMATION NEEDS AND PUBLIC MANAGEMENT PROCESSES.

4.3 INFORMATION NEEDS AND FEDERAL TRANSPORTATION POLICY

The Department's commitment to Technology Sharing is not new. This study is one of many that have attempted to identify those areas of information need reflected by a dynamic society. The Department, however, has shown that this interactive process of priority setting between Federal, state, and local decision-makers will continue. Secretary Coleman, in his recent Statement of National Transportation Policy, addressed this issue. He stated,

"... In recent years, laws have been enacted ... which are as concerned with local transportation as they are with interstate and foreign commerce. These laws have expanded the definition of Federal interest and require extensive cooperation among Federal, State and local governments.

"Now, we must seek a more rational delineation of responsibility among the levels of governments. Most transportation activity involves primarily local movement. Consequently, the largest share of existing Federal assistance programs requires shared Federal, State and local priorities and decisionmaking.

"To clarify the relative responsibilities of Federal, State and local government in Federal assistance programs, it is useful to distinguish between programs that serve national interests because of their predominantly interstate character, and programs that primarily serve the transportation needs of States and local communities but which also involve Federal priorities.

"The nature and extent of Federal financial assistance to States and localities is a function of the national interest involved. Our objective is to concentrate Federal resources on today's national priorities and increase the power and flexibility of State and local governments to respond to local needs. We will work with the Congress toward this objective by eliminating antiquated Federal requirements, simplifying the grant making process, consolidating the myriad Federal objectives into broader more manageable statements of national interest, increasing transferability of funds within and among transportation modes and decentralizing decision-making."

This study continues to demonstrate the Department's ongoing commitment to effectively develop Technology Sharing programs to meet the needs of the many users comprising the transportation decision-making process. This "working partnership" concept insures a Federal bureaucracy that is, and will remain, responsive to state and local transportation needs and infrastructures. This interactive process of Technology Sharing includes not only user needs identification, but the delivery system employed to share Federally developed technologies with state and local users.

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