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The New York-New Jersey-Connecticut Metropolitan Model Deployment Initiative

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Final Report

A Review of the Initial Negotiations Process



John A. Volpe National
Transportation Systems Center
Economic Analysis Division

Cambridge, Massachusetts
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PREFACE

In response to the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the United States Department of Transportation (U.S. DOT) developed the *Intelligent Transportation Systems (ITS) Institutional and Legal Issues Program* (formerly called the *Intelligent Vehicle-Highway Systems (IVHS) Institutional and Legal Issues Program*). This program was designed to identify (1) issues that may constrain the full deployment of ITS products or services, (2) the means to overcome non-technical barriers to ITS deployment, and (3) the lessons that were learned that might expedite the full deployment of ITS technologies.

The U.S. DOT's John A. Volpe National Transportation Systems Center (Volpe Center) provided analytical support to the U.S. DOT's Joint Program Office (JPO) for ITS addressing the broad spectrum of institutional issues. Recently, the Volpe Center is leading the Model Deployment Initiative's (MDI) evaluation of institutional benefits at the four metropolitan MDI sites: the New York/New Jersey/Connecticut (NY/NJ/CT) Metropolitan Area, Phoenix, San Antonio, and Seattle. These evaluations are focused on identifying the problems and issues that participants in MDI projects have encountered in deploying ITS technologies and services and the important lessons that have been learned and may be applied in future deployments of ITS products and services.

This report addresses the initial negotiations process at the NY/NJ/CT MDI. In April 1996, an MDI proposal was submitted by the Transportation Operations Coordinating Committee (TRANSCOM) in partnership with the New York State Department of Transportation (NYSDOT) and Lockheed Martin Federal Systems (LMFS). After the proposal was selected for funding, negotiations between the public sector team and LMFS were conducted for approximately 11 months. The parties were unable to resolve a number of major issues which resulted in the termination of negotiations on September 10, 1997.

On September 15, 1997, staff from the Volpe Center were requested to identify what factors contributed to the inability of LMFS, the NYSDOT, and TRANSCOM to execute a contract. To fulfill this request, Volpe Center staff interviewed representatives of the participating parties in an attempt to answer four questions:

1. *What were the expectations of each party?*
2. *What events occurred prior to and during formal negotiations?*
3. *What were the principal contributing factors to the breakdown in negotiations from the view of the participants?*
4. *What were the lessons learned and possible solutions from the view of the participants?*

The study team interviewed public sector staff from TRANSCOM, NYSDOT, and Federal Highway Administration's (FHWA's) Headquarters and NY Division Offices, as well as private sector staff from LMFS and two subcontractors, SmartRoute Systems (SRS) and MetroCommute

Options (MCO). Interviewees from both the public and private sectors were involved in various aspects of the NY/NJ/CT MDI including project oversight; program management; proposal development; legal and contractual negotiation; and development of technical, business, and staffing plans. From their responses to the four questions, the study team identified a number of *Key Issues* that were significant obstacles to reaching an agreement.

The study team was sensitive to the desire to determine what were the key issues that prevented the parties from reaching agreement on a partnership contract without placing blame on one party or another. The team acknowledged that this review was oriented toward uncovering issues, but the team structured the interviews to identify positive lessons that were learned and possible solutions that could be shared with others.

The team members thank the interviewees for taking time from their busy schedules to participate in these interviews and for their openness in doing so. The issues, lessons, and insights that they discussed will benefit the entire ITS effort.

Following the *Executive Summary*, the team's findings are presented in five chapters:

Chapter 1: Initial Developments provides an introduction and background summary of the NY/NJ/CT MDI proposal and examines the initial expectations of the public and private sector participants who were involved in developing the NY/NJ/CT MDI proposal.

Chapter 2: Negotiations Process provides an overview of the participant's expectations with regard to negotiating a contractual agreement for a public-private partnership, how the participants prepared for negotiations, and provides a chronology of the negotiations.

Chapter 3: Contributing Factors discusses the factors identified by the public and private sector participants in the NY/NJ/CT MDI and their effect on the ultimate breakdown in negotiations.

Chapter 4: Observations from the Participants describes the participants' observations in terms of lessons learned in dealing with issues that they faced in trying to form a partnership and possible solutions that can be applied to future partnering endeavors.

Chapter 5: Conclusions and Recommendations presents the study team's conclusions regarding the 11 key issues that led to the breakdown in negotiations, compares how other areas implementing ITS projects have addressed similar issues, provides recommendations for improving the ITS partnering process, and assesses whether the factors in the NY/NJ/CT MDI were new or old issues.

TABLE OF CONTENTS

PREFACE	i
EXECUTIVE SUMMARY	v
1. INITIAL DEVELOPMENTS	1
1.1 ITS And The Model Deployment Initiative	1
1.2 Proposal Development.....	2
1.2.1 Assembling the Partners	2
1.2.2 The NY/NJ/CT MDI Proposal	3
1.3 Initial Expectations	4
1.3.1 Initial Public Sector Expectations	4
1.3.2 Initial Private Sector Expectations.....	5
2. NEGOTIATIONS PROCESS.....	7
2.1 Contractual Expectations	7
2.1.1 Federal Highway Administration	7
2.1.2 NYSDOT and TRANSCOM.....	8
2.1.3 Private Sector Partners.....	9
2.2 Preparations for Negotiation	10
2.3 Chronology of Negotiations	13
3. CONTRIBUTING FACTORS.....	15
3.1 Organizational Factors	15
3.1.1 Public Sector - Private Sector Interaction	15
3.1.2 Public Sector Inter-Agency Coordination	21
3.1.3 Private Sector Coordination	24
3.2 Financial Factors.....	27
3.3 Procedural and Regulatory Factors.....	33
4. OBSERVATIONS FROM THE PARTICIPANTS	41
4.1 Lessons Learned.....	41
4.1.1. Partnering	43

4.1.2 Defining Roles	44
4.1.3 The Proposal Development Process.....	46
4.1.4 Project Funding.....	47
4.1.5 Maintaining Focus.....	48
4.2 Possible Solutions	49
5. RECOMMENDATIONS AND CONCLUSIONS.....	54
5.1 Key Issues.....	54
5.2 Comparative Observations	59
5.3 Recommendations	61
5.4 Conclusions.....	64
5.4.1 Recurring Themes	64
5.4.2 New Challenges	65
APPENDIX A - ACRONYMS AND ABBREVIATIONS	67
APPENDIX B - REFERENCES.....	69

EXECUTIVE SUMMARY

INTRODUCTION

On July 31, 1995, the U.S. Department of Transportation (U.S. DOT) released the Request for Information (RFI) on ITS Deployment Issues and a Proposed Initiative on ITS Model Deployment in Metropolitan Areas. In response to that RFI, the New York State Department of Transportation (NYSDOT) advertised for a private sector partner to serve as the prime contractor to work with the NYSDOT to develop a proposal, provide matching funds, and secure additional private sector participation. On December 22, 1995, the NYSDOT selected Lockheed Martin Federal Systems (LMFS) as its prime contractor. LMFS formed a team of 11 subcontractors.

On February 26, 1996, the U.S. DOT released the Request for Participation (RFP) in the ITS Model Deployment Initiative (MDI). In response to that RFP and in partnership with the NYSDOT and LMFS, the Transportation Operations Coordinating Committee (TRANSCOM), as the lead agency, submitted a proposal for the New York/New Jersey/Connecticut Metropolitan Area on April 26, 1996. The core of the proposal would be a personal traveler condition information (PTCI) system, a basic traveler information center (TIC), and a transit itinerary planning system (TRIPS), supported by an enhanced TRANSCOM regional architecture.

On October 24, 1996, the Secretary of the U.S. DOT announced the four chosen MDI sites. Upon being selected, representatives from the NYSDOT, TRANSCOM, and LMFS began to work on a detailed scope of service (SOS) and other contractual issues. Negotiations between the parties continued for approximately 11 months. The parties were unable to resolve a number of major issues which resulted in the termination of negotiations on September 10, 1997.

On September 15, 1997, the ITS Joint Program Office requested that staff from the John A. Volpe National Transportation Systems Center (Volpe Center) identify what factors contributed to the inability of LMFS, the NYSDOT, and TRANSCOM to execute a contract. To fulfill this request, Volpe Center staff interviewed representatives of the participating parties to identify and understand four aspects of the negotiations process:

1. *The expectations of each party*
2. *The events that occurred prior to and during formal negotiations*
3. *The principal stumbling blocks that prevented the parties from reaching an agreement in the view of the participants*
4. *The lessons learned and possible solutions from the view of the participants*

This review resulted in the identification of 11 *Key Issues* that were significant obstacles to reaching an agreement. The study team also made *Comparative Observations* of how the other three MDI sites dealt with these issues and developed *Recommendations* based on the lessons learned by the participants and the knowledge gained by that experience. Finally, in an effort to assess progress in implementing ITS, the study team developed *Conclusions* by examining past ITS reports to see whether the issues in the NY/NJ/CT MDI were common recurring issues in partnering to deploy ITS or uncommon issues that present new challenges to the ITS community.

KEY ISSUES

Participants in the NY/NJ/CT MDI project identified numerous organizational, financial, and procedural and regulatory factors that contributed to the inability of the parties to reach contractual agreement. However, the level of importance attributed to each factor varied according to the interviewee's perspective and organizational bias. After conducting interviews, the study team identified 11 key issues that proved to be the major elements in the breakdown in negotiations between the public and private sector participants.

ISSUE 1: ESTABLISHING A PARTNERING ARRANGEMENT WAS NEW TO THE PARTIES

LMFS, the NYSDOT, and TRANSCOM were attempting to form a new partnership. The parties had not worked together previously which affected the project. Any new partnering arrangement requires time to develop open communications, trust, and mutual appreciation for the concerns of the other parties and their ways of doing business. Participants confirmed that there was a lack of open sharing of information and trust between the parties which was an obstacle to forming a true partnership. In order to deal with the uncertainties that were inherent in the MDI project, parties would need to trust one another and willingly share risks and rewards. Since that did not occur, the parties were unable to reach an agreement on many outstanding issues.

ISSUE 2: THE PARTIES ENTERED THE PROCESS WITH CULTURAL BIASES

Based on their organizational and cultural biases, the parties had differing expectations concerning the contracting mechanisms, flexibility of contract budgets, the degree of specificity that should be included in contract documents, how to deal with risk and uncertainty, and the sharing of information to support proposed costs and activities. Public sector staff expected to pursue a deliverable-type contract typical of the transportation industry for items such as road construction, while LMFS officials expected a more open-ended research and development (R&D) approach more in keeping with their systems development contracting experience with the Department of Defense (DoD). These biases created significant hurdles to achieving a timely agreement on the terms and conditions and the SOS.

ISSUE 3: THE PROPOSAL LACKED SIGNIFICANT DETAIL

Several public and private sector participants noted that there was too little detail in the proposal regarding functional specifications and institutional roles and arrangements. The public sector's vision for the outcome of the MDI project and the private sector's business objectives were not fully discussed during the development of the proposal and, therefore, were not clearly defined in the proposal. LMFS wanted to develop and market the PTCI software while the public sector was more focused on putting a long-term, permanent traveler information system, consisting of both the PTCI and the basic TIC, in place for the NY/NJ/CT metropolitan area. SmartRoute Systems (SRS) was interested in the long-term operation of the TIC as well, but they assumed that they would own and operate the TIC. Proposers included general or high-level information in the proposal and thought they would "iron out" the details at a later date. It was during the negotiations process that the differing visions and objectives become quite conspicuous and came into conflict with one another.

ISSUE 4: THE PARTIES HAD TO ACCOMMODATE A REDUCTION IN AVAILABLE FUNDING

The U.S. DOT requested that all four MDI sites reduce their budgets by approximately 15 percent. In the NY/NJ/CT MDI, the impact of the budget reduction was exacerbated by the withdrawal of one of the original private sector participants. Not only did this firm's withdrawal reduce available "hard" match by \$200,000, but it also meant that other funds available to the project would have to be used to duplicate software that was to be provided by this firm for a component of the MDI. All parties felt that they were still on the line to deliver a highly functional system but with substantially fewer resources. In particular, LMFS was asked to reduce the cost of developing the PTCI system from \$6.4 million to \$4 million. This raised issues regarding the risk that each sector was willing to assume to provide these products and services and ultimately led to disagreements over how this would be accomplished and who would be responsible.

ISSUE 5: CONTRACTUAL REQUIREMENTS DID NOT ENCOURAGE PARTNERING

While ITS programs have called for new forms of public-private partnering, a contractual agreement is still a necessity in order to define terms and conditions between partners for items such as payment, project operations and maintenance (O&M), and product acceptance and testing. This contractual relationship is often difficult to reconcile with the idea of a partnership because contractual necessities reinforce traditional fee-for-service relationships between the public and private sectors. In the end, both LMFS and the public sector parties focused more on traditional contractual concerns rather than developing a partnering arrangement. The parties could not get beyond this contracting approach to form a viable partnership.

ISSUE 6: INSTITUTIONAL STRUCTURES CREATED COMMUNICATION PROBLEMS

TRANSCOM, with its 14 member agencies, reflects the unique multi-state, multi-agency nature of the NY/NJ/CT Metropolitan Area. As the lead public agency in the NY/NJ/CT MDI, TRANSCOM needed to include all its members. Organizing a project like the MDI and maintaining communications among member agencies was bound to be a challenge and proved time consuming. To address this issue, TRANSCOM formed a multi-agency public sector negotiating team, first with five members and later with three members, to negotiate with LMFS. However, this smaller group still had to get the approval of the five-member group on contract details. The lack of a single point of contact for the public sector, and the division of lead agency responsibility for operations and contracting within the public sector between TRANSCOM and NYSDOT respectively, delayed negotiations and created confusion regarding who had the authority to make a final agreement for the public sector. This situation was exacerbated by the fact that the TRANSCOM MDI project manager was not hired until March 1997. The institutional structure of the private sector also caused problems as key LMFS managerial and technical personnel assigned to the MDI changed, which sometimes resulted in corresponding changes in LMFS' vision for the project.

ISSUE 7: PARTNERING ARRANGEMENTS REQUIRE NON-TRADITIONAL PROCUREMENT MECHANISMS

The MDI project is a systems development project and, as such, required a larger degree of flexibility than deliverable-type projects typically advanced by state DOTs. NYSDOT and TRANSCOM staff expected to use a firm-fixed-price (FFP) contract for specifying deliverables. In so doing, the public sector team felt they were not only complying with their partnership agreement with FHWA, which they viewed as a deliverable-type contract, but also assuring that the project would get done within budget and not cost the public agencies additional funds which was an important issue in gaining TRANSCOM's approval to serve as the lead agency. LMFS officials expected to use a cost-plus-fixed-fee (CPFF) design and development approach to contracting with more contractual flexibility. Differences in expectations on the contracting approach were major stumbling blocks.

ISSUE 8: SUBCONTRACTORS WERE NOT INCLUDED IN THE NEGOTIATIONS PROCESS

The NYSDOT and LMFS teams were both accustomed to using a closed-loop, "contracting agency to prime contractor" approach, leaving the responsibility of coordinating the subcontractors to the prime contractor. A number of the subcontractors involved in the NY/NJ/CT MDI, particularly SRS, expected to be full participants in negotiations as they had been in other ITS projects where they served as a subcontractor. This closed-loop approach was not beneficial to the NY/NJ/CT MDI negotiations. The lack of involvement of the subcontractors created confusion as to the roles of these participants and resulted in conflicting assumptions not being addressed until late in the negotiating process. This approach also caused delays in providing answers to questions posed by the public sector team related to subcontractor responsibilities and activities and resulted in a lack of dialogue on possible alternative solutions.

ISSUE 9: THE PARTICIPANTS WERE UNCERTAIN WHAT CONSTITUTED AN ELIGIBLE MATCH

Under the NY/NJ/CT MDI proposal and partnership, the private sector had proposed that they would provide all of the 20% required "hard" match. However, U.S. DOT requirements differed from the DoD requirements with which LMFS staff was familiar. Public sector participants cited a number of differences with LMFS over whether certain items could be counted as match. FHWA staff also noted that some of the match that was being proposed did not follow U.S. DOT guidelines. Conversely, private sector partners noted that the public sector's approach to issues regarding match illustrated their lack of understanding of the risk the private sector would be taking by investing real "hard" cash match and the unwillingness of public sector participants to share that risk. After some of the proposed match was deemed unacceptable, the MDI participants, particularly the private sector, had difficulty identifying new funding sources. Throughout the negotiations process, the participants struggled with these issues and also the issue of who would own the equipment purchased with private sector match.

ISSUE 10: THE BASIS ON WHICH TO DETERMINE REVENUE SHARING WAS NOT ESTABLISHED

The market for personalized traveler information services is not yet fully developed. Therefore, the proposed revenues from potential subscribers to the PTCI system proposed for the NY/NJ/CT Metropolitan Area could not be accurately estimated. Given these uncertainties, negotiating revenue-sharing agreements proved to be an arduous task. Each sector had different ideas regarding an equitable split of revenues based on either O&M costs, provision of match, or initial investment of project capital. The public sector originally sought a 50%/50% private-public split of all MDI-generated revenues, while the private sector sought a 90%/10% split for the TIC and a 65%/35% split for the PTCI system. At one point, the parties agreed to a 62%/38% split of all revenues. However, when LMFS management decided to seek a third party vendor to develop the PTCI software, they no longer felt they could support a 62%/38% split on TIC revenues.

ISSUE 11: THE MARKET VALUE OF PERSONALIZED TRAVELER INFORMATION SYSTEMS HAS NOT BEEN DETERMINED

The lack of a mature marketplace for ITS products and services to assess demand and potential revenues made it difficult to determine the fair market value of the PTCI software. Under the original proposal, LMFS would develop a customized traveler information software package for \$6.4 million that would provide traveler information on a subscription basis to paying customers and would be owned by the public sector. When budget constraints prompted the public sector team to ask LMFS to reduce this cost to \$4 million, LMFS countered with a proposal to develop a proprietary product that would provide greater functionality and that would be licensed to the public sector for \$3 million. Although the parties eventually settled on a \$2.375 million license fee, neither party was completely satisfied. None of the public sector agencies involved had ever paid more than \$1 million for a software license, while LMFS was not entirely sure that they could develop the software for the agreed price and recover their costs. As approaches to developing the software changed, estimating an appropriate value for the software continued to be a difficult task and led to disagreements between the public and private sectors.

COMPARATIVE OBSERVATIONS

Volpe Center staff have conducted reviews of the three other MDI sites (Phoenix, San Antonio, and Seattle) and had been involved in assessing institutional and legal impediments at ITS field operational test (FOT) sites throughout the country. The results of these efforts provided valuable insight and comparisons into how other areas dealt with issues that proved to be stumbling blocks in the NY/NJ/CT MDI.

In many areas, public sector staff had a *greater degree of experience* in public-private partnering arrangements and in some cases had previously worked with the private sector participants to build a trusting relationship. Partners had learned to accept the uncertainty involved in system design and development projects and to be flexible. In several of these areas, the program manager, as the single point of contact, was empowered with the *authority to make commitments* and negotiate for the public sector. The *roles of the public and private sectors* were also more clearly defined in many cases and while the representatives of the public agencies also wrestled

with the issues of revenue sharing, selling data, and equipment ownership, they decided to postpone the sharing of revenues and charging for data until the market is better defined.

In other areas, *subcontractors have been involved in negotiations* and have been able to address questions or concerns as they arose. At the other MDI sites and in other areas, the *public sector is providing more of the “hard” matching funds* and, in essence, more directly sharing the risk with the private sector. Finally, public agencies at other MDI sites are also *playing a more active role in the O&M* of the major MDI components than was planned for in the NY/NJ/CT MDI project.

RECOMMENDATIONS

While the purpose of the review of the NY/NJ/CT MDI initial negotiations was not focused on developing best practices, the study team was able to develop a number of recommendations for facilitating the deployment of ITS by examining the issues that arose in the NY/NJ/CT Metropolitan Area and contrasting those issues with the experience of other areas in dealing with similar issues. A number of these recommendations reflect the lessons learned and possible solutions offered by the participants which are contained in the report.

Develop a Regional Vision for ITS. Projects have the greatest chance for success when they are part of a shared regional vision. This vision should articulate the overall project goals, expected outcomes, time frame and milestones, and functional and organizational responsibilities. This vision also should recognize explicitly the differences in the underlying missions of private and public partners.

Facilitate the Initiation of Public-Private Partnering Arrangements. New relationships and partnerships take time to develop. Funding agencies can play a key role in facilitating the development of that partnership through sponsoring retreats, seminars, or other methods of facilitation. Clear guidance from the funding agency is key in areas such as defining roles and responsibilities of the participants, model contracting procedures, matching criteria, assignment of intellectual property rights, and project management and coordination.

Provide Incentives for Participating. All potential participants must be shown the benefits of being involved in the project. Public sector officials must be shown that the expenditure of their limited funds will provide tangible improvements to their operations and serve their constituency better. Private sector managers must be convinced that participation in the project will advance their business objectives. Policies and procedures that encourage partnering or sharing risks should be developed such as providing a funding source for the proposal development stage to cover costs incurred prior to full funding of a project. In all cases, benefits received should be proportional to the resources expended and to the risk undertaken, especially in the areas of revenue sharing, assignment of intellectual property rights, and the ownership and use of data.

Adopt a Partnering-Oriented Approach. A partnering-oriented approach is required of both private and public sectors in establishing successful partnerships. This means that each sector seeks to understand and, as appropriate, adjust their ways of doing business in clear recognition of

the other partner's traditional way of doing business in order to develop an approach that best fits the partnership and the project. This should result in a relationship where professionalism is the expected norm and partners are responsive to and appreciative of the demands and concerns of their co-professionals. Participants should also acknowledge what each party does best and structure a partnership to highlight and complement each other's strengths.

Acknowledge Uncertainties in the Market for ITS Products and Services. Recognizing that the market for ITS products, services, and data has yet to be firmly established, private and public partners need to acknowledge the uncertain nature of ITS project-generated revenues and must structure their revenue-sharing arrangements and project assumptions to reflect those uncertainties.

Produce Guidelines that Explicitly Outline U.S. DOT Fund Matching Requirements. As parties enter into potential public-private ventures, they need to be aware of the requirements to match federal transportation funds. They need accurate information to ensure that the products and services they are offering will be accepted as "hard" match and on how to calculate the value of these items. This information will also help private sector firms understand the differences between matching transportation funds and matching funds from other agencies.

Appoint A Single Point Of Contact At The Project Level. The establishment of a single point of contact, often the project manager, for both the private and public partners is essential in establishing clear lines of communication and authority for decision-making.

CONCLUSIONS

In attempting to negotiate a contract for the NY/NJ/CT MDI, the public and private sector participants faced many issues that were similar to past experiences of other ITS implementors. These ***recurring themes*** suggest that certain issues continue to present a problem in ITS partnering endeavors. The problems of establishing new relationships, overcoming cultural biases, and needing time to develop a trusting relationship are not new. The effects ill-defined goals, roles, and responsibilities have on the deployment of ITS also continue to be an issue as well as the need for a single point of contact to help manage the project and ensure good communications between participants. In the financial area, the difficulty of placing a value or price on ITS products and services which are expected to generate revenue streams and the need for greater clarity with regard to Federal matching requirements are also continuing issues. Current contracting procedures continue to be ill-suited to ITS projects, and implementors will need to develop more open and flexible contracting procedures. Finally, there continues to be a need for facilitating the initiation of public-private partnering ventures, either through informational material or active facilitation.

There were also a number of distinct issues in the NY/NJ/CT MDI which pose ***new challenges*** for ITS implementors. Defining clear and appropriate roles for each sector may prove to be a difficult task as public sector agencies reconsider their traditional missions. In some cases, agencies are taking a more entrepreneurial approach to their operations. ITS participants will need to address whether this approach will come into conflict with private sector goals and

objectives and what impact it will have on future partnering efforts. The ownership of data and equipment is also a new question for ITS partners. Financial issues such as who should be entitled to revenues generated from ITS projects, how those revenues should be shared, and on what basis will also need to be addressed. Estimating the level of revenues that might be generated will continue to present a challenge as the parties attempt to estimate the market acceptance and value of ITS products and services. The roles of private and public sector entities are changing in response to calls for re-inventing government and developing public-private partnerships. Traditional roles may no longer apply. As public and private sectors continue to build partnerships to implement ITS, the new issues that arose in the NY/NJ/CT MDI will need to be addressed.

1. INITIAL DEVELOPMENTS

This chapter provides an introduction and background summary of the New York/New Jersey/Connecticut (NY/NJ/CT) Model Deployment Initiative (MDI) which was selected as one of four metropolitan MDI sites under the U.S. Department of Transportation's (U.S. DOT's) Intelligent Transportation Systems (ITS) Program. It provides a brief summary of ITS and the MDI Program, a brief description of the ideas put forward in the NY/NJ/CT MDI proposal to implement a traveler information system in the NY/NJ/CT metropolitan area, and examines the initial expectations of the public and private sector participants who were involved in developing the NY/NJ/CT MDI proposal.

1.1 ITS AND THE MODEL DEPLOYMENT INITIATIVE

In support of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Congress created the Intelligent Vehicle-Highway Systems (IVHS [now called ITS]) Program and appropriated \$660 million over a six-year period between 1992 and 1997. There are six principal goals of the ITS program:

- *Improve the safety of surface transportation.*
- *Increase the capacity and operational efficiency of the surface transportation system.*
- *Enhance mobility and the convenience and comfort of the surface transportation system.*
- *Reduce the environmental and energy impacts of surface transportation.*
- *Enhance the present and future productivity of individuals, organizations, and the economy as a whole.*
- *Create an environment in which the development and deployment of ITS can flourish.*

The U.S. DOT has supported the development and deployment of ITS systems, products, and services through research and development (R&D), operational tests, the Automated Highway System program, and overall deployment support under their ITS program.

On July 31, 1995, the U.S. DOT released the Request for Information (RFI) on ITS Deployment Issues and a Proposed Initiative on ITS Model Deployment in metropolitan areas soliciting public comment on the proposed MDI Program. The objective of this Program was to support the deployment goal announced previously by then Transportation Secretary Federico Peña. Called Operation TimeSaver, this goal was to reduce the travel time of Americans by at least 15 percent through deployment of complete ITS in 75 of the Nation's largest metropolitan areas.

On February 26, 1996, the U.S. DOT released the Request for Participation (RFP) in the Intelligent Transportation Systems (ITS) Model Deployment Initiative (MDI). The Department sought applications from public and private sector partnerships to demonstrate and showcase model deployments of a fully integrated, metropolitan ITS infrastructure with a five-year commitment to operate the system. The model deployments would demonstrate the benefits of

integrated transportation management systems that feature a strong regional, multimodal traveler information services component.

1.2 PROPOSAL DEVELOPMENT

The MDI program represented a strong Federal Government commitment to demonstrating the potential for ITS products and services in the real world. This commitment provided a signal to both the private and public sectors that long term investments in ITS would have the support of the Federal Government, and served as a significant incentive for both sectors to commit their time and resources to ITS. Not only did the program provide for substantial new funding for public sector projects, but it also provided private industry with the opportunity to transfer their considerable knowledge and resources from defense, aerospace, and other advanced technology industries to ITS and create new partnerships to deploy ITS technology.

1.2.1 Assembling the Partners

When the **New York State Department of Transportation** (NYSDOT) ITS program management learned of the proposal for the Federal MDI Program, they placed an advertisement in the New York State Contract Reporter in September 1995. They advertised for companies who were willing to lead the effort, and as such would be expected to develop the proposal, provide matching funds, and bring in other private sector subcontractors. The advertisement for partnering was also sent out via E-mail, Internet, and to ITS-New York members.

NYSDOT officials believed that the NY/NJ/CT metropolitan area was the logical choice for a MDI site as a high profile regional area in the United States and because many transportation agencies in the metropolitan area had acknowledged that they could not build their way out of congestion. The area has a need for traveler information, potential users are there, and the current and future infrastructure would support the project. The MDI Program presented a great opportunity to better move people and to balance the highway and transit modes.

As NYSDOT officials prepared to develop an application for the MDI, they started to form a group of representatives from various transportation agencies from the NY/NJ/CT metropolitan area. Each time this group met, they realized that yet another agency needed to be included. The group eventually acknowledged that they were simply re-inventing **the Transportation Operations Coordinating Committee** (TRANSCOM), a 14-member regional transportation agency. Therefore, they decided that TRANSCOM was the logical choice as the lead public agency.

TRANSCOM management was originally reluctant to take the lead on the MDI proposal because they would require approval from their 14-member agencies. They also felt that a state DOT might be a more appropriate lead agency. However, others felt that a regional body was needed to represent the NY/NJ/CT metropolitan area as a whole. NYSDOT staff noted that TRANSCOM could also bring other agencies besides the NYSDOT and New York City agencies into the MDI. Because TRANSCOM is not a legal entity, the NYSDOT was chosen as the

contracting agency. Part of the reason for this selection was because NYSDOT had already advertised for interested private sector participants in the MDI and selected LMFS, while the New Jersey and Connecticut Departments of Transportation would have to go through that process if they were going to serve as the contracting agency.

Loral Federal Systems (Loral), later **Lockheed Martin Federal Systems (LMFS)**, was the only respondent to the NYSDOT RFI for private partners in the MDI effort. Previous to the MDI, LMFS had two ITS projects with Minnesota Department of Transportation (MnDOT): a field operational test and an architecture development. LMFS proposed to develop a Personal Traveler Condition Information (PTCI) system as a centerpiece of the NY/NJ/CT MDI. On December 22, 1995, NYSDOT selected LMFS as the prime contractor for the MDI proposal.

SmartRoute Systems (SRS) was also interested in participating in the MDI and were looking for a few cities in which to participate. SRS had submitted a proposal to team with the MnDOT on MDI, as did LMFS. Because of the similarities of the proposals, MnDOT staff suggested that the SRS and LMFS staffs speak to each other. These staffs met and agreed to work together on the NY/NJ/CT MDI proposal. SRS proposed to build, finance, and operate the basic traveler information center (TIC) which would be a self-sustaining module.

LMFS also brought in ten other subcontractors including **MetroCommute Options (MCO)**. The principals from MCO attended an ITS-NY Conference in July 1995. At that conference, the principals met LMFS staff members and discussed the possibility of the two firms working together. Staffs from the two firms eventually submitted a grant proposal to the New York State Energy and Research Development Authority (NYSERDA) to put a complete inventory of all scheduled service of the approximately 100 transit operators in the NY/NJ/CT metropolitan area on the Internet. Although the proposal was not funded, the two firms established a working relationship and elements of that proposal would become part of the MDI proposal.

1.2.2 The NY/NJ/CT MDI Proposal

After the U.S. DOT released the RFP for the MDI Program, LMFS staff took the lead in writing the proposal for the NY/NJ/CT metropolitan area. They worked with the TRANSCOM members agencies to understand what they wanted to include in the MDI proposal. LMFS also worked with their team of subcontractors. The team decided that a traveler information system would be the core of the proposal along with the integration of existing systems and outreach

There was no clear mandate for the ideas put forth in the proposal. Specific ideas were developed collectively by the public and private partners. LMFS staff envisioned the PTCI system, a shopping mall approach to providing travelers with personalized information delivered via either phone, fax, beeper or E-mail. The public sector proposed a regional architecture, a transit itinerary planning system (TRIPS), and a basic traveler information center (TIC). SRS staff provided information on the development of the TIC. MCO staff provided information in two areas: (1) the collection and maintenance of transit schedules for suburban transit providers, and (2) the development of a product to put information from the INformation FOR Motorists (INFORM) corridor traffic management system on Long Island on a Web site.

On April 26, 1996, in response to the MDI RFP, the public and private team submitted a proposal under the TRANSCOM name. In September 1996, U.S. DOT officials selected four sites to receive MDI funding and negotiated with the management of the lead agencies at these sites to arrive at the funding levels. On October 24, 1996, then Transportation Secretary Federico Peña officially announced the four MDI sites, including the NY/NJ/CT metropolitan area which would be granted \$10.36 million.

1.3 INITIAL EXPECTATIONS

Each private and public sector participant in the NY/NJ/CT MDI had different expectations of their involvement in the MDI Program. The MDI Program was developed with the hope that a partnership between the private and public sectors would enable each to realize their expectations while providing benefits to the traveling public through the deployment of ITS components.

1.3.1 Initial Public Sector Expectations

NYSDOT management saw the MDI Program as an opportunity to jump start ITS and get ITS products out on the street. ITS projects did not always get the highest priority within the NYSDOT when competing with other construction or operations and maintenance (O&M) projects. Therefore, the funding for the MDI represented new money available exclusively for ITS applications. NYSDOT and TRANSCOM management also thought that the MDI presented an opportunity to partner with the private sector, who would be better at getting traveler information out to the public and creating revenues, while the public sector would coordinate collection of the data, ensure its accuracy, and manage the project.

From a regional perspective, the MDI would provide a great opportunity for TRANSCOM to serve the public more directly. It also presented a chance for TRANSCOM to add to its primary mission of a public agency to public agency coordination, by also providing information to the traveling public.

The MDI Program also provided the public sector team an opportunity to build on and leverage existing ITS activity in the NY/NJ/CT metropolitan area at that time. A multi-agency early deployment planning (EDP) study funded by the Federal Highway Administration (FHWA) was already underway involving the NYSDOT, the New York City Department of Transportation (NYCDOT), the Port Authority of New York and New Jersey (PANYNJ), and the Metropolitan Transportation Authority (MTA). A number of other EDP studies were also underway in the metropolitan area as well as numerous ITS projects under individual agencies and through TRANSCOM.

The NYSDOT and the MTA had previously identified \$2 million in Congestion Mitigation and Air Quality (CMAQ) funding (plus \$500k in state match) for the enhancement of the MTA's On-line Traveler Information Service (OTIS) for the New York City (NYC) Transit. Additional MDI funding would enable the OTIS to be expanded even further to include the regional transit

agencies serving the suburban areas. By doing this, the NYSDOT hoped to accomplish two primary objectives:

- Provide seamless information for those travelers with origins or destinations outside of New York City who would accomplish part of their trip using MTA-provided transportation.
- Create a forum and begin a dialogue for area transit professionals to address the potential of ITS applications to transit while educating NYSDOT staff in order to share that information with transit operators throughout the State.

TRANSCOM and its member agencies were already considering implementing an advanced traveler information systems (ATIS) and had issued an RFI to solicit responses. The RFI asked for ideas as to how the private and public sectors could partner to get travel information to the traveling public. TRANSCOM staff had done some prior research on the possibility of marketing traveler information.

As proposed by the private sector participants, the public sector team expected that the entire 20% match required for MDI funds would be provided by the private sector. The public sector agencies participating in the MDI project would not be expected to provide any hard cash match, but would supply staff and collect and provide data to the project. Based on original projections provided in the proposal, the public sector team also believed that revenues would be generated by subscriptions to the PTCI service and from advertising on the PTCI system and the basic TIC. They hoped that these revenues would help subsidize the operation of the TIC and other general operating expenses incurred by TRANSCOM. In addition, the public and private sector teams had agreed that, aside from the TRANSCOM Regional Architecture, the operations and maintenance (O&M) of the MDI components would be covered by the private sector partners.

1.3.2 Initial Private Sector Expectations

Although a traditional defense contractor, **LMFS** wanted to expand beyond working in the Department of Defense (DOD) community and to grow their commercial ITS business base. They felt that transportation problems were huge challenges and wanted to help solve them and that doing ITS integration work was consistent with LMFS' skills base. LMFS executives wanted to work within New York State because it is the home of LMFS and because of the amount of ITS activity being undertaken. However, LMFS management needed to see a strong commitment from the Federal Government before actively pursuing additional work.

When the U.S. DOT announced the MDI Program and signaled that commitment, LMFS management decided to apply their skill base to address transportation problems using ITS technologies. They viewed the MDI as seed money to develop a new market for traveler information. They also viewed the purpose of MDI as encouraging new participants into the ITS community. LMFS management expected to be an active participant in at least one MDI site.

LMFS staff submitted proposals to both the NYSDOT and the MnDOT. The centerpiece of these proposals was the PTCI system, which LMFS staff would develop. LMFS management felt that if both sites were selected, the cost of the development of the PTCI software could be shared, reducing the cost for both state DOTs. They also knew the limitations on making a profit and wanted to invest in the development of the PTCI software as long as they were able to recoup some of their cost by licensing the software. LMFS would also serve as the systems integrator for the project and coordinate subcontractor activities as the prime contractor.

SRS was already operating basic TICs in Boston and Cincinnati and was in the process of putting a system in place in Washington, D.C. In these ventures, SRS management was accustomed to working in a collegial atmosphere with other firms on ITS deployment projects and expected the same atmosphere in this project. They already had a very good informal relationship with TRANSCOM and expected this to continue. Also, they expected to have a large degree of input into the writing of the proposal and assumed that they would be included in the negotiations as they had been as a subcontractor in both Washington, D.C. and Cincinnati.

SRS' existing operations in the other three cities are on-going and are linked to a specific project time period for duration. In those cities, SRS management established various agreements with local jurisdictions and transportation agencies whereby they receive a continual monthly fee from the public sector entity for O&M of the TIC. In these situations they establish various forms of agreements with the public sector to share revenues generated by the TIC. In the NY/NJ/CT MDI, SRS would receive an operating subsidy which would expire after the first 30 months of the five-year MDI period and they would provide the initial investment to build the TIC. Under those provisions, SRS management expected to keep 100% of the revenue generated by the basic TIC.

After seeing a demonstration of the INFORM at the ITS-NY Conference in July 1995, **MCO** principals became interested in developing a method to provide information from that system in real time on a Web site. After their initial joint proposal with LMFS to NYSDERA was not funded, they hoped to develop their ideas for a Web site to provide transit schedule information and information from INFORM through their partnership on the MDI. The MCO principals expected to be full partners in the MDI and have frequent communications with the other private sector firms. Because they felt that some of the subcontractors had better data collection methods and that MCO had better dissemination methods, the MCO staff sought to have close contact with other subcontractors to provide good traveler information to the public.

MCO staff expected to have readily available access to transit information that would allow them to develop advanced traveler information dissemination tools. They also expected to have free access to the data collected by the participants in the MDI and to be able to sell the data in order to cover O&M costs. It was the understanding of MCO management that the private sector participants would share risk and access to information. They also felt that participating in the MDI would increase the firm's visibility and its contacts in the ITS community, which might lead to future work.

2. NEGOTIATIONS PROCESS

The previous chapter discussed the initial expectations of the public and private sector participants in the NY/NJ/CT MDI project. This chapter provides an overview of the participant's expectations with regard to negotiating a contractual agreement for a public-private partnership to implement the NY/NJ/CT MDI proposal. It also reviews how the participants prepared for negotiations during the September 1996 through June 1997 time frame and then provides a chronology of the intensive negotiations that were conducted from July 1997 until negotiations were terminated on September 10, 1997.

2.1 CONTRACTUAL EXPECTATIONS

To understand the significance in the timeline of events, it is important to understand the expectations of the participants as they entered negotiations. Each participant got involved in the NY/NJ/CT MDI for different reasons and with different goals for what they hoped to achieve. Those goals were formulated and then articulated in the proposal submitted to U.S. DOT in April 1996. When it came time to sit down at the negotiating table and put the technical details of the proposal into a contractual agreement, the private and public sector participants discovered that they had very different expectations regarding contractual roles and responsibilities, both organizational and financial, for the MDI project components.

NYSDOT, TRANSCOM, and LMFS staffs not only had to attempt to reconcile their own various expectations, but they also had to take the FHWA's expectations into account as the sponsoring agency. LMFS also had to take into account the expectations of their subcontractors as they negotiated the various roles of the subcontractors with the public sector team. These conflicting expectations proved difficult to overcome in the negotiating process.

2.1.1 Federal Highway Administration

As negotiations began, the FHWA Headquarters (HQ) and Division Office staff expected to see a contract between the public sector and LMFS structured around a commitment to the original proposal. Several project components were of particular concern to the FHWA staff:

- Web page to showcase the MDI and its development
- Basic traveler information service using a free telephone dial-in service and the Internet
- Strong outreach and marketing effort
- Revenue sharing that would benefit all partners
- Basic TIC to be implemented by December 31, 1997
- Initial demonstration of a TRIPS, and
- Full project acceptance by September 30, 1998.

FHWA staff was also interested in ensuring that the MDI program requirements spelled out in their partnership agreement with the NYSDOT were met. In particular, they wanted to ensure that the match, reporting, schedule adherence, and evaluation requirements were fulfilled. Additionally, FHWA staff expected that a staffing plan and a five-year O&M plan would be developed, that there would be adherence to the project budget, and that the deployment of the MDI components in the NY/NJ/CT metropolitan area would be consistent with the National ITS Architecture.

FHWA staff also expected that once the contract was signed, LMFS would be responsible for the design and the deployment of the MDI components which would build on the TRANSCOM Regional Architecture. Furthermore, they expected that TRANSCOM staff would provide project oversight with support from the NYSDOT, public sector agencies would provide the original set of data and updates, and LMFS or a subcontractor would provide the connections among the transit agencies and the regional architecture. In addition, the FHWA staff also expected that LMFS, with support from the public sector, would lead the outreach and marketing activity. Finally, because most concerns should have been resolved during the development of the proposal, the FHWA staff expected the negotiations to take less than three months.

2.1.2 NYSDOT and TRANSCOM

While NYSDOT staff had used a variety of contracting approaches to deliver engineering and consulting services in the past, including cost plus fixed fee (CPFF) contracts, the public sector team elected to use a deliverable-type firm fixed-price (FFP) contracting approach due to the limited budget and their commitment to delivering the project with no additional cost to the participating public agencies. The public sector team also wanted to put a permanent traveler information system in place for the NY/NJ/CT metropolitan area through the MDI project. In order to ensure that they achieved that goal, the public sector team pushed for a baseline of capabilities, acceptance testing, and performance evaluation criteria to be included within the contract's scope of services (SOS) so they could evaluate the system LMFS was proposing to put in place.

The public team also needed a detailed SOS and budget from LMFS staff so that they could assess the cost of the various components and deal with LMFS in good faith. They expected to see the 20% "hard" match that the private sector would provide clearly spelled out in the budget and also desired to see agreements for revenue sharing included in the SOS and final contract. In particular, TRANSCOM expected revenue sharing agreements to be included in the contract in keeping with the TRANSCOM's Regional Information Policy which was to generate revenues from the sale of information and to cover their existing O&M costs with those revenues. In that regard, the public sector negotiations team saw the partnership as sharing risks and rewards.

The public sector team was also concerned about meeting the federal requirements to operate and maintain the MDI components for five years and expected to receive a five-year O&M plan from LMFS. If for any reason, a private sector firm had to leave the MDI, the public sector team wanted to ensure that the traveler information services would continue to operate. Therefore, the public sector team also expected to own the equipment and software for the TIC and the PTCI

services. Moreover, ownership would provide them with the flexibility to hire another contractor to operate the system after the five-year MDI period, if necessary.

In addition, the public sector team expected that the CMAQ funds would be used primarily to enhance the OTIS for the NYC Transit. Any remaining CMAQ funds would be used to expand the OTIS to include information from other tri-state area transit providers. Otherwise, the expansion would be funded with MDI or other funds. The team did not intend to use the CMAQ funds for non-transit activities nor could they as they were restricted by the federal guidelines under which the CMAQ funding was granted.

2.1.3 Private Sector Participants

LMFS staff viewed the MDI proposal as calling for “requirements design and development.” Due to the research and development (R&D) nature of such projects and their inherent uncertainties, LMFS expected to use a CPFF “design-build” approach with an upper limit as the type of contract that would be negotiated. This type of approach would also accommodate the uncertainty of the cost to develop the PTCI software, which was estimated to be approximately \$6.4 million. Also, although LMFS staff do not see themselves as an O&M provider, they were willing to perform this function for the MDI. LMFS staff would commit to five years of O&M of the basic TIC and the PTCI software. They would also pay for the maintenance of the TRIPS. LMFS expected to use subcontractor support to cover some of the O&M activities. Furthermore, LMFS staff expected to negotiate revenue sharing issues that were postponed during the development of the proposal.

As stated previously, **SRS** management assumed that they would be included in the negotiations. After reviewing the proposal, SRS staff noted that there was too little detail in the proposal, especially in two areas: (1) functional specification and (2) institutional arrangements and roles. They felt, however, that because they had such a good relationship with TRANSCOM staff, they would be able to work out the details during the negotiations process.

As described in the proposal, SRS expected to build, finance, and operate the TIC, which would be a self-sustaining module. SRS would collect surveillance data through probes and new or existing cameras, develop and maintain a database, and disseminate information through their Audiotext system and a Web page. SRS staff also would be responsible for exchanging additional data with the public sector agencies via the TRANSCOM Regional Architecture. SRS’ investment to build the TIC was projected to be approximately \$3.6 million.

SRS management expected to implement their business model which required that SRS be the exclusive owner of the database, be the exclusive broker of the data, and control the conditions under which data could be sold. Once the TIC was operational, SRS would receive from the partners, monthly payments that would decrease over time and discontinue after the 30th month. The basic TIC would then be free to the public sector for the remaining two-and-one-half years of the five-year MDI period. The total cost for SRS to develop and operate the TIC for five years would be approximately \$16 million of which \$2.5 million would count as private sector hard match to the MDI funds.

The principals of **MCO** expected to participate as full partners during negotiations. This meant working closely with the private sector team during negotiations and providing their input into the development of the SOS.

2.2 PREPARATIONS FOR NEGOTIATION

After the announcement of the four MDI sites, the public and private sectors worked to develop an acceptable SOS. Most of the participants noted that in the early stages of the project, progress was slow. This section summarizes the key activities and dates as the participants prepared for subsequent negotiations.

September 1996

Four significant events took place this month. First, upon informally hearing that the NY/NJ/CT metropolitan area was selected as a MDI site, LMFS staff delivered the first version of the SOS to public partners, which detailed the LMFS proposal to develop the PTCI software.

Second, the public sector participants revised the structure of their negotiating team. Originally, the negotiations team consisted of representatives from most of the TRANSCOM members as well as representatives from the FHWA and the Federal Transit Administration (FTA). The TRANSCOM Technical and Operations (TechOps) Committee reduced the size of the team and selected representatives of five agencies to represent their membership:

- Connecticut Department of Transportation
- Metropolitan Transportation Authority
- New Jersey Department of Transportation
- New York State Department of Transportation
- TRANSCOM.

Although the larger team could still participate in reviewing the SOS and other documents and provide input, this team of five would have direct contact with LMFS staff during negotiations.

Third, staff from the U.S. DOT HQ approached the program managers to discuss funding levels. It was decided that \$10.36 million would be awarded, approximately \$2 million less than the amount requested in the proposal. Fourth, the FHWA responded by obligating \$4.6 million to the NY/NJ/CT MDI and transferred the funds to the NYSDOT.

October 1996

After Secretary Peña announced the four MDI sites, NYSDOT management sent a letter to LMFS informing them that a partnership agreement had been signed between the NYSDOT and

U.S. DOT and requesting information from LMFS in order to proceed with contract negotiations concerning the following:

- a scope of services detailing all the work to be performed and identifying all deliverables
- a detailed schedule identifying all milestones, deliverables, and meetings
- a work plan detailing how the effort will be organized, directed, managed, and controlled
- a detailed budget for performance of all work.

November 1996

The LMFS program manager asked the subcontractors to submit proposals or SOSs for the work to be performed by the subcontractors.

December 1996

Four significant events took place this month. First, SRS, MCO, and other subcontractors submitted SOSs to LMFS. Second, NYSDOT staff informed LMFS team that the cost for the PTCI software must be reduced from \$6.4 million to approximately \$4 million. Third, in reaction to NYSDOT's request, the LMFS team now considered developing a licensed software product that would contain more functionality than a site-specific package and licensing that product for \$3 million. Fourth, TRANSCOM officials advertised for and started to conduct interviews for the MDI Program Manager position.

January 1997

Two significant events happened this month. First, one of the original MDI private sector participants left the project. This action reduced the amount of private sector match available to the MDI by \$200,000. It also meant that most of the CMAQ funds would have to be used to recreate the OTIS source code which had been provided by the firm leaving the project.

Second, the TRANSCOM Executive Committee approved the TRANSCOM Regional Information Policy. This policy implements the Committee's decision to generate revenues from information and information products, including the sale of information. This policy states that TRANSCOM shall not enter into any agreement that would give exclusive rights to any of its information to one party, but may enter into agreements with one or more parties that would serve as brokers for TRANSCOM's information. The policy also allows TRANSCOM to enter into agreements with end users of the information.

March 1997

Three significant events occurred this month. First, the MDI Program Manager was hired. Second, NYSDOT management sent a letter to LMFS acknowledging performance of work by

LMFS prior to the formal award of the contract for the MDI. This letter permitted LMFS to proceed with previously identified pre-contract work but indicated that LMFS would be liable for all costs of this work unless and until a contract has been signed by NYSDOT and LMFS officials. The letter also specified a maximum amount for cost incurred conducting this pre-contract work. LMFS staff agreed to perform this work so the MDI team would be able to meet the FHWA deployment deadlines. Third, the public and private sector participants attended the first MDI workshop held in San Antonio.

April 1997

In order to expedite communications between the public sector team and LMFS staff, a smaller public sector negotiations team was formed. Two representatives from the NYSDOT and the MDI Program Manager were appointed to represent the larger five-agency team. This smaller team would report back to the five-agency team and request approval on negotiated items. As the public team discussed formation of the smaller team, LMFS staff noted that the month of April went by without any substantive progress between the public and private sector negotiating teams.

May 1997

During this month, the two teams continued to work on the SOS. LMFS staff continued to work on pre-contract tasks. In late May, the public negotiating team visited LMFS headquarters in Owego to work on ironing out differences over the SOS.

June 1997

The point of contact for the NYSDOT legal staff changed.

Other events

Also, during this early stage, five other significant events took place. First, because the private sector participants predicted that the initial revenues from the TIC would not cover its operations, the public sector participants made a request to the FHWA that \$2.6 million of MDI funds be allocated to operate and maintain the system for a limited time. The FHWA staff agreed, and amended the partnership agreement between the FHWA and the NYSDOT.

Second, while NYSDOT contracts and legal staff had been involved internally from the early stages of the MDI, the NYSDOT ITS program staff began to involve them in team meetings with the private sector. The concept that the MDI was not a traditional DOT project but more like a systems development project and the need for flexibility in the contracting approach were broached.

Third, due to changes at LMFS, the LMFS point of contact changed twice. Fourth, the NYSDOT contracting staff briefed staff at the New York State Comptroller's Office regarding the MDI contract. Staff at the Comptroller's Office are required to examine and approve all contracts executed by the New York State agencies.

Fifth, the public and private sector MDI team and the FHWA staff discussed federal fund match requirements. There was some confusion over what items would be acceptable as part of the 50%/50% (MDI/other) match requirements and what items would be acceptable for the 80%/20% (MDI/non-federal) "hard" match requirements.

2.3 CHRONOLOGY OF NEGOTIATIONS

Many participants related that intensive negotiations started in July 1997. This section presents the list of events and substantive disagreements that led to the termination of negotiations between LMFS and the public sector team on September 10, 1997.

July 1997

Five significant events occurred during this month. First, contracts and legal personnel from both parties established contact. Second, NYSDOT staff provided LMFS staff with a "straw man" contract, including proposed terms and conditions. Third, the LMFS staff stopped working on the pre-contract activities and provided the public sector team with documents resulting from their pre-contract work which included an RFP for the TRIPS, an O&M plan, and a preliminary design review. Fourth, LMFS reduced the number of staff available to work on the SOS. Fifth, LMFS management appointed a new manager of the ITS Group.

August 1997

Although the teams continued to negotiate, early in the month, there were still outstanding issues, including cost of the PTCI software, revenue sharing, and ownership of equipment and data. On August 14, because of their concern that the December 31, 1997 deadline for deliverables and for obligating funds before the end of the federal fiscal year would not be met, FHWA staff informed the MDI participants that a signed contract between the NYSDOT and LMFS was required by the end of August.

Near the end of the month, the two teams reached agreement on all remaining contract issues, including revenue sharing provisions and the cost of the PTCI license. As a result, on August 26 the MDI participants requested that the FHWA extend the August 28 deadline to September 5 to provide additional time for them to update current documentation and contract language. On the next day, however, LMFS staff requested that negotiations on the development of the PTCI software be re-opened.

September 1997

Early in the month, LMFS management proposed using a third-party vendor to develop the PTCI software and requested a time extension until September 17 to pursue that course of action. LMFS management offered September 10 as an interim check point at which LMFS management would inform NYSDOT management if the approach was workable. NYSDOT officials agreed to the extension pending the approval of FHWA management and that the new approach must be pursued within the context that all other aspects of the agreement reached in August would remain the same.

On September 4, FHWA management approved an extension until September 17 to execute a contract. This approval was based on the condition that certain information would be provided to the FHWA by September 10: (1) a revised cost estimate, (2) a discussion of the new role that LMFS would take in the project, (3) an update on the revenue sharing arrangements, and (4) a revised schedule. LMFS staff not only identified a third-party vendor for the development of the PTCI software but also presented several conditions that differed from the previous agreement between the NYSDOT and LMFS. The public sector team could not accept these terms. They reiterated that the FHWA had only granted an extension to explore the use of a third-party provider for PTCI software, not to re-open negotiations of previously accepted conditions.

On September 10, several conference telephone calls were held. In the first, between the public sector team and LMFS management, the areas of disagreement were discussed and some new issues were raised. Not being able to reach agreement, the participants agreed to resume discussions in the afternoon. In a second call, LMFS staff and the third-party vendor for the PTCI software discussed the public sector team's position. The vendor agreed to change some of their conditions in an attempt to reach an agreement with the public sector.

In the third call, the public sector team and LMFS management discussed the new position of the vendor. The public sector team did not accept these new terms because they still differed from the agreements made in August. The public sector team requested that LMFS staff provide the response to the FHWA questions posed in the time extension approval.

In the fourth call, the public sector team and FHWA management concurred that, considering the differences of the positions taken by the two sides, a contract could not be executed by the September 17 deadline. In the final call, between the public sector team and LMFS staff, NYSDOT management informed LMFS management that, with the approval of FHWA officials, they were terminating negotiations.

3. CONTRIBUTING FACTORS

In the context of this report, contributing factors are non-technical impediments that were significant stumbling blocks to reaching an agreement among the MDI partners. This chapter discusses the factors identified by the public and private sector participants in the NY/NJ/CT MDI when interviewed by Volpe Center analysts. The causes of the factors and their effect on the ultimate breakdown in negotiations are discussed. **These factors reflect the perspectives of the participants that led them to take specific positions during negotiations and, as such, help to develop a more complete and clear narrative of events.** Contributing factors have been classified into three categories and are summarized in the table on the following page:

- *Organizational*
Factors relating to new business relationships between the public and private sectors, public inter-agency coordination, and private sector coordination between the prime contractor and subcontractors.
- *Financial*
Factors relating to the project budget, matching requirements, coverage of operations and maintenance costs, and revenue sharing.
- *Procedural and Regulatory*
Factors relating to contracting, project schedules, ownership of equipment and data, and responsibility for operations and maintenance of project components.

3.1 ORGANIZATIONAL FACTORS

The NY/NJ/CT MDI is a joint public-private venture involving 14 public agencies in the greater NY/NJ/CT metropolitan area as well as 12 private companies led by LMFS as the prime contractor. The sheer number of participants in the project, with their different cultural biases and missions, would pose an organizational challenge for any project. There are three sub-categories of organizational factors that impacted upon the MDI negotiations: public sector-private sector interaction, public sector inter-agency relations, and private sector coordination.

3.1.1 Public Sector - Private Sector Interaction

Public-private partnerships are a relatively new approach to the delivery of services. Traditionally, relationships between the public and private sector have been on a contractor, fee-for-service basis, wherein the public sector has solicited private sector proposals to provide a specific service or deliverable which has been clearly defined by the public sector. In contrast, the development of ITS programs and projects have called for new forms of partnering between public and private sectors, where both parties may be involved not only in the development and delivery of products and services, but also the visioning and scoping process. What the vision of the project is, how the products or services will be developed and implemented, and who will pay for and be responsible for the operations and maintenance of the products and services are all

areas that must be negotiated as these new partnerships are formed. Participants from the public and private sector in the NY/NJ/CT MDI identified a number of factors which presented difficulties in their attempts to form a new partnership.

CONTRIBUTING FACTORS

ORGANIZATIONAL FACTORS

PUBLIC SECTOR – PRIVATE SECTOR INTERACTION

- ☐ *The parties had not worked together previously*
- ☐ *The parties entered the negotiations with cultural biases*
- ☐ *The parties had differing business objectives*
- ☐ *The partners had differing ideas on the provision of free traveler information*
- ☐ *There were too few face-to-face meetings and scheduled meetings were postponed*

PUBLIC SECTOR INTER-AGENCY COORDINATION

- ☐ *The public sector team included multiple partners*
- ☐ *The lead public sector agency was not the public sector contracting agency*
- ☐ *The TRANSCOM MDI project manager was not hired until March 1997*
- ☐ *Project participants had differing perceptions of the role of the FHWA*

PRIVATE SECTOR COORDINATION

- ☐ *LMFS did not involve the subcontractors in the negotiations*
- ☐ *The private sector negotiators changed during the process*

FINANCIAL FACTORS

- ☐ *The MDI budget was reduced by 15%*
- ☐ *An original private sector participant left the MDI project*
- ☐ *The provision of the 20% “hard” match was entirely the responsibility of the private sector*
- ☐ *The parties did not fully understand the match requirements*
- ☐ *The parties differed on the sharing of revenues generated by the MDI*
- ☐ *The fair market value of the PTCI software was difficult to determine*

PROCEDURAL AND REGULATORY FACTORS

- ☐ *NYS DOT contracting procedures were more oriented toward deliverable-type construction activities*
- ☐ *The project schedule was extremely aggressive*
- ☐ *The partners differed on the ownership of data to be collected during the MDI*
- ☐ *The parties differed on the ownership of equipment to be purchased for the MDI*
- ☐ *There were differing views concerning the five-year operations and maintenance of the MDI system*

FACTOR 1: THE PARTIES HAD NOT WORKED TOGETHER PREVIOUSLY

One of the stated intents of the national MDI program was to attract new private sector participants into the ITS arena and to solicit private sector participation in the development and marketing of ITS products and services. LMFS was interested in growing their ITS business and viewed the MDI as a good opportunity to work in New York State, where they are located, and develop new business relationships. Prior to the MDI proposal, LMFS had not worked directly with the NYSDOT. Also, they had not worked with the other public transportation agencies in the NY/NJ/CT metropolitan area directly in the area of ITS. These circumstances were cited by participants as a contributing **cause** to the difficulty in establishing a partnership. While a number of their subcontractors had previous experience working with some of the public transportation agencies in the NY/NJ/CT metropolitan area, LMFS was the only private sector participant involved in negotiations.

As with any new partnership, time is required to build mutual trust and understanding. Due to the newness of the relationship between LMFS and the public sector partners, trust among the partners had not been developed previously. The **effect** of this newness and lack of trust may have led to a reluctance on the part of both sectors to fully share information on components, such as the cost to develop the PTCI software. The partners did not communicate openly with one another, especially with regard to their expectations of the MDI project. LMFS was more interested in developing a market for the PTCI software while TRANSCOM was more focused on implementing a traveler information system. The reluctance to share information and the lack of open communication made it difficult for the partners to make decisions. Some public sector participants noted that they could not make decisions if they felt that they did not have all the facts on which to base their decisions. The factors raised with regard to cultural biases, differing business objectives, and differing ideas on the provision of free traveler information all may have been overcome with more open communications and mutual understanding between the partners which can be the result of relationships that have been established over time.

FACTOR 2: THE PARTIES ENTERED THE NEGOTIATIONS WITH CULTURAL BIASES

Civilian and military sectors are markedly different in their cultures, approaches to partnering, sharing of information, and contracting mechanisms. While LMFS is accustomed to dealing with the public sector, it is predominantly known as a defense contractor and has traditionally served the military sector and, as such, has operated within the military culture. The transportation sector, represented by the NYSDOT and TRANSCOM, operates in a very different culture. The clash between the two contrasting cultures was repeatedly cited as a **cause** in the parties' inability to form a lasting partnership.

These cultural biases were based in part on the differences in the kinds of products and services that the transportation and military sectors typically procure from the private sector. Transportation projects are traditionally oriented toward a deliverable product, such as a roadway or bridge. While NYSDOT staff often use cost-plus fixed-fee (CPFF) contracts to secure engineering services, they are not heavily involved in more open-ended large-scale R&D which is typically conducted at the federal level. Consequently, the NYSDOT and other transportation

agencies more often use firm-fixed-price (FFP) contracting mechanisms in contracting for the delivery of products or services. The military sector is more oriented towards R&D in their contracting endeavors. R&D contracts are by their very nature more flexible in order to deal with the uncertainties in developing new products and technologies. Consequently, the military sector more often uses a CPFF approach to cover the sometimes uncertain costs of developing a product, such as a new plane.

The transportation and military sectors also have distinctly different approaches to working with their contractors. The transportation sector typically contracts for a specific, defined product, and therefore they usually require more specificity in their contracts to insure a bridge, for example, meets exact specifications. They also assume greater disclosure of information including costing of the project, pay levels, etc., and work closely with the contractor throughout the project. In contrast, in many military R&D projects, the costs can be very difficult to predict and scoping the project is often part of the work performed by the contractor. According to LMFS, the military does not require contractors to disclose internal cost structuring to the same degree and detail as required by the transportation sector. Consequently, a military R&D contract often contains more general language, and while deliverables are discussed, they are not detailed in the same specificity as a bridge construction project.

LMFS staff noted that the military sector is also more accustomed to dealing solely with the prime contractor, leaving the subcontractors as the responsibility of the prime contractor. Although, the NYSDOT staff is accustomed to working primarily through a prime contractor, they wondered why LMFS did not actively engage subcontractors from the private sector team.

A final difference between the two sectors is also necessitated by budget constraints. Transportation project budgets are typically more fixed versus military projects that often have contingency funding available if needed to complete or continue with a project.

The **effect** of these differences between transportation and military sectors was that the NYSDOT and TRANSCOM, as the transportation sector representatives, and LMFS, whose culture was more accustomed to dealing with the military sector, had very different expectations with regard to what would be required to enter into a contract between the public and private sectors. As a new partnership, there was no history of working together to resolve these differences, which would require time and the establishment of mutual trust to overcome.

FACTOR 3: THE PARTIES HAD DIFFERING BUSINESS OBJECTIVES

ITS projects have created new opportunities to form public-private partnerships to bring new innovations to the transportation industry. The rationale for either a public or private sector entity to enter into a partnership is nominally to establish a mutually beneficial relationship where each partner brings their specific strengths to bear on development and delivery of the given product or service. While the private and public sector participants can have different business objectives for entering into the partnership, those objectives must be complementary or at least compatible. In the case of the NY/NJ/CT MDI, the basic underlying business objectives of the parties conflicted with one another.

One of the **causes** of this conflict was that a shared long-term vision was not clearly defined in the proposal. While LMFS took the lead in putting together the proposal, ideas were developed collectively by the public and private partners. The PTCI software was LMFS' vision, while the basic TIC and TRIPS were programs proposed by the public partners. Other differences included what was meant by a free telephone call; who would be responsible for the on-going operations and maintenance of the basic TIC, the PTCI software, and the TRIPS; and who would own the software and hardware at the end of the MDI period. As cited in Chapter 2, the proposal lacked these details in several areas regarding how the project would be implemented. This lack of specificity was noted not only by federal staff who reviewed the proposal, but also acknowledged by the public and private partners involved in developing the proposal. However, participants noted that this level of detail was not uncommon in a proposal of this size, technical complexity, and with the number of participants involved.

The **effect** of a lack of a shared vision for the NY/NJ/CT MDI was the absence of an overriding objective within which each participant would be required to fit their own business objectives. The conflicting business objectives are best illustrated by differences over the PTCI and the basic TIC. The LMFS team seemed more interested in developing and marketing the PTCI software. They were less focused on the operations and maintenance of the PTCI service and were considering having a third party, one of the subcontractors, operate the system. Because the FHWA's RFP for the MDI had required that the parties would operate and maintain the system for the five-year MDI time period, the public sector team expected LMFS to fulfill this commitment. They did not feel that LMFS' arrangements with their subcontractors adequately addressed this issue which was a federal requirement for the MDI.

With regard to the basic TIC, the public sector team wanted the private sector to build and operate the TIC but wanted the public sector to have access to and own components of the TIC after the five-year MDI period. This would enable the public sector to guarantee long-term operations in the future beyond the five-year MDI period. Staff from the public sector noted that their approach never was to privatize but rather to partner. SRS management, who would build and operate the basic TIC, thought the opposite, namely that SRS would continue to operate the basic TIC after the five-year MDI period as a private operator and provider.

FACTOR 4: THE PARTNERS HAD DIFFERING IDEAS ON THE PROVISION OF FREE TRAVELER INFORMATION

The lack of a clearly defined vision shared by all of the MDI participants also was the **cause** of a disagreement over the provision of free basic traveler information. An early draft of the MDI proposal included reference to a "toll-free" number to access the basic TIC, however, this was later removed at the public partners' request. The public sector participants began to realize that the term "toll-free" had different meanings to different people. They requested that the term "toll-free" be replaced by more specific wording that supported the public sector vision of a free call.

At the January 27, 1997 press conference announcing the NY/NJ/CT MDI, references were made to a "free call." The public sector participants assumed that this would be an 800 number.

Because an 800 number could represent an unbounded cost, which was estimated as high as \$1 million annually, the private sector participants wanted to consider alternative means to providing free access to traveler information. The public sector participants were willing to consider alternative means to accomplish the free telephone access at lower costs. They felt, however, that the free access concept was part of the original project vision and the responsibility for the costs of providing free access should be borne by the private sector as part of the MDI system operations and maintenance budget.

Because they were not directly involved in the negotiations, SRS staff was not aware of the discussion between LMFS and the public sector regarding an 800 number, despite the fact that it would directly impact the operation of the basic TIC for which SRS was responsible. According to SRS staff, it was only later, in August or early September 1997 during the critical negotiations time frame, that they heard vague references that access to the basic TIC was to be via an 800 number. Because SRS staff was not directly involved in the negotiations, they could not present other options to provide dial-in service, options that may have been cheaper to implement. At the time, SRS management was already working with the U.S. DOT and other Federal Government officials to get a three-digit (N11) land-line and cellular number for the I-95 corridor that would provide a “no access fee” call for callers into a basic advanced traveler information system.

The public and private partners never reached a mutual agreement on an approach to the “free” service with which both sides were comfortable. While conceptual agreement was finally reached on this issue, the public sector participants agreed to a final position that did not meet their vision as a concession to keep the project from failing and felt that the private sector had not delivered on a commitment that had been understood from the very beginning of the project. The **effect** of this disagreement was to further strain the partnership. Representatives from both sectors saw the benefits of their respective approaches and, therefore, strove to implement them.

FACTOR 5: THERE WERE TOO FEW FACE-TO-FACE MEETINGS AND SCHEDULED MEETINGS WERE POSTPONED

From the time the NY/NJ/CT MDI was selected in October 1996, most meetings were conducted by phone. The number of agencies involved from the public sector and the geographic distance between the public agencies located in the NY/NJ/CT metropolitan area, NYSDOT in Albany, and LMFS in Owego, were **cause** for the use of teleconferences. The teleconferences operated by going over items page-by-page, which typically worked well according to the private and public sector participants. Some public sector staff noted, however, that this sometimes led to spending time “wordsmithing” rather than discussing issues. The teleconference calls occurred often twice per week as the SOS was continually revised. At least once per month, the public team and LMFS staff would attempt to meet face-to-face. Near the end of the negotiations, several face-to-face meetings, which participants felt were critical, were canceled.

The **effect** of the lack of frequent face-to-face meetings was a missed opportunity to form a closer and more open working relationship that comes from working side-by-side and which is difficult to achieve by phone. Near the end of negotiations in late August or early September of 1997, several face-to-face meetings were postponed. At that point, negotiations may have benefited

from more face-to-face conversations, although there were times when it was effective to address certain items by telephone. Final negotiations from the end of August through the termination of negotiations on September 10 were conducted via conference calls. In interviews subsequent to the termination of negotiations, both public and private sector participants lamented that it may have been more productive to assemble all the participants in one room and not leave until a resolution of the major issues was achieved.

3.1.2 Public Sector Inter-Agency Coordination

In the NY/NJ/CT metropolitan area, there are numerous organizations whose members represent state and local transportation agencies and authorities from three states and several modes of transportation. Transportation officials from these numerous agencies and authorities have worked together through the metropolitan planning organizations (MPOs) in the area in preparing long-range transportation plans and transportation improvement programs. Several years ago, many of these officials formed TRANSCOM, which is a unique multi-jurisdictional agency. Unlike the MPOs where representatives from agencies from other states typically do not have voting authority, TRANSCOM voting members include representatives from transportation agencies located in three states. While the notion of working with multiple agencies is a daily reality in the area, both public and private sector participants in the NY/NJ/CT MDI identified a number of factors relating to public sector inter-agency coordination which presented difficulties in their attempts to form a new partnership and reach agreement on outstanding issues.

FACTOR 1: THE PUBLIC SECTOR TEAM INCLUDED MULTIPLE PARTNERS

Participants in the NY/NJ/CT MDI acknowledged that the number of public agencies involved was a contributing **cause** to the difficulty in negotiations. Both private and public sector participants noted that many of the members had different visions about what the MDI should be and how to contract with the private sector. The number of public sector partners necessitated a large communications network.

According to public sector participants, the public sector first tried to create a “contract by committee.” Originally, upwards of 14 people from various TRANSCOM member agencies attended meetings. When it came time for contract negotiations between the public sector and LMFS, in late August or early September 1996, TRANSCOM’s Technology and Operations Committee gave negotiating authority to a smaller five-member team. The larger group of public sector agencies, however, was still given an opportunity to review drafts of the SOS and other documents and to provide input. However, negotiations still progressed slowly into the spring of 1997, which led to the creation of an even smaller negotiating team. Staff from LMFS noted that during the month of April 1997, negotiations were delayed because the public sector team was trying to decide how to better structure their negotiating team.

In late April, the public sector formed a second, smaller three-person negotiating team comprising the MDI Project Manager from TRANSCOM and two staff members of the NYSDOT. However, because TRANSCOM rules require a unanimous vote on all matters, this lead negotiating team still had to get the approval of the members of the group of five before they

could accept conditions. The lead public negotiating team alone did not have authority to close a deal. Public sector participants noted that while going back to the larger team of five was sometimes inconvenient, the team made themselves very available, sometimes up to twice per day for conference calls and meetings.

Staff from LMFS noted that during the course of negotiations, the lack of a single point of contact made it unclear who was authorized to reach agreements for the public sector. LMFS was more accustomed to the military sector model where there is typically a single point of contact for the contractors. This was also their experience in working with the MndOT on ITS projects. A number of the private sector participants noted that from the beginning of the partnership, it was unclear as to where public sector authority for the MDI lay among the NYSDOT, TRANSCOM, and the FHWA Division Office. The **effect** of this structure was that the public sector negotiation team hierarchy caused delays in decision making. However, public sector participants noted that while this may have delayed negotiations, it was primarily the lack of agreement on issues that was the stumbling block to reaching an agreement.

FACTOR 2: THE LEAD PUBLIC SECTOR AGENCY WAS NOT THE PUBLIC SECTOR CONTRACTING AGENCY

Part of the lack of clarity with regard to the public sector negotiating hierarchy was **caused** by the fact that while TRANSCOM was the lead operational agency, they were not actually the contracting agency. TRANSCOM is not a legal entity, and therefore NYSDOT legal staff noted that they could not enter into contracts. Consequently, the NYSDOT was chosen as the contracting agency. This was the first time that TRANSCOM staff was attempting to contract through the NYSDOT. TRANSCOM was not accustomed to the NYSDOT contracting procedures which were considered more stringent than either the Port Authority of New York and New Jersey or the New Jersey DOT (NJDOT) - the two agencies through whom the TRANSCOM staff typically contract. As a result, TRANSCOM and NYSDOT staffs needed to develop a memorandum of understanding between their two agencies to clarify their relationship.

TRANSCOM management was accustomed to New Jersey contracts in which the TRANSCOM role was specifically mentioned. In contrast, the MDI contract spelled out what activities the NYSDOT, as agent for TRANSCOM, would perform. NYSDOT legal staff noted that this language was used to ensure that the contract would be approved by the New York State Comptroller's Office, through which all NYSDOT contracts had to pass. TRANSCOM management, however, was concerned that if TRANSCOM's role was not specified in the contract, it would not be acknowledged as the lead agency by the prime contractor. Eventually, the FHWA Division Office added TRANSCOM's name to the partnership agreement that was originally to be signed just with the NYSDOT. The **effect** of the lack of prior contracting experience between NYSDOT and TRANSCOM was to require significant time in settling on a public sector team hierarchy and contracting procedures.

FACTOR 3: THE TRANSCOM MDI PROJECT MANAGER WAS NOT HIRED UNTIL MARCH 1997

Both private and public sector participants in the NY/NJ/CT MDI cited the delay in hiring a MDI Project Manager as a contributing **cause** to the lack of more timely progress in negotiations. By the time the NY/NJ/CT metropolitan area was announced as one of the four MDI sites on October 24, 1996, the original implementation schedule of 18 months for initial deployment of some of the project components was already reduced to 14 months. The public sector team had been working with LMFS staff to refine the SOS prior to the October announcement in hopes of meeting the original schedule for deployment. As cited in the previous factors, the number of agencies involved and the lack of prior contracting experience between TRANSCOM and the NYSDOT were already contributing to delays in negotiating a final contract.

On March 17, 1997, TRANSCOM hired a MDI Project Manager. The **effect** of this delay was reflected in the uncertainty the private sector participants as to who spoke for the public sector prior to a Project Manager being hired. Prior to the Project Manager being hired, other TRANSCOM staff had represented TRANSCOM on the public sector team. When the Project Manager was hired, the implementation schedule had been reduced to 9 months. According to FHWA staff, negotiations had proceeded slowly up to this point, and it would be another month before the three-person public sector lead negotiating team was in place.

FACTOR 4: PROJECT PARTICIPANTS HAD DIFFERING PERCEPTIONS OF THE ROLE OF THE FHWA

As ITS technologies are implemented throughout the country, the FHWA is continually re-evaluating its role and how it can best facilitate ITS implementation. The impressions of both public and private sector participants of FHWA's role in the NY/NJ/CT MDI revealed that both sectors were not always clear about FHWA's role in the process. This is particularly evident when contrasting FHWA staff's perspective on their role versus the public and private sector's impression of the FHWA's role. The **cause** for this cited lack of clarity regarding the FHWA's role can be attributed to how each sector believed they were impacted by the FHWA's role in the MDI.

During the proposal writing process, FHWA Headquarters instructed division and region office staff to step away from the proposal development process so that no area was given an unfair advantage in competing in the MDI selection process. However, FHWA staff did continue to provide information and clarification in areas, such as match requirements, during that period. Upon announcement of the NY/NJ/CT metropolitan area as one of the winning sites, the FHWA NY Division Office staff participated in early negotiations and meetings to speak for the U.S. DOT interests in the MDI. According to FHWA staff involved in the MDI, their role was to ensure that all aspects of the NY/NJ/CT MDI proposal were implemented and Federal requirements would be met. FHWA staff also continued to work to clarify match requirements and articulate their concerns about who would operate and maintain the system during the SOS revision process.

The public sector team noted that the FHWA had a significant impact on negotiations through their requirements. According to NYSDOT legal staff, the FHWA's cooperative agreement with

the NYSDOT drove the MDI negotiations process. The agreement was structured for a “deliverable” project and not for an R&D development project. State contracts might have been more flexible, but legal staff did not see the cooperative agreement as being very flexible. NYSDOT contracting staff followed what they believed the FHWA was requiring. NYSDOT’s legal staff was also uncomfortable with the fact that the FHWA would be holding the NYSDOT accountable for the MDI project because the cooperative agreement was between the FHWA and the NYSDOT. This would be despite the fact that the NYSDOT did not have the legal authority to speak for another agency such as TRANSCOM or the MTA.

Private sector participants noted that they felt the FHWA was aligned with the public sector in negotiations. In contrast, FHWA staff noted that at some of the public-sector-only meetings during the negotiations process, FHWA staff argued for compromises on the private sector’s behalf such as less specificity in the contract, more public sharing of the risks, and an annual review of the revenue splits. Furthermore, in early April 1997, FHWA staff indicated to NYSDOT that many key issues were not being addressed as a result of the public sector team’s emphasis on refining the SOS. FHWA staff recommended that there needed to be a high-level meeting to clarify and reaffirm the partnership. However, it appeared that NYSDOT’s contracts and legal staff did not support elevating the issues until a detailed SOS had been ironed out.

Both public and private sector participants believed that the FHWA could have played a greater role as a neutral facilitator or moderator in the negotiations process and as promoter of the concept of partnering. These participants also commented that they believed that the FHWA could have stepped in more forcefully to advance negotiations by setting deadlines earlier. The **effect** of the differing perspectives on FHWA’s role complicated negotiations as both public and private sectors attempted to address what they believed were federal requirements. This also provides some insight into the challenges of developing non-traditional partnerships between the public and private sector where the relationships between traditional partners are being redefined and where the role of FHWA with both the public and private sectors in implementing ITS is evolving.

3.1.3 Private Sector Coordination

One of the goals of the national ITS program was to attract the considerable abilities of traditionally defense-oriented contractors into the transportation industry. This would not only help those industries to make the transition as defense budgets were reduced, but also help to bring leading edge command, control, and logistics technology to the ITS transportation sector. The NY/NJ/CT MDI provided just such an opportunity for LMFS which was looking to expand its ITS business and applications of their technologies to civilian commercial uses. As new private sector participants have moved into the transportation industry, their way of doing business has had to change in step with serving new and different customers and in adapting to new forms of partnerships. This is an evolving process and the operational constraints for public and private sectors remain different because of the underlying differences in their missions. These constraints impact the way in which private sector firms will approach partnering, staffing, and resource allocation. Both public and private sector participants in the NY/NJ/CT MDI identified a number

of factors relating to private sector coordination which presented difficulties in their attempts to form a new partnership and reach agreement on outstanding issues.

FACTOR 1: LMFS DID NOT INVOLVE THE SUBCONTRACTORS IN THE NEGOTIATIONS

As previously discussed, the original MDI proposal did not clearly specify the roles and responsibilities of each partner for many of the project components. With 14 public agencies and 12 private firms involved, close coordination and cooperation would be necessary to ensure successful implementation of the project. A number of public sector staff and potential private sector subcontractors noted that a contributing **cause** in the inability to reach an agreement was that LMFS did not adequately involve subcontractors in the negotiations. In particular, SRS, which was responsible for building and operating the basic TIC, was not included in face-to-face negotiations with the public sector. LMFS staff noted that their approach was that as the prime contractor they were responsible for direct negotiations with the client and that they were not accustomed to including subcontractors directly in the negotiations process. LMFS' experience with the military sector was the basis for this model.

Public sector participants noted their impression that the subcontractors were not kept informed by LMFS during negotiations. Shortly after it was announced that the NY/NJ/CT MDI proposal had been selected, the private sector subcontractors signed SOS agreements with LMFS in December 1996. According to the staff of two subcontractors, from the time of signing the SOS agreement until late August 1997, they were not involved in negotiations and had little contact from LMFS. SRS staff also noted that they originally assumed that they would be included in the negotiations. SRS staff further noted that if they had been involved from the beginning, they might have been able to help resolve some of the issues that led to an impasse.

At various times during the negotiations process, members of the public team informally talked with some of the potential MDI subcontractors, only to realize that the subcontractors had a very different understanding of the project, particularly with regard to issues of the ownership of data and equipment. These issues later proved to be critical stumbling blocks to reaching an agreement. The staff of one subcontractor believed that many of the issues raised should have been clear from the beginning and from their agreement with LMFS. They noted that when they were finally involved in late August, they were surprised to hear of the items that were surfacing as issues. When a subcontractor was indirectly brought into negotiations in late August as the proposed third-party provider for the PTCI software, their staff was still not involved in face-to-face negotiations with the public sector. When this subcontractor was offered an opportunity to participate in some of the final conference calls on September 10 between LMFS and the NYSDOT negotiators, they declined. They noted that they were not comfortable participating at that point without having had any prior involvement with the negotiations and with the negotiations being at a critical point.

The **effects** of the lack of participation of the subcontractors in negotiations were confusion as to the roles of the private sector participants and a lack of dialogue on possible alternative solutions to issues. There were also delays in providing answers to public sector questions related to subcontractor responsibilities and activities. Although the parties reached agreement on all issues

in late August, LMFS requested that negotiations on the development of the PTCI software be reopened and brought in a third party developer for the software. Because the subcontractor had not been previously involved in negotiations, they had very different assumptions about certain key issues. In final negotiations in September 1997, there were a number of very pronounced differences between the public and private sector's assumptions with regard to revenue splits and data and equipment ownership (these are discussed under Financial Factors and Procedural and Regulatory Factors). Both private and public sector participants noted that, had subcontractors been more closely involved in the process, these issues could have been addressed, and hopefully resolved, earlier on in the process. Participants noted that negotiations were conducted in the traditional "closed-loop" process, which, from their experience, is not ideal for ITS. In similar partnering ventures in Washington, D.C. and Cincinnati, subcontractors fully collaborated with the prime contractor and the public sector and were kept involved at all times.

FACTOR 2: THE PRIVATE SECTOR NEGOTIATORS CHANGED DURING THE PROCESS

Public sector participants in the MDI negotiations noted that the shifting of LMFS personnel on the project presented some difficulties. From December 1995, the time at which the NYSDOT opened discussions with LMFS about being their prime contractor for the MDI, until the termination of negotiations in September 1997, a number of key LMFS technical and managerial personnel changed. LMFS management noted that the **cause** for the changes in personnel and their respective responsibilities was part of the normal operations of a private company in order to achieve both professional development and the effective use of resources.

LMFS personnel were not typically assigned full time to the NY/NJ/CT MDI during the negotiations, in large part due to their other responsibilities and to the fact that until a contract was signed, LMFS was not being reimbursed for their work. In March 1997, the NYSDOT gave LMFS a "cost recognition" letter that said that once a contract was in place, LMFS would be paid for the work they were currently undertaking. Subsequently, LMFS continued working on that basis from April through June 1997. According to LMFS staff, they did this "at risk" work so they would be able to meet FHWA deployment deadlines and produced documents including the TRIPS RFP, an operations and maintenance plan, and a preliminary design review document.

A new LMFS team took over some time in late July and early August led by the newly appointed Manager of LMFS' ITS Group. The former Project Manager was appointed Business Area Manager for ITS but was still involved at times in the negotiations. Public sector participants noted that the **effect** of the changes in LMFS personnel was not only that the point of contact for LMFS changed, but also that LMFS' vision for the project also changed along with their personnel. Public sector personnel cited the change in LMFS' position with regard to the development of the PTCI software from developing a project-specific software product for a firm fixed price to developing and providing a licensed product for a cost plus a fixed fee. Late in the negotiations process, LMFS requested that the parties re-negotiate issues that at one time or another were thought to be settled. Proposals, such as the possibility of a third party vendor for the PTCI software and a change in the conditions under which that software would be developed, operated, and maintained, were presented.

3.2 FINANCIAL FACTORS

Financial factors involving cost and revenue sharing and the valuation of new technologies illustrate the difficulty in developing partnering arrangements and products for new and emerging markets, such as ITS. Developing a market for ITS products and services was one of the original goals for the ITS program, but until a market is firmly established, these types of issues will continue to challenge ITS implementors. Public sector and private sector participants in the NY/NJ/CT MDI identified a number of factors relating to cost and revenue sharing and the valuation of personal traveler information software which presented difficulties in their attempts to form a new partnership and reach agreement on outstanding issues.

FACTOR 1: THE MDI BUDGET WAS REDUCED BY 15%

In the negotiations prior to selecting the four MDI sites, the U.S. DOT requested that the proposals be reduced by 15% in cost. The original proposal for the NY/NJ/CT MDI was approximately \$14.2 million, and it would have to be reduced to \$12.2 million (\$10.36 Federal share) to meet FHWA's request. Both public and private participants in the MDI cited the budget reduction as a major **cause** in the inability of the partners to reach agreement. According to the participants in the MDI project, the partners attempted to avoid significantly reducing functionality of the project commensurate with the budget reduction because it was a very focused project. If they were proposing to provide traveler information to the public then they could not very well cut out a part of the project, such as data collection, without hurting the underlying objective of the project.

The NYSDOT members of the public sector team expressed to the Commissioner of NYSDOT their discomfort and nervousness in trying to fit a \$14.2 million project into a budget reduced to \$12.2 million. LMFS also felt the pressure of having to work with a smaller budget. According to LMFS staff, when the U.S. DOT team asked for a \$2 million cut in proposed project costs, the U.S. DOT team did not specify what they thought should be cut. This created future uncertainty because LMFS staff felt that they had been asked to cut \$2 million from the budget while they believed that the sponsor seemed to want to maintain all the proposed elements of the original proposal.

To generate the 15% reduction, LMFS first proposed to reduce the funding for outreach and marketing and to scale back project management activities. However, the public sector partners did not agree to reductions in outreach and marketing, which they felt were central components of the project. These disagreements were further exacerbated by the withdrawal of an original participant from the project which resulted in additional resource constraints. Eventually, the functionality of the project was reduced with the deletion of kiosks and monitors as travel information delivery mechanisms.

When a revised budget was sent to the U.S. DOT, it was submitted jointly by TRANSCOM, NYSDOT, and LMFS as a feasible budget and included compensation for the withdrawal of the original participant from the project. However, the **effect** of the budget reduction had already

been felt by the partnership. All parties felt that they were still responsible to deliver a highly functional system but for substantially less funding. Conflicts over how this could be accomplished and who would absorb the reduction in resources may have placed the parties in adversarial roles.

FACTOR 2: AN ORIGINAL PRIVATE SECTOR PARTICIPANT LEFT THE MDI PROJECT

The withdrawal of a private sector firm from the MDI project was cited by both public and private sector participants as a significant **cause** of subsequent disagreements regarding the project budget and scope. Prior to the announcement of the four MDI sites, the NYSDOT and the MTA had secured \$2 million in CMAQ funding for the enhancement of the MTA's existing OTIS system, which was developed by this firm. The CMAQ funding, along with \$500,000 in NYSDOT matching funds, were part of the 50%/50% match requirements for the MDI. The departing firm was also going to provide \$200,000 in the form of software licenses to the public agencies, which was part of the 80%/20% "hard" match requirement. As part of the MDI, this firm was going to develop and implement the TRIPS, which would enhance the OTIS for NYC Transit and expand it to include information from other tri-state area transit providers.

The firm left the project in January 1997. This meant that the source code for the OTIS and \$200,000 in "hard" matching funds would no longer be available to the project. The MDI participants cited this as a major problem because any replacement firm would have to recreate the OTIS as opposed to expanding and enhancing it to encompass a more regional perspective. LMFS then agreed that they would develop a TRIPS RFP to generate response from other possible vendors. In August 1997, LMFS released a draft RFP to 11 potential vendors. The draft RFP was released with the assumption that the private and public sectors would reach agreement on a contract in the near future and the parties wanted to adhere to the MDI deliverable schedule.

The **effect** of the firm's withdrawal were numerous. The partners had originally planned to use the CMAQ funds to implement their TRIPS package as a major component of the MDI. Now that money would only allow them to re-create the former OTIS system. The partners disagreed on who would fill the funding gap created by the loss of the matching funds. The partners also had to determine who would be responsible for the operations and maintenance of the TRIPS. With these uncertainties in place, the partners also had to proceed with the development of a TRIPS RFP while still negotiating the numerous other issues which had yet to be resolved.

FACTOR 3: THE PROVISION OF THE 20% "HARD" MATCH WAS ENTIRELY THE RESPONSIBILITY OF THE PRIVATE SECTOR

Although the private sector had proposed that they would provide all of the 20% required "hard" match for the project, the responsibility for providing matching funds for the MDI project was cited by both private and public sector participants as a contributing **cause** to the failure to form a lasting partnership. The MDI project proposal required two categories of matching funds. The first category was for a 50%/50% (MDI/other) match under which other federal funding sources such as CMAQ or FTA funding could be counted as match. The second category was for an

80%/20% ratio under which 20% of the funding, considered “hard” match, had to come from non-federal sources.

Early in the MDI process, as the public sector was forming its team, the participating agencies assumed that they would follow the approach of the private sector providing the entire “hard” match. When NYSDOT management approached TRANSCOM’s Executive Committee in hopes of persuading TRANSCOM to become the lead public agency for the MDI, they highlighted the fact that the MDI project would not cost the public agencies anything. TRANSCOM’s Executive Committee voted unanimously to become the lead agency. The original NY/NJ/CT MDI proposal identified approximately \$27.6 million in public agency matching funds, of which \$21.3 million was from various federal funding sources and \$6.3 million was from various state and local government sources. While \$2.5 million of the public agency matching funds for an advanced transit information system was considered cash that would flow directly into the MDI, that funding was already in place regardless of the outcome of the MDI proposal. As stated in the original proposal, approximately \$8.6 million “hard” cash contributions were going to come from the private sector. Participants noted that even when an original participant left the MDI, the partners assumed that the funding gap created by this withdrawal would be covered by a match from the firm that would replace the original participant.

While the private sector originally proposed providing all of the “hard” match, the **effect** of the private sector assuming this responsibility for “hard” match was to establish an imbalance in the risk each side of the partnership would be assuming. When FHWA judged certain items to be ineligible as match, the private and public partners disagreed over how to replace those items and who should provide those funds. The imbalance in risk would also lead partners to have very different expectations regarding how any revenues should be shared if they materialized. The private sector could not ignore the reality of having to answer to shareholders as they evaluated whether or not they would be willing to assume risk without appropriate chances for recouping their investments. Similarly, the public sector partners needed to minimize the risk to their agencies of having to provide unforeseen funding for the project and to be accountable to the taxpaying public.

FACTOR 4: THE PARTIES DID NOT FULLY UNDERSTAND THE MATCH REQUIREMENTS

While the provision of “hard” matching funds exclusively by the private sector was an issue, the participants in the NY/NJ/CT MDI also noted that determining what was considered eligible hard match also became an issue and was a contributing **cause** to the difficulties in reaching agreements between the partners. The criteria for match was stated in the U.S. DOT RFP, and the NY FHWA Division Office staff provided regulatory guidance to the partners, verbally in January 1997 and in writing in April 1997. Although federal match requirements may apply to all government branches including the DoD, the way in which match is interpreted varies from branch to branch of government. According to the public sector participants in the MDI project, transportation match requirements are typically more stringent than DoD match requirements, and LMFS was more accustomed to the “soft” match, such as in-kind services, used in DoD contracts.

In the original proposal, LMFS was to contribute approximately \$3.6 million in match for research and development of a personalized traveler information system and architecture compliance, while SRS would provide \$2.6 million to set up the basic TIC. At the time of forming the private partnership team, LMFS also required a 25% in-kind contribution from their subcontractors as part of the private sector matching funds. While these sums were significant, FHWA staff noted that some of the match that was being proposed did not follow the U.S. DOT guidelines. According to FHWA staff, it was very difficult for the FHWA to make a preliminary determination of eligibility of certain items from the private partners because they did not receive enough information concerning the specifics of the match. This continued to be a challenge for FHWA staff as the project budget and SOS continued to change and evolve in response to the 15% MDI budget reductions and the change in approaches to the delivery of certain MDI components, such as the PTCI software.

Public sector participants cited numerous disagreements over how certain resources could be counted as match. In several instances, the public sector team became frustrated when they were told that there was no other match from the private side to replace some elements of the proposed match that were not accepted. Conversely, private sector partners noted that the public sector's approach to issues regarding match provided a clear illustration of the public sector's lack of understanding of the risk the private sector was assuming in investing real "hard" match. In particular, SRS noted that the public sector's assertion that any items paid for with private match as part of the MDI should be owned by the public was unrealistic and would discourage private sector firms from investing in the project. The **effect** of the lack of agreement over what was eligible for match further strained the partnership.

FACTOR 5: THE PARTIES DIFFERED ON THE SHARING OF REVENUES GENERATED BY THE MDI

The partners projected that revenues would be generated by advertisement on the Web site and telephone services, subscriptions to the PTCI, and the sale of data to other independent service providers (ISPs). The market for ITS products and services, however, is not yet fully developed. Consequently, the potential value of ITS products and services and the probable revenue streams they may generate are difficult to predict. The lack of a mature marketplace for products and services was an underlying **cause** for disagreements between partners over revenue sharing.

LMFS staff noted that during the proposal writing process, the public sector team pressed for revenues from selling data that would cover some O&M costs. Eventually, the parties settled on agreeing to split revenues at a later date. The NY/NJ/CT MDI proposal did not specify the exact split of revenues that might be generated, but it did discuss splitting revenues based on the O&M costs borne by both the public and private partners. A 50%/50% (private/public) split of revenues was originally proposed in early negotiations. According to the public sector participants, the logic behind an equal split was that if each side covered 50% of the total O&M costs, then revenues should be split accordingly. Some public sector participants perceived the revenues to be the gross revenues from both the basic and customized services.

The parties could not agree on which costs should be included in calculating a revenue split. The public sector team felt that the TRANSCOM operating costs (i.e., the cost of data collection and

dissemination involving the TRANSMIT freeway management system, the Regional Architecture, and pagers), other public sector O&M costs as presented in the proposal, and the MDI O&M costs should be used as the basis for the revenue split percentage. They also proposed to include the privately borne costs for the O&M for the basic TIC and PTCI in their determination. It appeared that LMFS did not want to include covering the O&M on certain items that they felt the public would have to provide regardless of the MDI project. In fact, LMFS staff noted that they felt that the public team wanted to capture the revenue stream generated from the MDI project that would have been used to recover the cost of private investment. Because the parties could not agree on which costs should be included, they moved away from a determination based on O&M costs.

At various times during the negotiations, different revenue splits were considered for different components of the MDI. LMFS first proposed a 65%/35% (private/public) split for the PTCI system revenues and a 90%/10% split of TIC revenues in their first business plan. This proposal was never accepted by the public team negotiations team. The FHWA staff, however, supported this proposal for two reasons. First, special approval from the FHWA HQ had been obtained to use MDI funds to help offset a projected shortfall in basic revenues for approximately the first two years of operation. Second, the taking of a lesser percentage of the “guaranteed” basic revenues and a greater amount of the personalized revenues by the public sector would better reflect the risk in building a paying user base to support the PTCI system. FHWA staff further recommended that revenue splits could be reviewed annually. This would remove the need to spend time negotiating and trying to justify a fixed rate and would allow the parties to focus on other issues needed to reach an agreement.

The public sector team did not want a different split for the basic TIC and the PTCI software revenues. Eventually, LMFS agreed to have one revenue split for all components of the MDI and presented a 65%/35% (private/public) split in their subsequent business plans. The public sector team felt that the LMFS proposal did not take into account the \$2.6 million subsidy for the operations of the basic TIC that would come from MDI funds. In the opinion of the public sector team, this would be “double counting” the TIC costs. In late August 1997, LMFS and the public team agreed to a 62%/38% split of all gross revenues generated under the MDI project.

These agreements, however, ignored certain assumptions of the private subcontractors, namely SRS. SRS staff noted that their business model for operating the basic TIC was based on receiving 100% of the revenues generated by the basic TIC, although they later offered to accept a 90%/10% split. The lack of involvement of the subcontractors in negotiations, as previously discussed, prevented clarification of these issues earlier in the negotiations process. Nevertheless, LMFS staff agreed to the 62%/38% split on the premise that LMFS would use some of its margin on the development of the PTCI software to provide SRS with an equivalent of 100% of the revenues from the TIC. LMFS management felt that it was a reasonable approach because the parties also had an agreement to annually revisit the revenue sharing question to ensure that all parties were not losing money. When LMFS management decided that they would not develop the PTCI software, but would seek a third party developer, they lost that margin and could no longer afford to cover the concession to TRANSCOM on the basic TIC revenue sharing.

In the three other MDI sites, participants decided to postpone issues of revenue sharing and charging for data until a market was better defined or developed. However, in the NY/NJ/CT MDI, revenues were a primary issue in negotiations from the beginning. LMFS staff noted that they believed the public sector's focus on revenues was misdirected. Furthermore, private sector participants noted that since they were assuming a large share of risk in terms of up-front investment in the PTCI and basic TIC, they needed to focus on recouping their investment. In contrast, the public sector team stressed their right to recover their costs in developing and gathering the data.

Some participants noted that the original purpose of the MDI was to provide seed money to get the private sector involved and to develop a market for ITS products and services. The private sector participants felt that the public sector did not understand that there was no existing market for the sale of information in place. The public team's position on revenue sharing may have been based in part on the TRANSCOM business plan which capped annual agency contributions at \$1.9 million with a stated goal of reducing those contributions and becoming a self-sustaining.

The **effect** of disagreements over revenue sharing, especially near the end of negotiations, prevented the partners from forming a true partnership. These disagreements created an adversarial atmosphere, with each party believing that the other party was not being reasonable in their approach. This was further heightened by the lack of an established working relationship which prevented the open sharing of information and cost assumptions that were the basis of the positions taken by the private and public sector negotiators.

FACTOR 6: THE FAIR MARKET VALUE OF THE PTCI SOFTWARE WAS DIFFICULT TO DETERMINE

The lack of a mature marketplace for ITS products and services was also among the **causes** which made it difficult to determine the fair market value of the PTCI software. While similar software has been under development and testing in other areas, the market for personal traveler software and services and the probability that people will subscribe to fee-based services is not yet proven. Without a market in place to assess demand and potential revenues, it was difficult for the MDI participants to settle on an appropriate price for the PTCI software.

Both private and public sector participants cited an unwillingness on the part of the other party to disclose information that was the basis for their respective cost approaches to the development of the PTCI software. LMFS originally proposed to develop the PTCI software for \$6.4 million as a custom software package with functionality specifically designed for NY/NJ/CT metropolitan area. In December 1996, as the partners attempted to address the 15% project budget reduction, the public sector requested that the cost to develop the PTCI be reduced to \$4 million. According to LMFS, the public sector did not provide a rationale for the amount of the reduction other than necessary budget constraints. Conversely, public sector participants noted that LMFS cost estimates for the PTCI software varied significantly and were based on propriety information that LMFS would not make available to the public sector. There was also some confusion regarding what was included in these costs, such as development costs, licensing fees, etc.

In response to the public sector's request to reduce the PTCI development cost, LMFS decided that they would re-orient their approach from one of developing a custom software package for the MDI to a licensed software product, thereby amortizing the development cost via licensing agreements. LMFS management proposed a \$3 million license for a software package which would contain greater functionality than originally proposed. The basis for this cost was a proposed split of the original \$6.4 million development estimate between the NY/NJ/CT MDI project and work LMFS was also pursuing with another state DOT.

The \$3 million dollar cost was still a concern to the public sector. None of the public sector agencies involved had experience with paying more than \$1 million for a software license. It was difficult to get an idea of a fair market value for the software because there was no other product to compare with the PTCI in scope or value. After further negotiation, the public team and LMFS agreed to a \$2.375 million price for a software license. The license would extend indefinitely, permit the use of the software throughout the region by public agencies, and provide a warranty and applicable upgrades throughout the O&M commitment. According to the public sector participants, agreeing to a licensed software product was a concession by the public sector team as the original project concept provided that the public sector would own the software.

Despite LMFS' agreement to the \$2.375 million price on August 20 and again on August 26, LMFS staff noted that the cost of the PTCI software had been driven down so far that they no longer were sure that they could develop the software for the \$2.375 million under an FFP approach and within the time allotted for completion. Consequently, they informed NYSDOT that they could no longer abide by this agreement and asked NYSDOT to consider a CPFF contract or development of the PTCI software by a third party. During negotiations in late August until negotiations were terminated on September 10, LMFS proposed a third party provider for the PTCI software who would provide the software for the accepted price of \$2.375 million. However, the involvement of the third party vendor re-opened a number of related issues of data ownership and revenue sharing, not only with regard to the PTCI software but also with the basic TIC. Because the public sector stated that these areas were not subject to renegotiation, these issues eventually proved insurmountable.

The **effect** of the lack of a developed marketplace for the PTCI software or similar product forced both the public and private sectors to assume some risk because they could only attempt to estimate the value of the PTCI product. The public sector participants did not want to pay for a product whose market place had not yet been determined. By the same token, the private sector wanted to cover their cost in developing the product to minimize their risk in an unproven market.

3.3 PROCEDURAL AND REGULATORY FACTORS

One of the most difficult challenges faced by both the private and public sectors in forming new partnerships is clearly defining appropriate roles and responsibilities for each sector. This is particularly true in the ITS arena. Many of the new private sector participants are not traditional transportation construction partners, and many of the ITS systems that partners are attempting to implement are new and undefined. Public transportation agencies have had a traditional role in gathering information for freeway and traffic management, but until recently, most of this information was for use by other public agencies and was not focused specifically on the traveling

public. The central focus of the NY/NJ/CT MDI proposal was to provide real-time travel information to the public.

While the public sector viewed itself as experienced in gathering information, they looked to the private sector for the private sector experience to package, deliver, and market the information to the public. These broadly defined roles would eventually require specific operational and maintenance plans, specifying how the traveler information delivery system would be integrated, and which agencies, private and public, would be responsible for each defined operation. Operational details also needed to be negotiated into some form of contractual agreement. Public and private sector participants in the NY/NJ/CT MDI identified a number of factors relating to defining roles and responsibilities, ownership of the products of the project, and coming to agreement on contractual terms which presented difficulties in their attempts to form a new partnership and reach agreement on outstanding issues.

FACTOR 1: NYSDOT CONTRACTING PROCEDURES WERE MORE ORIENTED TOWARD DELIVERABLE-TYPE CONSTRUCTION ACTIVITIES

Many traditional transportation contracts are fee-for-service, deliverable-type contracts which include design specifications and acceptance testing criteria befitting the construction of transportation infrastructure. Many of the ITS projects being implemented around the country are more oriented towards systems development and integration. While private sector firms provided systems development and integration services to the public sector previously, the concept of developing a partnership between a public sector agency and a system developer requires different contracting approaches than the fee-for-service contracts under which these services are typically provided. The NY/NJ/CT MDI project required a different and more flexible contracting approach, and the public and private participants in the MDI cited the NYSDOT's orientation toward deliverable-type contracting procedures as a contributing **cause** to the difficulty in reaching a contractual agreement.

LMFS staff noted that the original MDI proposal was for the development of system requirements and implementation of the system. Conversely, it appeared to LMFS staff that NYSDOT, the public sector contracting agency, wanted more of a traditional build or product deliverable contract rather than a design-build contract. According to LMFS staff, their original approach was for a CPFF contract, considering that the MDI project was a design-build activity in nature with a number of uncertainties related to how the project would be implemented. In their preliminary discussions with NYSDOT legal staff, LMFS staff noted that NYSDOT's approach reflected a FFP approach more suited to a product deliverable project. In fact, during the negotiations in July 1997, the first draft contract outline received from the NYSDOT was oriented towards a deliverable-type project.

NYSDOT's legal staff noted that their cooperative agreement with FHWA was structured as a deliverable project and not as an R&D development project. Their interpretation of the cooperative agreement influenced their approach to contracting as they felt they had to adhere to FHWA requirements. The NYSDOT legal staff wanted to structure the partnership agreement with LMFS to follow the terms and conditions (T&Cs) of the cooperative agreement.

The NYSDOT staff also preferred a detailed SOS to define what was going to be delivered and which could also serve as a guide in issues, such as revenue sharing. The public sector team requested that a baseline of capabilities, acceptance testing, and performance evaluation criteria be described within the SOS and reflected in the T&Cs. While the T&Cs would have certain elements of a deliverable-type contract including payment specifications, which are required with expenditures of federal funding, the NYSDOT legal staff noted that they recognized that flexibility would be needed to deal with uncertainties.

Both sectors acknowledged that LMFS staff wanted sample T&Cs earlier than they received them. Because this contract did not fit neatly into the current NYSDOT process, the NYSDOT staff had to modify their standard clauses to accommodate this non-traditional procurement, which delayed submitting the T&Cs to LMFS. Also, the public sector team of five focused on the SOS more than the T&Cs of the contract because they were more technically oriented and, therefore, more comfortable with scoping of the project versus actual negotiating contract terms. Whereas, the NYSDOT contracting staff required a detailed SOS before providing the T&Cs, the program staff wanted to see the T&Cs to help them develop the SOS.

NYSDOT staff noted that they believed LMFS wanted to work out the details of the SOS after the contract was executed. However, NYSDOT legal staff requested more detailed information from LMFS on operating assumptions pertaining to the multiple MDI project components in order to assess the cost of the products and services. LMFS staff noted that this was more detail than was necessary. LMFS was more accustomed to R&D contracts with the DoD, where finalizing the SOS is often one of the first tasks after a general contract agreement is signed. LMFS staff contended that detailed specifications in an SOS were not possible in a design-build type of contract because of uncertainties in designing a new system. According to LMFS staff, as negotiations progressed, the public sector team and NYSDOT legal staff wanted the SOS to contain other items including a business plan and preliminary design review documents which LMFS considered contract deliverables, not pre-contract deliverables.

The **effect** of disagreements over approaches to contracting was to further strain the partnership. With disagreements between the public and private sectors over what the SOS should include and their inability to finalize an SOS, achieving progress in negotiations was very difficult. According to LMFS staff, NYSDOT's approach still reflected a fee-for-service contract which was more of a work-for-hire structure than a partnership. This approach provided little incentive for the private sector to adopt a partnership attitude. The lack of an established, trusting relationship between the partners also dictated that each sector would pursue a contracting approach that would be most appropriate to protecting their interests. For the public sector, they felt they were required to guarantee the delivery of a quality product resulting from public expenditures. For LMFS, they need to reflect the uncertainties inherent in an R&D effort, where risk had to be shared and uncertainties acknowledged.

FACTOR 2: THE PROJECT SCHEDULE WAS EXTREMELY AGGRESSIVE

The U.S. DOT's request for applications for the MDI program specified that projects were to be operational by December 31, 1997. U.S. DOT had originally hoped to select the MDI sites by July 1996 which would have provided 18 months from the time of the awarding of the MDI grants until projects were to be operational. By the time the MDI sites were announced on October 24, 1996, the development cycle had already been reduced to 14 months until the first deliverable date. This tight time schedule was cited as a contributing **cause** to the difficulty in reaching agreement on a final contract by both the public and private sectors.

Participants from both parties noted that all the people involved had their eye on the implementation deadlines. The tight schedule became more of an issue as negotiations between the private and public sector moved into the spring of 1997 with many operational and contractual issues still unresolved. As discussed in Factor 1, the partners differed as to what work should be conducted before the contract was executed and what should be performed under contract. The private sector participants noted that many of the elements required for early implementation and operation could not proceed until a contract was in place. While LMFS continued to work with the public sector on certain items, such as the SOS, the preliminary design review document, the TRIPS RFP, and the business plan, in order to keep in line with meeting the deadlines, they did so somewhat reluctantly believing that a number of these items were contract deliverables.

The **effects** of a tight schedule on the negotiations were numerous. As these deadlines drew nearer, the public sector participants were concerned that if deadlines were missed the funding could be removed. The public sector pressed for a detailed SOS, focusing on a "deliverable" product with specifics as to how and when MDI components would be operational. As cited earlier, the parties disagreed on how detailed the SOS should be and the type of contracting approach to be taken which made negotiations difficult. According to FHWA staff, as negotiations continued to lag, U.S. DOT attempted to facilitate progress by agreeing to modify the partnership agreement with NYSDOT to allow increased flexibility for the project (and thereby relieve some of the pressure), requiring only limited functionality to be in place by the original December 31, 1997 deadline. Under pressure to meet deadlines, and with large project dollars at stake, both sectors were reluctant to go too far out on a limb and bare the risk of assuring the delivery of MDI components when so many issues were yet unsettled.

FACTOR 3: THE PARTNERS DIFFERED ON THE OWNERSHIP OF DATA TO BE COLLECTED DURING THE MDI

One of the primary assumptions in the NY/NJ/CT MDI proposal was that the partners would generate revenues from the sale of traveler information data. Who owned the data and who would be allowed to sell the data became a major **cause** of disagreement between the partners and was never fully resolved. The disagreements were the result of conflicting business models between the private sector, namely SRS, and public sector, namely TRANSCOM. Yet during the formation of the partnership and as negotiations between the parties progressed, these differences received relatively little attention because SRS was not involved in the negotiating process.

Under the proposal, SRS would be building and operating the basic TIC and would install 70 cameras to augment data being collected via the TRANSCOM regional architecture. They would also develop and maintain a database and disseminate information through their Audiotext system and a Web site. According to SRS staff, the total cost to SRS to develop and operate the TIC for five years would be approximately \$16 million. This figure included a \$3.6 million original investment and \$250K per month O&M cost for 60 months, which would be only partially offset by the \$2.6 million SRS would receive under the MDI contract. SRS staff noted that their business plan depended on their ability to sell the data in order to recover their \$16 million investment, and therefore, they needed to be exclusive owners of the database, be the exclusive brokers of the data, and would control the conditions under which data could be sold. If other parties could sell the data, SRS would not be able to recover their investment.

This approach, however, was in direct contrast with TRANSCOM's Regional Information Policy which identifies what information constitutes TRANSCOM property and how this information can be used and disseminated. The policy states that TRANSCOM can not enter into any agreement that would give exclusive rights to any of its information to one party, but that they could enter into agreements with one or more parties that would serve as brokers for the information.

Members of the public sector team from both TRANSCOM and the NYSDOT noted that their approach to data ownership was based on TRANSCOM's Regional Information Policy as well as public precedent whereby most states do not allow the selling of customer database information in order to protect the customer. TRANSCOM's business plan also had the stated goal of generating revenues from the sale of information and information products, and therefore, TRANSCOM staff did not want to cede these rights to a single private sector party. The public sector participants contended that this situation was different from other areas deploying ITS because no architecture exists at these locations. TRANSCOM already had an architecture up and running in the NY/NJ/CT metropolitan area and had been collecting, coordinating, confirming, integrating, and disseminating up-to-date transportation information throughout the region for nearly ten years.

The public sector participants also noted that, although SRS was installing new cameras and collecting data, the SRS-collected data would be part of the MDI project for which the public sector team was responsible, and therefore, the information should be part of one database, namely the MDI database. The public sector team did not want SRS to be able to use the data for anything outside of the MDI. While the public sector team did want the private sector to use the information to raise revenues and split the revenues received, they did not want the revenues to go solely to one of the private sector participants. Because data collected by a private sector firm would be combined with data from the Regional Architecture, a private sector firm would not be allowed to own and sell TRANSCOM's data. Furthermore, if data was going to be disseminated to the public, TRANSCOM staff felt they would be responsible for ensuring the accuracy of that data.

The **effect** of different views regarding ownership of the data, especially at the end of negotiations, left the public and private sectors far apart on an issue that was of significant importance to the partnership. This disagreement also illustrates the impact of other issues

previously discussed, such as revenue and risk sharing, differing business objectives, and, in particular, the lack of subcontractor involvement in negotiations. Late in negotiations on September 10, 1997, SRS management agreed to drop their request for the exclusive ownership of the data as long as any other broker would make an initial investment similar to what SRS had made. SRS management also proposed that they would settle for exclusivity of data at the point where they fused the data from the Regional Architecture with data collected by the TIC system. However, SRS staff was not involved in the face-to-face negotiations to resolve the matter. Members of the public team noted that while they acknowledged that SRS was adding value to the data, the value added was done so under the scope of MDI, and therefore, it was not SRS property.

FACTOR 4: THE PARTIES DIFFERED ON THE OWNERSHIP OF EQUIPMENT TO BE PURCHASED FOR THE MDI

While the private and public sector participants disagreed over the ownership of the data, they also had different ideas regarding the ownership of the equipment purchased as part of the NY/NJ/CT MDI project. The parties' differences over ownership of the equipment only further illustrates that the partners had contrasting underlying assumptions and business objectives, which was a major contributing **cause** in the parties' inability to reach an agreement. According to public sector participants, they looked at the MDI project as a beginning that would serve to install a basic TIC in the NY/NJ/CT metropolitan area. The private sector, namely SRS, also saw this as a permanent fixture in the area but assumed that SRS would continue operations beyond the original five-year period.

The public sector participants noted that having a private sector partner own and operate the TIC would make continued operation of the TIC uncertain beyond the five-year period. They did not want to be in a position at the end of the MDI where a contractor could dictate the cost to continue the operation. Therefore, the public sector felt that it needed to have ownership of the TIC equipment, both hardware and software, to ensure future operations. The public team felt that this was a critical issue because the equipment and the SRS WINGS™ software, upon which the TIC would run, were central to the continued operation of the TIC after the MDI. If SRS removed its equipment and WINGS™ software, the ability to provide traveler information in the region would be impacted significantly. Also, the public sector team did not want to be in a position where they would have to obtain a license for the operating software at the end of the five-year period.

According to SRS staff, if SRS had to relinquish the operations of the TIC and hand over the equipment to the public sector at the end of five years, they would have to change their business plan. They would not have proposed to make the initial \$3.6 million investment to build the TIC. Instead, they may have offered to operate the TIC and would have been open to different contractual agreements regarding revenue sharing and the ownership of data. Late in negotiations, when ownership of the equipment was discussed as an issue, SRS management proposed licensing their proprietary WINGS™ software at the end of five years, at a market value to be determined in approximately three years. However, public sector participants noted that they would not be comfortable with this arrangement because the WINGS™ software is

proprietary and, as such, SRS could arbitrarily set a price for the software license which might be higher than the market value.

This issue was not simply a matter of the public team offering to purchase the equipment from the private sector at the end of the five-year period. Instead, during negotiations, the public participants noted that they were spending \$2.6 million to support the TIC (the amount of MDI funds allocated to cover the initial operations of the TIC). This, in turn, entitled the public to own the purchased equipment. The public sector also felt that if SRS was providing the \$3.6 million to build the TIC as a match to MDI funds, then those monies were part of the MDI and, as such, the equipment purchased with those monies belonged to the project.

According to SRS staff, the public sector's approach was unacceptable because SRS was investing its own money to build the TIC, and the \$2.6 million of MDI funding would not fully cover the cost of operations. In fact, the basic TIC would not cost the public sector anything to operate after month 30 of the five-year MDI period (at which time the incremental payment of the \$2.6 million would end). This had been one of the original selling points in presenting the idea to the public sector as the proposal was being developed.

As stated previously, the objectives of the public and private sectors were not clearly articulated at the start of the project. Differences surfaced as the parties negotiated specific conditions. Similar to differences over the ownership of data, the **effect** of the disagreement over who should ultimately own the equipment purchased under the MDI left the public and private sectors far apart on a critical issue that was of significant importance to the partnership. To the private sector, the public sector's approach did not provide any incentive for private investment of capital if they would not own the capital. Consequently, the private sector felt that, during negotiations, they had to minimize their exposure because they were putting up the initial investment and taking all the risk. The public sector, on the other hand, did not want to be bound to one ISP or to one vendor's product at the end of the MDI. The public sector also wanted to ensure their ability to keep the services in place beyond the five-year MDI period.

FACTOR 5: THERE WERE DIFFERING VIEWS CONCERNING THE FIVE-YEAR OPERATIONS AND MAINTENANCE OF THE MDI SYSTEM

The U.S. DOT's request for applications for the MDI program required proposals to provide for a five-year period of operations and maintenance of the proposed project. While LMFS staff noted that they do not typically see themselves as an O&M provider, they were willing to assume this role on the NY/NJ/CT MDI project. However, the O&M of the PTCL, the basic TIC, and the TRIPS components of the MDI, all of which were ostensibly the responsibility of the prime contractor, were significant issues and became a contributing **cause** in the difficulty in reaching a final agreement between the private and public sectors.

During the course of negotiations, as approaches to implementing different MDI components were discussed and sometimes changed, the approach to the provision of the O&M of these components also changed. Regardless of these changes, the public sector team expected to see a five-year O&M plan from LMFS covering all of the MDI components. According to public

sector participants, they did not feel that LMFS' arrangements with their subcontractors properly addressed five-year O&M requirements. This was a concern to the public team because FHWA had made this a Federal requirement for the MDI projects. The public partners needed to ensure five years of operation.

While it was assumed that SRS would provide the O&M of the basic TIC, LMFS was exploring the possibility of getting other subcontractors to run the PTCI service. The public sector participants noted their impression that LMFS was more interested in developing the PTCI software and then marketing it to other regions, rather than guaranteeing its long-term operations. Also, despite the fact that the LMFS staff acknowledged in their O&M plan that they were responsible for the O&M of the TRIPS, it appeared to the public sector participants that LMFS was reluctant to take on this responsibility themselves, and instead were looking to pass on the O&M of the TRIPS to another private sector subcontractor or a public sector partner.

Initially, the public sector team saw the LMFS role as being the principal system integrator; developing the PTCI service, a critical MDI component; providing the long-term O&M of the MDI systems; and managing the other private sector team members. As negotiations proceeded, it appeared to the public sector team that LMFS was only going to be responsible for developing the PTCI software and serving as the system integrator. Near the end of negotiations, when LMFS suggested that a third-party vendor provide the PTCI software, it appeared that the LMFS role was being reduced just a little more than contract management. The public sector participants noted that it was never their intent for the prime contractor to have a single role of managing the subcontractors.

The **effect** of the differing views on the role of the prime contractor with regard to its responsibility for the O&M of the MDI systems was to make the public sector push harder for guarantees that the project would be operated and maintained for at least five years. However, since the public participants saw the traveler information services provided under MDI as the beginning of a permanent system, their interest was also more long term. Therefore, they wanted to ensure that if for any reason LMFS or another subcontractor had to pull out of the project, the public side would be able to keep the project running. Public sector participants noted that this was part of the rationale behind their approach toward owning the project equipment and for pressing for a detailed O&M plan in the SOS before signing an agreement with LMFS.

4. OBSERVATIONS FROM THE PARTICIPANTS

The previous chapter identified the factors cited by the public and private sector participants in the NY/NJ/CT MDI project that contributed to the inability of LMFS, NYSDOT, and TRANSCOM officials to execute a final agreement. This chapter describes the participants' observations in terms of lessons learned in dealing with these impediments. Participants were asked to identify the most important lessons they learned and would want to share with others in the ITS community. These lessons may be useful to other private and public sector entities who are attempting to develop new partnerships to deploy ITS products and services. In some cases, participants offered possible solutions for future partnering endeavors and for roles that other agencies could play in facilitating new and innovative partnering arrangements.

The lessons learned and possible solutions reflect the perspective of the individual participants in the NY/NJ/CT MDI and are not offered as overall conclusions of this report. In some instances, they clearly reflect the participant's bias. However, while biased, these perceptions are nonetheless important and, therefore, should be discussed in the context of the differences in outlook between the public and private sectors and the misunderstandings that can arise in building new partnerships. These views are likely to reflect perceptions held by other representatives of public and private sector organizations that are either currently or will be involved in ITS partnering. Therefore, it is important that each sector be aware of their counterpart's perceptions in order to address them when and if they occur. The perceptions, though biased, give us insight into potential stumbling blocks that need to be surmounted in order to create lasting partnerships, where all parties involved are likely to benefit from that partnership.

Lessons learned address what the participants might do differently in their next attempt to form a partnership, while possible solutions offer participants' ideas as to how the ITS partnering process in general might be improved.

- *Lessons Learned*

Lessons learned fall into five subcategories including partnering, defining roles, the proposal development process, project funding, and maintaining focus.

- *Possible Solutions*

Participants' ideas relating to how ITS partnering can be improved through changing roles, new mechanisms, Federal requirements, and continuing education.

4.1 LESSONS LEARNED

Private-public partnerships for the delivery of services are relatively new. This is particularly true in the ITS transportation arena, where the structure and operational guidelines for these relationships are evolving as the parties move away from the traditional customer-vendor relationships. As ITS partnerships are formed, public and private parties are learning from their experiences and continue to strive for better, more durable and mutually beneficial partnerships.

In the case of the NY/NJ/CT MDI, since the parties were never able to reach final agreement on a contract, it provided the participants with an opportunity to re-examine what had prevented them from forming a lasting partnership. In so doing, participants have reassessed their approaches to partnering, sharing project costs and benefits, and the roles their agencies played. For public and private participants in the NY/NJ/CT MDI, this was the first time they had attempted to form a partnership with each other. From these experiences, participants noted a number of lessons learned in overcoming obstacles involving issues of partnering, defining roles, the proposal development process, project funding, and maintaining focus.

LESSONS LEARNED
PARTNERING ☐ <i>Developing partnerships is a unique way of doing business</i> ☐ <i>Negotiations may have been more successful if a single point of contact was identified and maintained for both private and public sectors</i> ☐ <i>The two sectors need to understand and appreciate the culture within which the other sector operates</i> ☐ <i>Partnering is an evolving relationship and each sector needs to continually address its own cultural biases</i>
DEFINING ROLES ☐ <i>The U.S. DOT should play a more active role in guiding and facilitating the development of partnering agreements</i> ☐ <i>The pressure exerted by the U.S. DOT had good and bad consequences</i> ☐ <i>Each subcontractor must have clearly defined roles and should be full participants in the partnership</i>
THE PROPOSAL DEVELOPMENT PROCESS ☐ <i>Proposers should iron out project details as part of the proposal development process</i> ☐ <i>More detail should be required in proposal applications</i> ☐ <i>Significant time is required to develop large scale projects</i>
PROJECT FUNDING ☐ <i>All parties must understand the federal matching requirements</i> ☐ <i>The parties did not know enough about the generation of revenues to develop an appropriate approach to revenue sharing</i>
MAINTAINING FOCUS ☐ <i>Negotiation details distracted participants from focusing on the original purpose behind the MDI</i> ☐ <i>The public and private agencies' views of their respective missions came into conflict</i>

4.1.1 Partnering

LESSON 1: DEVELOPING PARTNERSHIPS IS A UNIQUE WAY OF DOING BUSINESS

The public and private participants in the NY/NJ/CT MDI uniformly agreed that developing partnerships is a different, and in many ways, unique way of approaching transportation projects. The lack of clearly defined project goals and agency roles and responsibilities created a great deal of ambiguity. In hindsight, public and private sector participants cautioned that participants must expect ambiguity and learn to be flexible. They must also work towards developing clear expectations for all parties and then put those agreements into writing. Participants also noted that having individuals with experience in implementing ITS is important in dealing with the ambiguity that is sometimes involved with implementing new and innovative technology.

LESSON 2: NEGOTIATIONS MAY HAVE BEEN MORE SUCCESSFUL IF A SINGLE POINT OF CONTACT WAS IDENTIFIED AND MAINTAINED FOR BOTH PRIVATE AND PUBLIC SECTORS

Given the nature of the tri-state NY/NJ/CT metropolitan area, with numerous public transportation agencies working independently and sometimes in tandem through organizations such as TRANSCOM, organizing a project like the NY/NJ/CT MDI was bound to be a challenge. Both public and private participants in the MDI acknowledged that given this reality and the complexity of the MDI proposal, and faced with the challenge of forming a partnership with the private sector, there was a clear need to develop a process for reaching consensus on difficult topics. This would require a clear hierarchy for decision-making with the public sector and with LMFS.

Private sector participants noted that the management structure for the public sector was extremely complex. Public sector participants noted that LMFS' management changed, and with those changes, previously accepted points of negotiation were altered. According to both sectors, it was unclear who was in charge of the project. Initially, this made the project difficult to manage, slowed progress, and created conflicts among the management of the various partners. Both sectors agreed that the project may have benefited by the appointment of a single point of contact for each side who could make decisions during negotiations and who would remain the point of contact throughout the project. Participants noted that while U.S. DOT had required a full-time project manager and staffing tables, they should have required that points of contact be clearly identified in the proposal on both the public and private sector sides before any money was awarded to the project.

LESSON 3: THE TWO SECTORS NEED TO UNDERSTAND AND APPRECIATE THE CULTURE WITHIN WHICH THE OTHER SECTOR OPERATES

In a public-private partnership, the two cultures must understand each other. Private sector participants noted that they are restricted in what they can do and are driven by the reality that they must seek to make a profit. In order for public-private partnerships to work for the private sector, the public sector needs to provide avenues for the private sector to achieve their objectives. A number of public sector participants concurred, espousing the belief that if the private sector is making money then the public sector is doing its job in partnering. By the same measure, public sector participants noted that they are accountable to taxpayers as public officials, and therefore, they need to minimize public exposure to risk and seek ways to minimize expense to the public.

Public sector participants also noted that private industries entering ITS partnerships need to be aware of the differences of working with transportation agencies versus other government sectors such as defense. Private sector firms may not realize that state DOTs work with contractors on a more frequent, even daily, basis on a given project than their DoD counterparts. While the private sector may react to the public transportation agency's approach as intruding in proprietary areas, those agencies are following their normal practices in transportation construction projects. Furthermore, public agencies often must deal with requirements that take time, such as submitting contracts through the State Comptrollers Office in the case of NYSDOT, which is often in conflict with the private sectors desires.

LESSON 4: PARTNERING IS AN EVOLVING RELATIONSHIP AND EACH SECTOR NEEDS TO CONTINUALLY ADDRESS ITS OWN CULTURAL BIASES

Public and private participants in the NY/NJ/CT MDI all acknowledged that all parties involved were partially responsible for their inability to reach a contract. LMFS staff noted that partnering is an evolving relationship and LMFS needs to keep on addressing its own culture to ensure that they are in step with new customers. LMFS pledged to continue to attempt to understand the customer's needs and be able to adapt to their needs by being flexible. Similarly, staff from NYSDOT acknowledged that their contracting procedures need to be flexible and continue to change in order to facilitate partnerships. Furthermore, public sector participants noted that they continually need to re-think their traditional contractor-vendor approach to developing transportation projects.

4.1.2 Defining Roles

LESSON 1: THE U.S. DOT SHOULD PLAY A MORE ACTIVE ROLE IN GUIDING AND FACILITATING THE DEVELOPMENT OF PARTNERING AGREEMENTS

A number of the lessons learned reflect the cultural differences of the private and public parties involved in the MDI negotiations. The views of the private and public sector participants regarding the role U.S. DOT staff played, or should have played, illustrate these differences.

However, both private and public sector participants agreed that U.S. DOT staff should have played a more active role in facilitating negotiations and providing project guidance.

Private sector participants, accustomed to a model of hierarchical decision-making power where upper management may step in and force a settlement in certain instances, noted on several occasions that someone from the U.S. DOT headquarters should have gotten involved and called the participants into one room. LMFS staff noted that U.S. DOT officials should have been uncomfortable with the lack of progress in negotiations and felt that U.S. DOT staff were reluctant to get involved. Public sector participants, accustomed to their traditional partnership with FHWA, noted that the U.S. DOT staff should have been more neutral and just represented the Federal interest and not have considered itself a public sector partner. Public sector staff also noted that U.S. DOT staff could have enforced the concept of partnering and played an effective role as moderator in the negotiations.

In response, participants from the U.S. DOT commented that while headquarters was kept closely informed of the problems with negotiations, they did not believe that a solution could be dictated by the U.S. DOT but instead had to come from the partners. While U.S. DOT officials did not dictate a solution, staff noted that they were extremely uncomfortable with the lack of progress and, in order to facilitate negotiations, they agreed to modify the partnership agreement to allow increased flexibility for the project. They were also involved in numerous telephone calls to the project partners, offers to help, and face-to-face meetings.

LESSON 2: THE PRESSURE EXERTED BY THE U.S. DOT HAD GOOD AND BAD CONSEQUENCES

In mid-August 1997, FHWA staff informed NYSDOT, TRANSCOM, and LMFS officials that a signed contract between NYSDOT and LMFS was required by the end of August. While this was not a new deadline, the increased pressure exerted on the parties pushed them all to try to find agreement on outstanding issues. The extra pressure had the intended effect. Public sector participants noted that they became increasingly flexible as the deadlines approached because they thought it was in the interest of the public to proceed with the project. LMFS was also flexible in its approach and was able to reach preliminary agreement on all outstanding issues by August 26.

In hindsight, both public and private sector participants noted that while pressure to meet deadlines moved negotiations forward, it also pushed them to take positions that they may not have taken otherwise. According to FHWA staff, at this time, they stepped back from the process with the expectation that the partners could best reach agreement by themselves. Those agreements, tentatively reached on August 26, later fell apart and a final agreement was never reached. As a footnote, LMFS staff noted that when U.S. DOT threatened to pull the MDI money near the end of August, they should have stuck to their threat and pulled the money back.

LESSON 3: EACH SUBCONTRACTOR MUST HAVE CLEARLY DEFINED ROLES AND SHOULD BE FULL PARTICIPANTS IN THE PARTNERSHIP

The NY/NJ/CT MDI proposal included eleven subcontractors that would be working under LMFS as the prime contractor. In some cases, the subcontractor would be playing a major role in the implementation and O&M of the MDI project components. During negotiations, as the responsibilities for project components were being negotiated by the public sector team and LMFS, the subcontractors who would be responsible for these components often had a markedly different idea about what their role would be. These differences proved to be significant stumbling blocks near the end of the negotiations.

In hindsight, the public sector participants noted that they had assumed that the roles LMFS was negotiating for the subcontractors were consistent with contractor's expectations, which did not prove to be the case. Public sector participants noted that in the future they might involve major subcontractors in the negotiating process, but emphasized that improving the flow of communication between the subcontractors and the prime has been successful in numerous negotiations. Furthermore, some subcontractors noted that if they were to be a subcontractor in a future ITS project with a significant role in the project, they would want to be at the negotiating table with the prime contractor and have their role clearly defined and articulated.

4.1.3 The Proposal Development Process

LESSON 1: PROPOSERS SHOULD IRON OUT PROJECT DETAILS AS PART OF THE PROPOSAL DEVELOPMENT PROCESS

Some public and private sector participants noted that they were somewhat surprised when their proposal was selected. Although these participants stated that the proposal lacked detail in several areas regarding how the project would be implemented, they also noted that this level of detail was not uncommon in a proposal of this size and complexity. The parties developed a proposal that they felt met the requirements and thought that if they won they would figure out the details at a later date. Both public and private sector participants acknowledged that this approach to proposal development is not uncommon in the proposal writing process. They acknowledged that "grantsmanship" is often part of the proposal process, as the team attempts to put its best foot forward.

Having acknowledged this, participants from all sectors noted that future proposals should identify whether partnerships are in place or include a memorandum of agreement or very specific letter of commitment signed by the potential partners. While commitments from the various public sector agencies were included in the proposal, the proposal did not include a memorandum of understanding (MOU) between the public and private sector parties. Furthermore, public sector participants noted that more clear articulation of the vision of the project was needed on all parts prior to submitting the proposal. This lack of vision came to the forefront during the negotiating process, as the parties realized that their particular visions were not aligned. Public sector participants cautioned that in the future, they should develop a defined scope prior to soliciting partners.

LESSON 2: MORE DETAIL SHOULD BE REQUIRED IN PROPOSAL APPLICATIONS

FHWA staff noted that the MDI proposal evaluation criteria were specifically designed to try to “head-off” problems before they occurred. The criteria required signed MOU’s among the partners detailing roles and responsibilities. The criteria also required a full time project manager, and considerable existing interagency, interjurisdictional and public-private cooperation.

While the public and private sector participants in the NY/NJ/CT MDI proposal complied with proposal requirements, the participants agreed that U.S. DOT should have required more detail in the application. Private sector participants noted that the application was at a very high level and did not contain requirements definition. Therefore, when the MDI was awarded, the contractor could not hit the ground running. The winners won the chance to then propose what to do. This created a time lag that was, in essence, built into the project because of the lack of detail required in the application. Because the proposal lacked a good definition of institutional relationships and roles, the seeds were sown for problems to occur.

Public sector participants also noted that the proposal should have provided more detail up front regarding the relationship of the partners and their functional responsibilities. Participants noted that in the future they would define the nature of the project, the roles and responsibilities of the partners, and the contracting process as soon as possible. They would be as specific as possible when clarifying partner roles and spell this out in a formal document, such as a contract or MOU.

LESSON 3: SIGNIFICANT TIME IS REQUIRED TO DEVELOP LARGE SCALE PROJECTS

The NY/NJ/CT MDI was unique compared with the three other MDI sites in terms of the number of agencies and states involved. The other three sites have one or two lead agencies driving and directing ITS efforts with a single point of contact, while the NY/NJ/CT MDI had 14 agencies involved. Public sector participants in the MDI noted that the time required to develop large-scale projects in the NY/NJ/CT metropolitan area is significant because of the large number of agencies involved and the issues that each agency will bring to the table. Some public sector participants suggested that perhaps there was not an appreciation on the part of the U.S. DOT as to how greatly this project differed from the other three MDI sites. New partnering agreements also require a long learning process and both the public and private sector participants noted that moving away from their traditional ways of doing business required time.

4.1.4 Project Funding

LESSON 1: ALL PARTIES MUST UNDERSTAND THE FEDERAL MATCHING REQUIREMENTS

The MDI project required partners to contribute matching funds of 20% in “hard match.” According to public and private participants, the MDI match requirements were difficult to understand and determine, and led to partner disagreements, project uncertainty, and delays.

This was despite FHWA staff's provision of verbal and written guidelines during the negotiations process. While some of the public participants should have been familiar with these requirements, they noted that what is eligible as match still needs to be specified with more clarity by the U.S. DOT. Participants also noted the differences between matching transportation funds and matching funds from other agencies, especially the DoD, and the ambiguity involved in reconciling different definitions of match.

This ambiguity created a situation where match meant different things to different parties. LMFS, familiar with DoD match requirements, had a different interpretation of private match requirements on the MDI project. The parties noted that they should have determined matching requirements at the beginning of the project. The public sector participants suggested obtaining up-front commitments from the participants using an MOU or partner agreement. Although the private sector had proposed that they would provide the entire "hard match," private sector participants lamented that bearing this burden was an underlying cause for the disagreements between the public and private parties as to what was and was not match since, in their view, the parties were not sharing the risk in providing match.

LESSON 2: THE PARTIES DID NOT KNOW ENOUGH ABOUT THE GENERATION OF REVENUES TO DEVELOP AN APPROPRIATE APPROACH TO REVENUE SHARING

One of the underlying purposes of the MDI program was to develop a market for ITS products and services. In the NY/NJ/CT proposal, both public and private sector parties saw the potential for the generation of revenues from the sale of traveler information to the general public. This was also part of the rationale for forming the partnership; each party saw their counterpart as providing an essential role in implementing the components of the project which would make the development of a market for the resulting products and services possible.

While both parties embraced this possibility, participants noted that they were moving into uncharted territory and did not really know enough about the generation of revenues from the project components. The lack of existing knowledge on the part of both parties regarding revenue generation created an atmosphere where they were negotiating without a firm basis for their assumptions. This resulted in disagreement during negotiations and proved to be a stumbling block to the formation of a true partnership.

4.1.5 Maintaining Focus

LESSON 1: NEGOTIATION DETAILS DISTRACTED PARTICIPANTS FROM FOCUSING ON THE ORIGINAL PURPOSE BEHIND THE MDI

U.S. DOT staff involved in the MDI program noted that the purpose behind the four metropolitan MDIs was to showcase the potential of ITS products and services to the traveling public. In hindsight, both public and private sector participants acknowledged that the parties may have lost sight of the purpose behind the MDI as they negotiated the SOS, revenue sharing, and O&M agreements. As alluded to in discussions regarding project revenue generation, the parties

focused on ends before the means to achieve those ends were put in place. Some participants suggested that they should have continued to look at the “big picture” rather than debating the specifics of components that were still only in the planning stages.

LESSON 2: THE PUBLIC AND PRIVATE AGENCIES’ VIEWS OF THEIR RESPECTIVE MISSIONS CAME INTO CONFLICT

The cultural differences of the private and public sector parties involved in the NY/NJ/CT MDI were reflected in the way they viewed each other’s appropriate role. The private sector would market traveler information to the public and create a market for these services while the public sector would develop and maintain the data gathering infrastructure in keeping with its public service role. However, according to LMFS staff, when the public sector started to view themselves as revenue-generating agencies, it brought them into competition with their private sector counterparts. In contrast, the public sector staff stressed their right to recover their costs and to share in any revenues derived from the project as an equal partner.

The private sector participants viewed the original purpose of the MDI as providing seed money to get the private sector involved in ITS. As providers of the “hard match,” the private sector, and particularly SRS, would be investing its own capital in MDI program components, and therefore, they expected to realize a return on their investment or to break even at a minimum. The public sector felt that public money was being expended for the project and, as public agencies responsible to the taxpayers, they should seek to control and recover their costs. When the public sector took the position of wanting a fair share of the revenues and to own the data and equipment from the project in order to ensure the continuity of the subscription service and the basic TIC beyond the five-year MDI period, some private sector participants felt that they were being asked to bear the burden of risk (match) while having to share the reward.

4.2 POSSIBLE SOLUTIONS

Public and private sector entities will continue to have different missions and different operating environments. Yet these differences can be bridged for the benefit of both parties as has been illustrated in the other MDI sites and in ITS projects throughout the country, including projects in the NY/NJ/CT metropolitan area such as the Service Area Traveler Information Network (SATIN) and TRANSCOM’s System for Managing Incidents and Traffic (TRANSMIT). While differences remained between the public and private sector participants in the NY/NJ/CT MDI project, they offered similar suggestions for solutions to some of the obstacles that they faced in attempting to form a partnership which are summarized in the table below. A number of these solutions echo recommendations and lessons learned from previous ITS deployments. **Although the U.S. DOT, state DOTs, and private sector firms involved in ITS, may have already addressed some of these findings, participants in the NY/NJ/CT MDI still encountered these problems and recommended these solutions.** This suggests that there continues to be a need to address these issues in an effort to continually improve the ITS partnering process.

POSSIBLE SOLUTIONS

- ☐ ***U.S. DOT staff should be more active in facilitating partnering***
- ☐ ***Model contracting mechanisms that would facilitate partnering are needed***
- ☐ ***Changes are needed in state procurement regulations to allow contractual agreements to be signed between parties prior to awarding grants to the states***
- ☐ ***A federal stipend to reimburse both the private and public sectors for costs which may be incurred prior to full funding approval should be established***
- ☐ ***There is a need for guidance that provides explicit interpretation of federal regulations with regard to issues such as match and intellectual property rights***
- ☐ ***There is a continuing need for educational outreach to state DOTs including an emphasis on a new orientation toward information systems design***

SOLUTION 1: U.S. DOT STAFF SHOULD BE MORE ACTIVE IN FACILITATING PARTNERING

Participants from LMFS, the NYSDOT and TRANSCOM all noted that they had different perceptions of the role FHWA played in the proposal stage and during negotiations, and that FHWA's role changed during the project. FHWA staff noted what they saw as their appropriate role and their expectations for the NY/NJ/CT MDI. FHWA repeatedly attempted to facilitate negotiations through modifications to project agreements and increased flexibility, but they were also constrained by policy and legal considerations that limited their ability to dictate a solution. While perceptions may have differed, members of the private and public sectors both suggested that the U.S. DOT could have played a more effective role as a moderator in the negotiations by actively facilitating the concept of partnering. Participants suggested that U.S. DOT staff should develop a "How to Develop Partnership Agreements" guidelines because the issues that occurred in the NY/NJ/CT MDI project are occurring throughout the country. Issues covered in the guidelines would include defining partner roles and responsibilities, differences in operating methods between the public and private sectors, contracting procedures, procurement requirements, matching criteria, assignment of intellectual property rights, and project management and coordination.

FHWA staff involved in the project also noted that there may be an opportunity for field offices to provide more assistance at the time the proposals are being developed. They would enable participants to develop a better understanding of the project, identify strengths and weaknesses, and provide advice to the FHWA headquarters. They also could advise locals on issues like "hard" and "soft" match requirements, and could be more instrumental in helping partners adjust to the funding reductions when and if they occur.

SOLUTION 2: MODEL CONTRACTING MECHANISMS THAT WOULD FACILITATE PARTNERING ARE NEEDED

Public sector staff involved in the NY/NJ/CT MDI acknowledged that public procurement policies are not focused on partnering. This will continue to be an issue in the future. The current state contracting process is designed to do a certain kind of project, namely to acquire construction and consulting services. These procedures are unsuitable for ITS because technology turns over more quickly than the roadway infrastructure for which the original contracts were designed and contracting procedures do not address the issues related to software design, intellectual property rights, liability, and proprietary data. Private partners also noted that these standard contracts were inflexible and time-consuming.

Both public and private sector participants cited the need for innovative contracting mechanisms to meet ITS partnering needs. In the case of the NY/NJ/CT MDI project, work was difficult to define because it involved developing and testing new technologies. Therefore, the contracting procedures needed to be more flexible. A flexible contracting process would allow timely modifications to be made to existing contracts and fast execution of new contracts to meet unanticipated needs. However, public sector participants noted that the private sector still needs to understand the rules and regulations under which the public sector works.

Participants suggested that the FHWA should provide a model contract, although they acknowledged that “one size does not fit all.” Federal guidelines might recommend how procurement processes should change to accommodate ITS systems development agreements. Some participants even suggested that perhaps partners could be brought into ITS partnerships through a federal contracting mechanism. Federal model contracting mechanisms could explore changes to the contract structure, such as permitting changes to specific tasks without requiring a contract amendment, taking a phased approach to a contracting (i.e., similar to a construction project which starts with a preliminary engineering phase, then right-of-way acquisition phase, etc.), or the use of cooperative agreements. Staff from NYSDOT pointed out that their cooperative agreement with FHWA did not fit the need for flexibility as the agreement was structured as a “deliverable” project and not a systems development project.

SOLUTION 3: CHANGES ARE NEEDED IN STATE PROCUREMENT REGULATIONS TO ALLOW CONTRACTUAL AGREEMENTS TO BE SIGNED BETWEEN PARTIES PRIOR TO AWARDING GRANTS TO THE STATES

One of the lessons learned by participants noted the need for future proposals to identify whether partnerships between the public and private sector agencies, in the form of an MOU or specific letter of commitment or a contract, are in place prior to awarding of funding. While a signed agreement between LMFS and the public sector prior to awarding of the MDI funds may have helped in the case of the NY/NJ/CT MDI, staff from Federal and state agencies pointed out that in many states, contractual agreements between the state and private sector can not be legally processed before funding is granted. Despite this reality, private sector participants suggested that the proposal application to the U.S. DOT should at least have included basic agreement in

principle. Private and public sector participants both suggested that state procurement regulations need to be changed to provide for such an agreement to accommodate new partnering relationships.

SOLUTION 4: A FEDERAL STIPEND TO REIMBURSE BOTH THE PRIVATE AND PUBLIC SECTORS FOR COSTS WHICH MAY BE INCURRED PRIOR TO FULL FUNDING APPROVAL SHOULD BE ESTABLISHED

The NY/NJ/CT MDI proposal lacked technical detail with respect to clearly defined agency roles and responsibilities for the project. Without an accepted SOS between the parties, it was not possible to include the level of detail that may have prevented some of the disagreements that arose as the parties negotiated their respective roles in the project. Not only were the details of the SOS a major obstacle to reaching agreement between the parties, but the parties also disagreed over whether an SOS should be a pre- or post-contract task. LMFS staff thought SOS development should have occurred after the contract was signed and should have been an item for which they would be paid, while NYSDOT thought an SOS was needed before a contract could be signed and payment begun.

LMFS staff noted that the public sector was requiring a business plan, a staffing plan, and a preliminary design review document as part of the SOS. These items would require LMFS staff to spend significant time and resources to develop these products for which LMFS was not guaranteed to be reimbursed. NYSDOT legal staff noted that they needed an SOS in order to define what was going to be delivered from the prime contractor and for what they would be paying. The degree to which the SOS should be developed was never resolved in negotiations.

In light of this disagreement, public sector staff suggested that in future ITS projects, it may be worth exploring the creation of a “stipend” which would be available for private sector firms to do some development work before a final choice is made. This would provide funds to the private sector firm which would otherwise pay for development of items such as an SOS from their overhead. Such a “stipend” would allow for a detailed SOS to be developed and then included in proposals and would allow U.S. DOT to ensure that all significant project requirements are defined and in place before full federal funding is approved. The stipend might also serve as an incentive for private firms to partner with the public sector by reducing some of the up-front risk and investment involved in a new arena such as ITS.

SOLUTION 5: THERE IS A NEED FOR GUIDANCE THAT PROVIDES EXPLICIT INTERPRETATION OF FEDERAL REGULATIONS WITH REGARD TO ISSUES SUCH AS MATCH AND INTELLECTUAL PROPERTY RIGHTS

While NYSDOT and TRANSCOM staff have used significant federal ITS funding over the years and have satisfied previous match requirements, staff from these agencies involved in the NY/NJ/CT MDI suggested that what is eligible as match still needs to be specified with more clarity by the Federal Government. Public sector participants noted that perhaps there is a need to tailor match requirements to U.S. DOT projects. Match means different things to different

branches of government and to the private sector firms accustomed to working with those branches. This led to problems in interpreting match between the public and private sectors in the NY/NJ/CT MDI. Both private and public sector participants suggested that guidelines on match eligibility include the types of non-cash contributions that will be accepted as a match and a process to establish the value of products provided by the project participants.

SOLUTION 6: THERE IS A CONTINUING NEED FOR EDUCATIONAL OUTREACH TO STATE DOTs
INCLUDING AN EMPHASIS ON A NEW ORIENTATION TOWARD INFORMATION SYSTEMS
DESIGN

The notion of partnering continues to present a challenge to public and private agencies. Overcoming the traditional orientation toward a customer-vendor relationship will require new approaches to contracting. Partnering in ITS projects presents even more of a challenge because the pace of technological change and the lack of a fully developed marketplace for ITS products and services creates greater uncertainty than with traditional construction-oriented projects. As state and local agencies attempt to embrace ITS and implement projects, the traditional ways of doing business will continually need to be changed to accommodate these new relationships.

A number of participants in the NY/NJ/CT MDI suggested that the U.S. DOT's educational outreach to state DOTs should continue to include a new orientation toward information systems designs versus classical bridge building. Private sector participants cited these issues as stumbling blocks in negotiations as the private sector looked at the project as a "design-build" while the public sector approached it more in the traditional "deliverable" project manner. They cited the need to continue to educate public agencies on the meaning of public/private partnerships and issues regarding shared risk and return, profit, intellectual property rights, and data ownership. Public sector staff also acknowledged the need for educational outreach to state and local public sector agencies to assist agency staff in implementing ITS.

5. RECOMMENDATIONS AND CONCLUSIONS

The purpose of this study of the NY/NJ/CT MDI was to assess the primary issues that led to the inability of LMFS, the NYSDOT and TRANSCOM to execute a contract. This chapter presents the study team's conclusions regarding these issues. In so doing, it was hoped that both public and private sector members of the ITS community would be able to learn from this experience as they work towards building partnerships to implement ITS projects. With that goal in mind, this chapter also includes a comparison of how other areas implementing ITS projects have addressed similar issues, provides the study team's recommendations for improving the ITS partnering process, and assesses whether the factors in the NY/NJ/CT MDI were new or old issues. Many of these conclusions reflect the critical issues identified by private and public sector participants in Chapter 3, Contributing Factors. The recommendations made also reflect a number of the lessons learned and possible solutions offered by participants in Chapter 4, Observations from the Participants. Conclusions and recommendations are presented in four categories:

- *Key Issues*

The study team's summary of ten key issues contributing to the inability of the public and private sector to execute a contract.

- *Comparative Observations*

An examination of how other MDI sites and agencies involved with ITS throughout the country have dealt with the key issues identified by the study team.

- *Recommendations*

Recommendations drawn from the key issues and comparisons with other areas focusing on developing successful public-private partnerships.

- *Conclusions*

An assessment of progress in implementing ITS through a comparison between key issues and recommendations identified in this report and the issues, findings, lessons learned, and recommendations contained in the *IVHS Institutional Issues and Case Studies, Analysis and Lessons Learned* report (SAIC, 1994) and the *Analysis of ITS Operational Tests, Findings and Recommendations* report (Volpe Center, 1995).

5.1 KEY ISSUES

Participants in the NY/NJ/CT MDI project identified numerous organizational, financial, and procedural and regulatory factors that contributed to the inability of the parties to reach contractual agreement. However, the level of importance attributed to each factor varied according to the interviewee's perspective and organizational bias. In fact, factors identified by some participants as being important were sometimes considered of little importance to their counterparts or even to members from the same sector. After interviewing a majority of the public and private sector participants in the project, the study team identified a number of key issues that were significant stumbling blocks during negotiations. While there were other factors,

the 11 issues summarized in the table below proved to be the major elements in the breakdown in negotiations between the public and private sector participants.

KEY ISSUES
☐ <i>Establishing a partnering arrangement was new to the parties</i> ☐ <i>The parties entered the process with cultural biases</i> ☐ <i>The proposal lacked significant detail</i> ☐ <i>The parties had to accommodate a reduction in available funding</i> ☐ <i>Contractual requirements did not encourage partnering</i> ☐ <i>Institutional structures created communication problems</i> ☐ <i>Partnering arrangements require non-traditional procurement mechanisms</i> ☐ <i>Subcontractors were not included in the negotiations process</i> ☐ <i>The participants were uncertain what constituted an eligible match</i> ☐ <i>The basis on which to determine revenue sharing was not established</i> ☐ <i>The market value of personalized traveler information systems has not been determined</i>

ISSUE 1: ESTABLISHING A PARTNERING ARRANGEMENT WAS NEW TO THE PARTIES

The fact that the public and private sector participants had not worked together previously affected the project. Whenever a new partnering arrangement is started, it takes time to develop mutual appreciation and understanding of the concerns of the other parties. Also, participants need time to develop a trusting relationship and strong lines of communications. A number of hurdles identified by participants confirmed that there was a lack of open sharing of information and trust between the parties which was an obstacle to forming a true partnership. In order to deal with the uncertainties that were inherent in the MDI project, parties would need to trust one another and willingly share risks and rewards. Since that did not occur, the parties were unable to reach an agreement on many outstanding issues.

ISSUE 2: THE PARTIES ENTERED THE PROCESS WITH CULTURAL BIASES

All parties entered into the relationship with cultural biases. Based on their previous experience, the parties had differing expectations concerning the contracting mechanisms, flexibility of contract budgets, the degree of specificity that should be included in contract documents, how to deal with risk and uncertainty, and the sharing of information to support proposed costs and activities. These biases created hurdles to achieving a timely agreement on the terms and conditions and the scope of services.

ISSUE 3: THE PROPOSAL LACKED SIGNIFICANT DETAIL

Several participants mentioned that the lack of specificity in the proposal submitted to the U.S. DOT later caused problems. Several interviewees noted that the development of proposals is “grantsmanship.” Proposers put their best foot forward and decide to “iron out” the details at a later date. In the case of the NY/NJ/CT MDI proposal, the public sector’s vision for the outcome of the MDI project and the private sector’s business objectives were not clearly defined. It was during the negotiations process that the differing visions and objectives become quite conspicuous and came into conflict with one another.

ISSUE 4: THE PARTIES HAD TO ACCOMMODATE A REDUCTION IN AVAILABLE FUNDING

The U.S. DOT requested all four MDI sites to reduce their budgets by approximately 15 percent. In the NY/NJ/CT MDI, the impact of the budget reduction was exacerbated by the withdrawal of one of the original private sector participants. Not only did this firm’s withdrawal reduce available “hard” match by \$200,000, but it also meant that other funds available to the project would have to be used to duplicate software that was to be provided by this firm rather than be used to expand the existing OTIS. All parties felt that they were still on the line to deliver a highly functional system but with substantially fewer resources. In particular, LMFS was asked to reduce the cost of developing the PTCI system from \$6.4 million to \$4 million. This raised issues regarding the risk that each sector was willing to assume to provide these products and services, and ultimately led to disagreements over how this would be accomplished and who would be responsible.

ISSUE 5: CONTRACTUAL REQUIREMENTS DID NOT ENCOURAGE PARTNERING

Traditionally, relationships between the public and private sector have been on a contractual, fee-for-service basis. While the development of ITS programs and projects have called for new forms of public-private partnering, a contractual agreement is still a necessity in order to define terms and conditions for items such as payment, project O&M, and product acceptance and testing. However, this contractual relationship is often difficult to reconcile with the idea of a partnership. In fact, many of the private and public sector participants involved in the NY/NJ/CT MDI noted that it will continue to be a challenge to form a true partnership when contractual necessities reinforce traditional relationships between contractors and contracting agencies. In the end, both private and public sector parties focused on traditional contractual concerns rather than developing a partnering arrangement. The parties could not get beyond this contracting approach to form a viable partnership.

ISSUE 6: INSTITUTIONAL STRUCTURES CREATED COMMUNICATION PROBLEMS

As an agency, TRANSCOM reflects the unique multi-state, multi-agency nature of the NY/NJ/CT metropolitan area. Its 14 member agencies are all actively involved in the area’s transportation-related activities. As the lead public agency in the NY/NJ/CT MDI, TRANSCOM

needed to include all their member agencies. Maintaining communications among these members was time consuming. To address this issue, TRANSCOM's TechOps Committee appointed representatives of five agencies to represent TRANSCOM in the negotiations with LMFS. The TechOps Committee appointed a smaller three-person team when intense negotiations began. The lack of a single point of contact delayed negotiations and created confusion for the private sector regarding who had the authority to make a final agreement for the public sector. The division of lead agency responsibility with TRANSCOM serving as the lead operational agency and NYSDOT serving as the lead contracting agency added to some of these difficulties.

The institutional structure of the private sector also caused problems. Several times throughout the negotiations process, the key LMFS managerial and technical personnel assigned to the MDI changed, sometimes in response to a restructuring within the organization. Also, because of responsibilities to other customers and the fact that LMFS staff were working "at risk," LMFS personnel were not assigned full time to the NY/NJ/CT MDI during the negotiations. During the summer of 1997, only the principal negotiator was participating in the negotiations and could only dedicate 50% of his time to the MDI. The change of personnel meant that the LMFS vision for the project sometimes changed; the lack of full-time staff dedicated to the project meant a delay in the public sector team receiving responses to requests for changes in the SOS.

ISSUE 7: PARTNERING ARRANGEMENTS REQUIRE NON-TRADITIONAL PROCUREMENT MECHANISMS

The MDI project is a systems development project and, as such, required a larger degree of flexibility than deliverable-type projects typically advanced by state DOTs. Initially, the contracting process used by the NYSDOT focused on deliverable-type oriented projects and did not contain this flexibility. Time was spent trying to adjust the NYSDOT process to accommodate more uncertainty and flexibility. In the end, however, the parties still could not agree as to the level of detail and the items that should be included in the contract.

ISSUE 8: SUBCONTRACTORS WERE NOT INCLUDED IN THE NEGOTIATIONS PROCESS

ITS projects also require non-traditional negotiating procedures. In previous contracting situations, both the NYSDOT and LMFS teams used a "contracting agency to prime contractor" approach, leaving the responsibility of coordinating the subcontractors to the prime contractor. This approach was not beneficial to the NY/NJ/CT MDI negotiations. The lack of open communication with subcontractors and, in turn, their lack of involvement in the negotiations process, created confusion as to the roles of these participants and caused delays in providing answers to questions posed by the public sector team related to subcontractor responsibilities and activities. It also resulted in a lack of dialogue on possible alternative solutions to issues.

ISSUE 9: THE PARTICIPANTS WERE UNCERTAIN WHAT CONSTITUTED AN ELIGIBLE MATCH

Throughout the negotiations process, the participants struggled with the concept of matching funds. The U.S. DOT requirements differed from the DoD requirements with which LMFS staff was familiar. Also, after some proposed match was deemed unacceptable, the MDI participants, particularly the private sector, had difficulty identifying new funding sources. The loss of an original participant added a heavier burden of matching the MDI funds on the remaining participants. These fund matching issues also led to disagreement over the amount of risk being taken by the participants and the ownership of equipment purchased with private sector funds being used as “hard” match.

ISSUE 10: THE BASIS ON WHICH TO DETERMINE REVENUE SHARING WAS NOT ESTABLISHED

The market for personalized traveler information services is yet to be established. The proposed revenues from potential subscribers to the system proposed for the NY/NJ/CT metropolitan area could not be accurately estimated. Therefore, given these uncertainties, negotiating revenue-sharing agreements proved to be an arduous task. Each sector had different ideas regarding an equitable split of revenues based on either O&M costs, provision of match, or initial investment of project capital. The debate on revenue sharing also created a significant disagreement on whether revenues should cover O&M costs incurred by TRANSCOM that were not directly related to the MDI.

ISSUE 11: THE MARKET VALUE OF PERSONALIZED TRAVELER INFORMATION SYSTEMS HAS NOT BEEN DETERMINED

Because such systems are not in widespread use, the market value of the personalized traveler information system proposed for the NY/NJ/CT MDI site could not be determined. As approaches to developing the software changed, estimating an appropriate value for the software continued to be a difficult task and led to disagreements between the public and private sectors as to the value of a custom software package or a software license.

The original MDI proposal included the development of a customized traveler information software package that would provide traveler information on a subscription basis to paying customers and would be owned by the public sector. LMFS proposed to develop this PTCI service for \$6.4 million. To accommodate the reduction in funding, LMFS was asked to reduce this cost to \$4 million without being told how the functionality should change.

Later, the private sector partners proposed development of a proprietary product that would provide greater functionality and that would be licensed to the public sector. LMFS proposed a license fee of \$3 million; the public sector team countered with a \$1 million figure, the maximum license fee that any agency had previously paid for a software license. Although the parties eventually settled on a \$2.375 million license fee, the basis for this decision is unclear.

5.2 COMPARATIVE OBSERVATIONS

The U.S. DOT awarded MDI funding to four metropolitan areas in October 1996: the NY/NJ/CT metropolitan area, San Antonio, Seattle, and Phoenix. Each of these areas have had to deal with the challenges of forming new public-private partnerships to implement their MDI projects and have had to deal with issues similar to those that occurred in the NY/NJ/CT MDI. However, in the other three selected sites, the project participants were able to reach a contractual agreement with the original private sector participants to move forward with the project. In other regions of the country and in the NY/NJ/CT metropolitan area, ITS projects have also gone forward with public-private partnering arrangements. Some of these include the private sector participants from the NY/NJ/CT MDI proposal, such as LMFS in Minnesota and SRS in Washington, D.C., and Cincinnati.

While there is not yet a definitive model for public-private partnering in ITS, many lessons can be learned by observing what has been successful in other efforts to implement ITS around the country. Volpe Center staff have conducted reviews of the three other MDI sites and had been involved in assessing institutional and legal impediments at ITS FOT sites throughout the country. The results of these efforts provided valuable insight and a basis for comparisons in a into how other areas dealt with issues that proved to be stumbling blocks in the NY/NJ/CT MDI which are summarized in the table below.

COMPARATIVE OBSERVATIONS	
☐	<i>Public sector experience in public-private partnering arrangements was important in dealing with project uncertainties and building trust</i>
☐	<i>The roles of the public and private sectors were more traditional at other sites</i>
☐	<i>Authority to make commitments was granted to a single point of contract</i>
☐	<i>Subcontractor involvement in negotiations was greater at other sites</i>
☐	<i>Both public and private sectors provided project matching funds</i>
☐	<i>Public sector staff are more heavily involved in the long-term operations and maintenance of the project components at other sites</i>

COMPARISON 1: DEGREE OF EXPERIENCE

In many areas in which several ITS projects have been or are being deployed, public sector staff have been involved previously in public-private partnering arrangements. In areas where the participants had worked together earlier and then entered a new project together, the participants built on the trusting relationship that was established to facilitate progress in the project. In areas where the public sector participants had worked with some private sector firms and entered into a new arrangement with a new set of firms, the participants applied the experience that they gained from the previous work to the new project.

Also in other MDI and ITS deployment sites, through previous experience, the public sector has learned to accept the uncertainty involved in system design and development projects and to be flexible. To accommodate the ambiguity in ITS projects, they developed contracting mechanisms which allow for changing functionality and the shifting of project resources among tasks.

During the FOTs and earlier deployments, however, these staffs struggled with the some of the same issues as did the NY/NJ/CT team. They learned that it takes time to develop mutual trust, to appreciate the concerns and cultures of the other participants, and to work out contractual requirements. The NY/NJ/CT MDI parties lacked experience in partnering with one another and, therefore, had not developed a trusting relationship beforehand. Also, because the NYSDOT had not previously entered into an ITS partnering arrangement and did not have a suitable procurement device, the NYSDOT contracting mechanism had to be modified to accommodate this new type of project.

COMPARISON 2: ROLES OF THE PUBLIC AND PRIVATE SECTORS

At other three MDI sites, the public sector has assumed a more traditional role in providing the physical infrastructure and traffic and transit information database, while leaving the development of a market for the sale of the traveler information products and personalized services, and the resulting revenues, in the hands of the private sector. At these sites, the representatives of the public agencies also wrestled with the issues of revenue sharing, selling data, and equipment ownership. They decided to postpone the sharing of revenues and charging for data until the market is better defined. They also are permitting the ISPs to sell data provided by the public sector and enhanced by the ISP. In other ITS projects, the private sector ISPs have typically retained ownership of the equipment purchased with their capital unless a purchase agreement had been developed between the public and private sector or the public sector has provided part of the funds to purchase the equipment.

In the NY/NJ/CT MDI, the roles of the two sectors were commingled. Although the private sector parties would create the information dissemination systems, both sectors would participate in the provision of the traveler information, both the free and the personalized services. This led the participants to explore sharing revenues as soon as the systems were operational. The public sector retained the right to sell data, both basic and enhanced, and would allow ISPs to sell the data, with a share of the revenues going back to the public sector. Also, the public sector participants assumed that the public sector would own the TIC equipment after the five-year MDI period, while the private sector participants assumed that they would maintain ownership.

COMPARISON 3: AUTHORITY TO MAKE COMMITMENTS

In several areas, the program manager has been granted unshared authority to negotiate for the public sector. While the program manager will consult with other public sector participants, the program manager is the single point of contact who is empowered to make decisions for the public sector during negotiations. Those decisions are then supported by the other participants

and upper management. In the NY/NJ/CT MDI site, the public sector had a hierarchy of negotiation teams and approval levels, and changes in the principal point of contact occurred at LMFS.

COMPARISON 4: INVOLVEMENT OF SUBCONTRACTORS

Open communication is essential for successful partnering. This includes communications between the prime contractor and the subcontractors and between all members of the public and private sector participants. In other areas, subcontractors have participated in negotiations and have been able to address questions or concerns as they arose. They have worked as a partner with the prime contractor and the public sector agencies to develop scopes of services and contracts. In the NY/NJ/CT MDI, subcontractors were not part of the negotiating process nor were they kept informed of the proceedings by the prime contractor.

COMPARISON 5: PROVISION OF MATCHING FUNDS

At the other MDI sites and in other areas, the public sector is providing part of the “hard” matching funds. In the NY/NJ/CT MDI, the provision of “hard” match was entirely the responsibility of the private sector.

COMPARISON 6: LONG-TERM OPERATIONS AND MAINTENANCE

The operations and management of the MDI project for the five-year period is a Federal requirement and is a key element of the program. At other MDI sites, public agency staff is involved in the O&M of the major MDI components and will be operating the MDI equipment. If the agencies do not have the resources to adequately maintain the hardware and software, they will contract with the private sector, but still retain their responsibility for the maintenance.

In the NY/NJ/CT MDI, the project was defined such that the public sector staffs would continue to maintain the regional architecture and other traveler information components that were already in place prior to the MDI and that would supply data for the MDI. They looked to the private sector, however, to provide the O&M for the MDI components, such as the basic TIC and the PTCI system.

5.3 RECOMMENDATIONS

While the purpose of the study of the NY/NJ/CT MDI was not focused on developing best practices, there are many lessons that can be learned from the knowledge gained through the study. By examining the issues that arose in the NY/NJ/CT metropolitan area and contrasting those issues with the experience of other areas in dealing with similar issues, the study team was able to develop a number of general recommendations for facilitating the deployment of ITS which are listed in the table below.

RECOMMENDATIONS

- ☐ *Develop a regional vision for ITS*
- ☐ *Facilitate the initiation of public-private partnering arrangements*
- ☐ *Provide incentives for participating*
- ☐ *Adopt a partnering-oriented approach*
- ☐ *Acknowledge uncertainties in the market for ITS products and services*
- ☐ *Produce guidelines that explicitly outline U.S. DOT fund matching requirements*
- ☐ *Appoint a single point of contact at the project level*

RECOMMENDATION 1: DEVELOP A REGIONAL VISION FOR ITS

Projects have the greatest chance for success when they are part of a regional vision. A regional vision should consider several facets:

- Overall goal for the region
- Expected outcomes
- Time frame and milestones
- Functional and organizational responsibilities.

Such a vision will also help the representatives of both sectors determine the most appropriate role for them in the region. This vision also should recognize explicitly the differences in the underlying missions of private and public partners. This recognition should enhance a partnering arrangement as each sector clearly defines what they hope to realize through the project and how that is a natural reflection of their mission.

RECOMMENDATION 2: FACILITATE THE INITIATION OF PUBLIC-PRIVATE PARTNERING ARRANGEMENTS

New relationships and partnerships take time to develop. If a project involves a partnering arrangement, the funding agencies should sponsor retreats, seminars, or other methods of facilitation to develop the details of the partnership. Several topics should be addressed: roles and responsibilities of the participants, differences in the cultures of the public and private sectors, contracting procedures, procurement requirements, matching criteria, assignment of intellectual property rights, and project management and coordination. This approach will decrease the time required to build trust, clear communications, and mutual understandings.

RECOMMENDATION 3: PROVIDE INCENTIVES FOR PARTICIPATING

All potential participants must be shown the benefits of being involved in the project. Public sector officials must be shown that the expenditure of their limited funds will provide tangible improvements to their operations and serve their constituency better. They also must be convinced that working to achieve a regional goal will improve the transportation system at large, which in turn will provide them benefits. Private sector managers must be convinced that participation in the project will advance their business objectives. In all cases, the benefits received should be proportional to the resources expended and to the risk undertaken, especially in the areas of revenue sharing, the assignment of intellectual property rights, and the ownership and use of data.

Institutional and legal constraints may discourage private sector participation. In particular, private sector firms may work with the public sector to develop proposals “free of charge,” but are not guaranteed additional work if the proposal was approved. Additional work has to be competitively bid. Therefore, private firms run the risk of expending resources without the possibility of any reimbursement. Policies and procedures should be identified that will provide funding to the private sector during the proposal development stage and that will allow partnering arrangements developed at the proposal stage to be continued in the design and development stages after a proposal is accepted.

RECOMMENDATION 4: ADOPT A PARTNERING-ORIENTED APPROACH

A partnering-oriented approach is required of both private and public sectors in establishing successful partnerships. This means that each sector seeks to understand and, as appropriate, adjust their ways of doing business in explicit recognition of the other partner’s traditional culture. Ideally, this will result in both the public and private sector participants compromising to develop a way of doing business that best fits the partnership and the project.

In this approach, private and public participants need to adhere to their basic missions and acknowledge what each party does best. Each participants play a role in the project based on their strengths and those roles should be clearly defined and mutually accepted.

This approach also includes respecting project deadlines and budgets. In doing so, participants create an atmosphere where professionalism is the expected norm. As such, professionals are responsive to and appreciative of the demands and concerns of their co-professionals.

RECOMMENDATION 5: ACKNOWLEDGE UNCERTAINTIES IN THE MARKET FOR ITS PRODUCTS AND SERVICES

Recognizing that the market for ITS products, services and data has yet to be firmly established, private and public partners need to acknowledge the uncertain nature of ITS project-generated revenues and must structure their revenue-sharing arrangements and project assumptions to reflect those uncertainties.

RECOMMENDATION 6: PRODUCE GUIDELINES THAT EXPLICITLY OUTLINE U.S. DOT FUND MATCHING REQUIREMENTS

As parties enter into potential public-private ventures, they need to be aware of the requirements to match Federal transportation funds. They need accurate information to ensure that the products and services they are offering will be accepted as “hard” match and on how to calculate the value of these items. This will eliminate possible financial issues if proposed matching is not acceptable to the federal funding agency. This information will also help private sector firms understand the differences between matching transportation funds and matching funds from other agencies, especially the Department of Defense.

RECOMMENDATION 7: APPOINT A SINGLE POINT OF CONTACT AT THE PROJECT LEVEL

The establishment of a single point of contact, often the project manager, for both the private and public partners is essential in establishing clear lines of communication and authority for decision-making.

5.4 CONCLUSIONS

Several studies have been conducted to assess the effects of non-technical barriers to the deployment of ITS. Two products from these studies, the *IVHS Institutional Issues and Case Studies, Analysis and Lessons Learned* report (SAIC, 1994) and the *Analysis of ITS Operational Tests, Findings and Recommendations* report (Volpe Center, 1995), focused on various ITS field operational tests (FOTs) throughout the country in an attempt to identify common impediments to successful ITS partnering and ways to overcome those impediments. In an effort to assess whether the issues in the NY/NJ/CT MDI were common recurring issues in partnering to deploy ITS or new and uncommon issues, the study team compared the Key Issues and the Recommendations contained in this report to the Issues, Findings, and Strategies contained in the *Analysis and Lessons Learned* report and the Institutional Issues, Lessons Learned, and Recommendations contained in the *Findings and Recommendations* report.

5.4.1 Recurring Themes

Many of the issues and recommendations identified in the study of the NY/NJ/CT MDI reflect findings contained in the *Analysis and Lessons Learned* and the *Findings and Recommendations* reports. This suggests that certain recurring issues continue to present a problem in ITS partnering endeavors. All but one of the Key Issues identified in this report are similar to the Issues identified by FOT participants. The problems of establishing new relationships, overcoming cultural biases, and needing time to develop a trusting relationship were identified in both FOT reports. In fact, the *Analysis and Lessons Learned* report specifically stated that start-up processes are unnecessarily problem prone. Both reports also highlighted the effects that ill-defined goals, roles, and responsibilities have on the deployment of ITS. In addition, both reports

acknowledged that the lack of good communications is a detriment to achieving a successful deployment.

In the financial area, the *Analysis and Lessons Learned* report addressed the issues of the difficulty of placing a value on the products provided by private sector participants and the lack of information on the value of ITS products and services in the market place. The *Findings and Recommendations* report noted that match requirements were not always clearly defined or understood and that some FOTs were negatively impacted by funding limitations.

In the procedural area, the *Findings and Recommendations* report stressed that contracting procedures must be open and flexible and addressed the issue of current contracting procedures not being suited to ITS projects. It also noted the issues of partners not being familiar with required contracting procedures and the strain placed on a partnership when one partner becomes a vendor to another.

Several Recommendations listed in this report echo some of the Recommendations and Strategies in the FOT reports. Both reports noted the need for facilitating the initiation of public-private partnering ventures, either through informational material or active facilitation. Both reports also highlighted the need for a full-time project manager, stressing the necessity for a single point of contact.

The *Analysis and Lessons Learned* report stressed the urgency for open communications and frequent discussions to understand the traditional cultures of the other partners. The *Findings and Recommendations* report recommended clearly specifying match requirements and the project details. The *Analysis and Lessons Learned* report goes beyond just the acknowledgment of market uncertainties and listed strategies to overcome this lack of knowledge of the market.

5.4.2 New Challenges

While many issues that arose in the NY/NJ/CT MDI were similar to past experiences of ITS implementors, there were also a number of new and distinct issues which raise new questions for ITS implementors. Defining clear and appropriate roles for each sector may prove to be a difficult task as public sector agencies reconsider their traditional missions in response to calls for re-inventing government and developing public-private partnerships. Traditional roles for the public and private sectors may no longer apply. In some cases, such as TRANSCOM, agencies are taking a more entrepreneurial approach to their operations. ITS participants will need to address whether this approach will come into conflict with private sector goals and objectives and what impact it will have on future partnering efforts.

While intellectual property rights have been discussed in previous reports, the ownership of data and equipment, which is closely intertwined with the issues of changing agency missions, is also a new challenge for ITS partners. As previously noted, financial issues remain a challenge, but they are not the same issues as who should be entitled to revenues generated from ITS projects, how those revenues should be shared, and on what basis. With a fully developed marketplace for ITS products and services not yet in place, estimating the level of revenues that might be generated

will continue to present a challenge as the parties attempt to estimate the value of ITS products and services. As public and private sectors continue to build partnerships to implement ITS, the new issues that arose in the NY/NJ/CT MDI will need to be addressed.

APPENDIX A

ACRONYMS AND ABBREVIATIONS

ATIS	Advanced Traveler Information Systems
CMAQ	Congestion Mitigation and Air Quality Program
CPFF	Cost-Plus-Fixed-Fee
CT	Connecticut
DoD	Department of Defense
EDP	Early Deployment Plan
FFP	Firm-Fixed-Price
FHWA	Federal Highway Administration
FOT	Field Operational Test
FTA	Federal Transit Administration
HQ	Headquarters
INFORM	INformation FOR Motorists
ISP	Independent Service Provider
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITS	Intelligent Transportation Systems
IVHS	Intelligent Vehicle-Highway System
JPO	Joint Program Office
LMFS	Lockheed Martin Federal Systems
MCO	MetroCommute Options
MDI	Model Deployment Initiative
MnDOT	Minnesota Department of Transportation
MOU	Memorandum of Understanding
MPO	Metropolitan Planning Organization
MTA	Metropolitan Transportation Authority
NJ	New Jersey
NJDOT	New Jersey Department of Transportation
NY	New York
NYC Transit	New York City Transit
NYC	New York City
NYCDOT	New York City Department of Transportation
NYSDOT	New York State Department of Transportation
NYSERDA	New York State Energy and Research Development Authority
O&M	Operations and Maintenance
OTIS	On-line Traveler Information Service
PANYNJ	Port Authority of New York and New Jersey
PTCI	Personal Traveler Condition Information System
R&D	Research and Development
RFI	Request for Information
RFP	Request for Participation

SATIN	Service Area Traveler Information Network
SOS	Scope of Service
SRS	SmartRoute Systems
T&C	Terms and Conditions
TechOps	TRANSCOM Technical and Operations Committee
TIC	Traveler Information Center
TRANSCOM	Transportation Operations Coordinating Committee
TRANSMIT	TRANSCOM's System for Managing Incidents and Traffic
TRIPS	Transit Itinerary Planning System
U.S. DOT	United States Department of Transportation
Volpe Center	John A. Volpe National Transportation Systems Center

APPENDIX B

REFERENCES

1. Science Applications International Corporation, *IVHS Institutional Issues and Case Studies, Analysis and Lessons Learned*, DOT-VNTSC-FHWA-94-15, NTIS number: PB 94-186145, Volpe National Transportation Systems Center, prepared for the Federal Highway Administration, Cambridge, Massachusetts, April 1994.
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