

FTA RESEARCH

FEDERAL TRANSIT ADMINISTRATION

UWR/MSAA Demonstration of Coordinated Human-Services Transportation Models Phase II—Phased Implementation

DECEMBER 2012

FTA Report No. 0058
Federal Transit Administration

PREPARED BY
Montachusett Regional Transit Authority



U.S. Department of Transportation
Federal Transit Administration

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PREPARED BY

Bruno Fisher
Dr. Himanshu Bhatnagar
Montachusett Regional Transit Authority

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Federal Transit Administration
Office of Research, Demonstration and Innovation
U.S. Department of Transportation
1200 New Jersey Avenue, SE
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SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liter	L
ft³	cubic feet	0.028	cubic meters	m ³
yd³	cubic yards	0.765	cubic meters	m ³
NOTE: volumes greater than 1000 L shall be shown in m ³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C

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13. ABSTRACT This report presents the results of a 16-month project for system development and design of a model for a Travel Management Coordination Center (TMCC) using ITS capabilities. The system was designed as a tool to facilitate the exchange of knowledge and data, enabling seamless coordination of transportation across geographic regions, programs, funding entities, private/public/non-profit providers, caregivers, and travel coordinators. The efforts put forth in this project involved countless discussions, meetings, research, cardboard modeling, and verification sessions. The entire team worked for almost 16 months and was able to translate a design “vision” into a practical product that can be implemented in multiple locations without difficulty. MART took the most practical and essential elements of that design and developed them into a working portal that met our stakeholders’ needs and provided an expandable platform from which we could continue to develop the entire system as future funding became available. This program provides a platform in which providers and travelers have access to the same system (using the Web) and can achieve more efficient transportation utilization. At the same time, providers can achieve a higher degree of cooperation among themselves by sharing resources and benefits.			
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TABLE OF CONTENTS

1	Executive Summary
3	Section 1: Background
7	Section 2: Approach
10	Section 3: M-ITS Phase II—Project Management
11	Section 4: M-ITS Phase II—“Pre-Deployment” Pilot Projects
19	Section 5: M-ITS Phase II—Alternative Funding Projects
22	Section 6: Lessons Learned
24	Section 7: Findings and Conclusions
25	Appendix: Self-Evaluation Report
30	Glossary

LIST OF FIGURES

13	Figure 4-1:	Client Management Screen
15	Figure 4-2:	M-ITS Web Portal
15	Figure 4-3:	Easter Seals Group
16	Figure 4-4:	Trip Board/Vendor Portal
21	Figure 5-1:	Fare Card System

LIST OF TABLES

10	Table 3-1:	Project Team
17	Table 4-1:	Milestones and Deliverables
18	Table 4-2:	Results of Subprojects
28	Table A1-1:	SWOT Analysis

FOREWORD

The purpose of this final report is to present the results of a 16-month project for the system development of a model for a Travel Management Coordination Center (TMCC) using Intelligent Transportation System (ITS) capabilities. The report includes:

- Summary of the project
- Background information on user needs that motivated our participation in this project, as well as information on MART and the project stakeholders
- Approach to the project
- Results of the work done during the development and design phase
- Lessons learned during the project

This report is intended for all interested readers but includes information particularly relevant to the United We Ride/Mobility Services for All Americans (UWR/MSAA) initiative, federal transportation officials, transit agency representatives, transit information technology staff, and our project stakeholders.

ABSTRACT

MART's Integrated Traveler Services (M-ITS) was the Phase I project designed under the United We Ride/ Mobility Services for All Americans (UWRMSAA) Initiative. The current project is the pre-award phase of the M-ITS model that implements two selected modules (trip booking, trip board) and performs a study of the current on-line billing systems for designing the M-ITS Billing module. The chief findings of this pre-award project were 1) demand for Web-based trip booking and trip selection via a bulletin board to replace coordination via faxes and telephones; 2) difficulties in testing software projects with agencies due to logistics problems such as funding cuts and staff training and losses; and 4) a sophisticated on-line billing system can be built. The Town of Acton's Web-based transportation system and the Easter Seals Special Transit Services shuttle were two successes of coordination efforts. One demonstrated using Web-based scheduling and dispatching to coordinate rides on three vehicles belonging to three agencies, and the other designing a shuttle using a mobility management communication tool. The billing study successfully identified issues and challenges in the Payment Management, On-line Billing, Fare Card/Voucher Management, and Rider Accounting functions. The potential benefits in labor savings are significant, provided the users can be convinced to change.

EXECUTIVE SUMMARY

The Montachusett Area Regional Transit Authority (MART) provides transportation through fixed-route and paratransit operations throughout Fitchburg, Leominster, and Gardner area in north central Massachusetts. MART's extensive brokerage operations allows for brokerage/coordination of human service transportation in four regions (70%) of Massachusetts. MART has had the privilege over the past 16 months to be involved in a project through the United We Ride/ Mobility Services for All Americans (UWR/MSAA) Initiative, sponsored by the U.S. Department of Transportation's Federal Transit Administration (USDOT/FTA). Phase I of this research project was the development and systems design of a model for a Transportation Management Coordination Center (TMCC). We have named our model MART's Integrated Traveler Services (M-ITS). The efforts put forth in this project involved countless discussions, meetings, research, cardboard modeling, and verification sessions.

The overall objective of the MSSA/UWR initiative was to simplify access to transportation services for persons with disabilities, persons with lower incomes, and older adults by establishing a coordinated human service transportation system that provides a simple point of access for consumers and is replicable and scalable. Another objective of this phase was to seek alternative funding options for implementation of the full system. MART and many of its stakeholders, in partnership with the Commonwealth of Massachusetts' Human-Services Transportation Office, have been coordinating transportation services across multiple funding programs, communities, and demographics since 2001. The demography that MART and its partners support covers not only older adults and persons with disabilities, but also children, low-income individuals, and employment seekers.

The UWR phased-implementation grant allowed MART to pursue selected modules of the M-ITS coordinated model design submitted under the Phase I. Three projects were chosen: 1) Web-based call-taking and trip-management software; 2) a Web-based bulletin board system that implemented the Trip Board Portal; and 3) evaluation of the feasibility of implementing a billing system the size and scale of that is proposed in Phase I.

The entire team worked for almost 16 months and was able to translate a design "vision" into a practical product that can be implemented in multiple locations without difficulty. The project was designed to be easily implemented by an entity using mostly off-the-shelf components (with some customization). Care was taken in Phase I to design a system that has six concurrent phases so that it can be implemented in its entirety, provided funding is available for all six phases, in a reasonable amount of time. This is in contrast to a typical sequential phasing, in that, in the past, such projects ran into serious motivational issues. Since the demand for low-cost transportation is increasing rapidly, waiting to complete this project over a period of three to four years would fail to meet the demand challenges.

The key to the M-ITS system is that it is designed to be a repository of knowledge, together with the tools to access that knowledge. However, participation is not conditional, and the information does not become property of the system. M-ITS is not a gatekeeper of coordination but a facilitator of knowledge and data exchange, enabling seamless coordination of transportation across regions, geographies, programs, and government entities, and across private, public, and non-profit providers and caregivers and travel coordinators. M-ITS is an ever-enlarging, all-encompassing, and fluent opportunity for the industry to truly coordinate transportation.

Background

MART's Interactive Traveler System (M-ITS) project was designed as the choice coordinated human-services transportation system to provide three high-level goals:

1. Provide a simple point of access through a travel-management coordination center (TMCC).
2. Simplify transportation services for low-income persons, older adults, and persons with disabilities.
3. Implement a TMCC that can be scaled to add more services and replicated to other regions in the nation.

MART and many of its stakeholders, in partnership with the Commonwealth of Massachusetts' Human-Services Transportation Office (HST), have been coordinating transportation services across multiple funding programs, communities, and demographics since 2001. MART's partners are varied and spread across the entire spectrum of transportation—private, public, for-profit, non-profit, quasi-government, government, volunteer, etc. These partnerships have been in place, and rules of governance have already been cast in the form of Memorandums of Understanding (MOUs), contracts, and other legal documents.

The demography that MART and its partners support covers not only older adults and persons with disabilities, but also children, low-income individuals, and employment seekers.

M-ITS Partnerships

The M-ITS concept was conceived out of a continuous working partnership between HST (established by the Executive Office of Health and Human Services) and the Montachusett Area Regional Transit Authority. HST was originally tasked with reducing the cost of the funded transportation programs of three of its agencies while maintaining service levels by better coordinating transportation across a spectrum of providers.

MART proposed innovative methods to lead the way in coordination, including opening up service delivery to any vendor who is qualified without a pre-set, fixed contract period. If the service providers are cost-effective, they are awarded work; if not, they are not. MART maintains a group of service inspectors who are always on the road inspecting vehicles, drivers, service levels, etc. MART also offers operational and financial support in various forms to its vendors. With its methods, MART has created a community of transportation

providers, seekers, brokers, and funding agencies by using cutting-edge, advanced technologies that enable this community to interact via the Internet.

MART has had an advanced, coordinated transportation system in place for the last six or seven years, that:

- Manages 17 different funding sources and associated regulations
- Manages 71 percent of Massachusetts' brokered human-services transportation
- Has its own fleet of approximately 180 paratransit vehicles
- Has access to approximately 1,200 vehicles through approximately 200 vendors
- Has 230+ users linked to its Web-based coordination and billing system statewide
- Performs automated, Web-based invoicing functions for its approximately 200 vendors
- Has an AVL/MDT system on its Paratransit vehicles

M-ITS Foundation: A Unique Blend of Physical and Technological Infrastructure

MART has an expansive physical and technological infrastructure. MART's physical infrastructure is fully supported by a sophisticated technological infrastructure monitored by a four-person IT staff and a four to five person ITS technology consulting staff.

Additionally, MART's technological infrastructure is very scalable, which has been proven over the last five to six years with an ever-increasing volume of trips, vehicles, and contracts. The system has been able to absorb a multitude of new information and still performs at peak speeds with no degradation in response times. MART's technological infrastructure implements several ITS application transportation packages, such as the Automated Scheduling and Dispatching Application, as well as non-ITS packages, such as the Vendor Portal, the basis for the OpsMgmt and Billing components of M-ITS.

M-ITS Stakeholder Participation

MART

MART was the primary stakeholder for this project.

Kiessling Transit, Inc. (KTI)

KTI is a private provider in southeastern Massachusetts that maintains two facilities, with corporate headquarters in Norfolk, Massachusetts. This fully-equipped maintenance facility is the centralized area for its "fixed-route"

operations. The second facility is located in Braintree, Massachusetts, and is contracted with the Massachusetts Bay Transportation Authority (MBTA) to provide services for the south area RIDE (a “demand-response” service).

Management Transportation Services, Inc. (MTS)

MTS is a provider/operator of paratransit/ADA and brokered trips in the Fitchburg/Leominster area. It also operates fixed-route buses in this region and brokered transportation in Worcester, Boston, and Springfield. MTS is a stakeholder in the project, focusing on the needs of private operators providing services to regional transportation authorities.

Central West Regional Employment Solutions Team

The Central West Regional Employment Solutions Team provides transportation for individuals served by the Massachusetts Department of Developmental Services (DDS) in employment and community-based day programs. It provides transportation among all stakeholders, including individuals, families, service providers, public transit, and other transportation providers and all levels of government.

Easter Seals, NH, RI, ME, VT, NY

Easter Seals’ Special Transit Services is a community transportation provider and advocate experienced in working with underserved populations. It has a proven track record for success in community service, public-private partnerships, and systemic change initiatives and is a community transportation provider in New Hampshire, Vermont, Maine, Rhode Island, and New York.

HB Software Solutions (HBSS)

HBSS is an intelligent transport solutions company. Headquartered in Lowell, Massachusetts, HBSS has provided technology solutions for the public transit industry since 1997 and has been providing technology solutions for MART since 1999. HBSS was selected as the technology consultant for the M-ITS project.

New Hampshire Department of Transportation (NHDOT)

NHDOT promotes transportation excellence in New Hampshire as fundamental to the state's sustainable economic development and land use, enhancing the environment and preserving the unique character and quality of life. The Department provides safe and secure mobility and travel options for all of the state's residents, visitors, and goods movement through a transportation system and services that are well-maintained, efficient, reliable, and provide seamless interstate and intrastate connectivity.

American Training

American Training, Inc./Vanway is a private, not-for-profit organization headquartered in Lawrence, Massachusetts, that acts as a primary vendor of transportation services to residents of 29 northeast Massachusetts communities. The regions serviced by American Training overlap several regional transit authorities. The specific populations currently benefitting from its transportation services are those with disabilities and low incomes.

Town of Acton – MinuteVan

The MinuteVan Dial-A-Ride shuttle is a new service of the Town of Acton. The service runs from 8:00–11:00 AM and 2:15–7:15 PM Monday through Friday. Rides are booked for town residents 24 hours in advance for travel within the community. The service is open to all residents.

Approach

Overview of Phase I— M-ITS Design Phase

Simple Access to Transportation Services and Information Portal

The M-ITS Phase I Transportation Services Portal (TSP) was designed to provide information and allows clients to access transportation services through it. It was designed to be a Web portal, much like Orbitz or eBay, where the service providers can publish their services and the consumers (riders) can use the services by paying for them on-line. It is also similar to SABRE, the airline reservation system, in that it allows “agents” to do the travel planning and booking.

Not Just an Urban Trip Planner

M-ITS TSP was designed to extend the definition of a Trip Planner to include demand-response routes, volunteer services, and brokered transportation. A typical Trip Planner is designed to handle simple “fixed” routes only. Adding these other services increases the complexity of trip planning and requires a new way of thinking—Trip Coordination.

Simple, Unified Customer User Interface

The M-ITS initial user interface was designed to be a simple screen with source/destination/time/travel date information. M-ITS extended the Trip Planner concept to become a universal front-end format, whether it is accessed via a personal computer, personal device assistant (PDA), kiosk, or smartphone. Once a rider was familiar with one mode, he/she could use any other. The M-ITS concept included the unification of screen labels, prompts, and messages across all forms of communication. Therefore, a message that indicated “No itinerary found” would read and sound the same, regardless of the mode of communication. In the M-ITS model design, the unified user interface allowed all levels of users to use the same screen to plan trips for themselves or their clients. The same front-end format displays the multitude of payment options, its contractual restrictions, and various service providers, as well as vehicle location information and schedule information that may be obtained via an Automatic Vehicle Locator or Mobile Data Computer (AVL/MDC) system. The M-ITS system proposed to use Web-based maps (Google, Yahoo etc.) to display vehicle locations within M-ITS. Similarly, vehicle location information could be obtained by landline, cell phones, PDAs, kiosks, etc., by calling the same number.

Simple, Unified Service Provider Interface

The unified user interface design enables the service providers to obtain work, schedule trips, and perform billing transactions using the same provider interface. This allows the service providers—small, large, for-profit, non-profit, private, government, quasi-government—to be part of the transportation network. Service providers can expect the same level of simplicity in accessing the system as a rider and can participate in the coordinated human-services transportation effort, no matter its affiliation or size. A centralized billing system would tie together the planning of and paying for trips, agency billing, and revenue collection for transportation. It would also streamline audit and reporting processes.

Finding Alternative Funding

Following is an explanation of the funding for the M-ITS Project, separated into multiple phases.

Design Phase – 2008–2009

The Design Phase (I) of this project was estimated to cost \$372,000, of which the Federal Transit Administration (FTA) contributed \$298,000; the remainder was funded by MART. This project was designed over a period of 18 months with help from the U.S. Department of Transportation/Volpe staff and consultants.

Implementation Phase – 2009–2010

The Implementation Phase (II) of this project was estimated to cost about \$1,200,000, of which the request to FTA was \$970,000, and the remainder was to be met by MART. FTA chose to offer \$100,000 to fund a “pre-deployment” phase so that MART could arrange for funding from other sources. Since then, the following funding has been provided, or is in the process of being added, to the project:

- \$500,000 was funded by KTI to deploy the vendor management component, including 120 MDTs for KTI. KTI, a vendor stakeholder, arranged to pay through an installment plan with MART. This implementation is completed and in place.
- \$310,000 was funded by MART to deploy the pilot eFareCard as well as a 3rd-Party Swipe-Card component of the project.
- \$25,000 was provided by MART to deploy the Text Messaging Server project.
- \$150,000 was funded by American Training to implement the vendor component of the project, including 30 Mobile Data Terminals (MDTs) for American Training, a vendor in the project.

Not all of the 150 MDTs were included in the original \$1,200,000 budget, and hence, not all of the funding from KTI and American Training meet the requirements. As of 2010, MART was seeking additional funding and applying for various grants under FTA's JARC/New Freedom/Livability programs to fund this project.

Implementation Phase – 2011–2012

- \$135,000 was funded by MART and the Massachusetts Department of Transportation (MassDOT) from the New Freedom program for expansion of the Text My Ride component of the M-ITS project.
- \$2,350,000 was funded by MART and MassDOT from the Veterans Transportation and Community Living Initiative (VTCLI) grant program to expand the “One Call / One Click” (aka M-ITS) technology infrastructure, designed and developed by MART for HST transportation to include veterans' transportation needs.

Operational Phase – 2010–Present

M-ITS operational phase is estimated to cost roughly \$100,000–\$350,000 per year in technical support, continued development, and hosting costs. This funding must be met by contributions from stakeholders as well as a brokerage fee (membership fees + per-transaction fees) from participating vendors/funding sources that use the system, as well as from grants.

Expansion Phase – 2011–Present

NHDOT has joined the M-ITS project as a stakeholder and has selected the M-ITS model as the most suitable model for the improvement of transportation coordination throughout the state. The M-ITS model is intended to be implemented as the statewide model for the use of ITS in coordinated transportation in New Hampshire.

SECTION

3

M-ITS Phase II— Project Management

An important part to approaching a research project is to have the appropriate personnel contributing to the project. Table 3-1 shows the key personnel involved in Phase II.

Table 3-1

Project Team

Key Stakeholder(s) Project Management Team	Role
USDOT–FTA	Project Sponsor
Bruno Fisher, MART	Project Manager reporting to FTA
Bonnie Mahoney, MART	Co-Project Manager, responsible for all documentation and managing of consultants
HBSS Project Team	Consultant company, responsible for development and deployment of deliverables
Himanshu Bhatnagar	Project Lead, oversees all development, integration, and deployment
Divya Bhatnagar	Transportation planner, feasibility study and system testing
Sarah Porter	Executive Assistant, oversees all marketing and stakeholder outreach

M-ITS Phase II— “Pre-Deployment” Pilot Projects

Project Background

The portion of the M-ITS Portal produced in Phase II is a scaled-down version of the entire high-level design created in Phase I. We took the most practical and essential elements of that design and developed them into a working portal that met our stakeholders’ needs and provided an expandable platform from which we could continue to develop the entire system as future funding became available. This program provides a platform where providers and travelers have access to the same system (using the Internet) and can achieve more efficient transportation utilization. At the same time, providers can achieve a higher degree of cooperation among themselves by sharing resources and benefits. For successful implementation of this project, MART is prepared to use the existing ITS infrastructure, which also consists of an MDT/AVL system running on its entire fleet. We also have, as one of our stakeholders, a private transportation provider that has the same technology and is willing to lend it to this project.

Project Overview

Subproject A

Project Description

This subsystem provides Web-based call-taking and trip-management software for coordinating agencies. The M-ITS Client and Trip Management subsystem offers M-ITS users (medical providers, client agents, employers, etc.) the ability to manage clients and book trips right into the systems of local regional transit authorities to be scheduled on to their vehicles. The M-ITS project team intended to work with Easter Seals to expand the Web-based Client and Trip Management software to Easter Seals funding agencies. This would allow the funding agencies to create and manage their own clients and book trips directly into the Easter Seals scheduling system.

The M-ITS project team also intends to work with the Region 2 Fitchburg Office of the Massachusetts DDS, in coordination with C/W REST, to enable DDS to access the Web-based software for the purpose of managing information on behalf of clients for whom DDS is finding employment and to book trips using the Web-based system. These trips may be sent to a specific provider

and will be posted on the Trip Portal (Project B). This M-ITS subsystem will have a centralized database that is run on powerful server hardware and uses an industrial-strength, off-the-shelf relational database management system (i.e., Oracle). This database is the main repository and also the main conduit for different subsystems to communicate with each other. The benefit of this subsystem is that it automates an existing relationship between Easter Seals and its funding agencies and DDS and its providers. Granting coordinating agencies access to Web-based software that allows them to manage their clients' transportation needs results in the ability to transfer those clients' information electronically to their providers. Currently, this is all done using fax and telephone. Using a centralized database will allow for automated reporting of the relationship between the coordinating agencies and the providers that is not possible today.

Project Implementation

Both Easter Seals and C/W REST had to withdraw from their commitment to the pilot projects for Subproject A. In January 2010, both stakeholders received news about funding cuts to their departments that would have implemented the pilot project. While the stakeholders remained involved in the project, the scope for Subproject A changed in March 2010. The M-ITS team approached two potential new stakeholders to participate in Subproject A: the Guild of St. Agnes Daycare and the Town of Acton MinuteVan.

The Guild of St. Agnes is a daycare facility in Fitchburg, Massachusetts, that has a contract with MART for transporting its students to and from home, school, and the daycare. When scheduling trips with MART, the Guild will usually fax details of the trips to MART's dispatch office, where all faxed items are filed in a binder kept in the office. With the use of the M-ITS site, the Guild can schedule these trips and make any necessary changes on-line rather than sending a fax that can potentially be lost. Unfortunately, the Guild ran into staffing challenges in the summer of 2011 and had to abandon this pilot project.

Prior to abandonment, the Guild had been set up with usernames and passwords to use the system and had been trained on client and trip entry. We had several meetings with them and had trained two staff members. In the summer of 2011, new staff were hired and needed to be trained. The administrative staff then decided that they did not want to invest any further administrative time in learning a new way to manage trips and clients due to the turnover rate of their staff.

MinuteVan is a new dial-a-ride service for the Town of Acton that was looking for a Client and Trip Management System. Figure 4-1 shows the Client Management screen from the website. Acton had some difficulties finding an operating company for the new service and was not able to start this pilot project until August 2012. MinuteVan is currently using the Client and Trip Management

components of Subproject A. The Town of Acton is able to use this subsystem as it was designed as part of the M-ITS project; it is also using Reporting, Scheduling, and Dispatching, which are different subsystems connected through the same M-ITS Portal.

Figure 4-1

Client Management Screen

The benefit of this subsystem is that it automates an existing relationship between Acton and its funding agency, the Lowell Regional Transit Authority. Granting coordinating agencies access to Web-based software that allows them to manage their clients and book trips means that the information can be transferred electronically to their providers.

Subproject B

Project Description

A Web-based Bulletin Board technology was proposed to implement the M-ITS Trip Board Portal. This portal is a shared bulletin board on which participating entities can share travel requests and post acceptances of requests. This system is aided by a “chat and messaging” application in which requesters (riders) and suppliers (vendors) of transportation services can meet in a structured environment and conduct business. This subsystem allows coordinating agencies,

HST funding sources, and client advocates the ability to research travel options on behalf of riders they care for, negotiate a rate with the providers, and arrange for transportation.

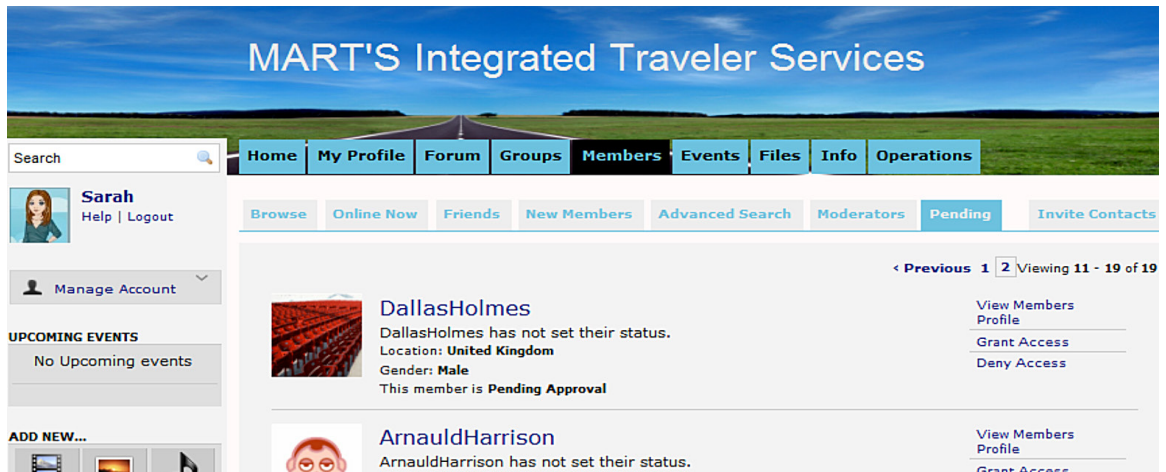
The coordination system allows agents to conduct coordination activities within a structured and regulated Web-based environment to accomplish goals set out in the TMCC vision. The Trip Board Portal allows agents (riders, vendors, and coordinating entities) to post trip-request information, provide fare information, and accept trip requests on the portal. The M-ITS project team was slated to work with Easter Seals to take some of the trips it performs and post them to a group of providers that might be interested in performing the work. The M-ITS project team was also slated to work with DDS to post trips booked using the Web-based system onto the trip board for a group of pre-selected vendors to view and accept or reject.

Project Implementation

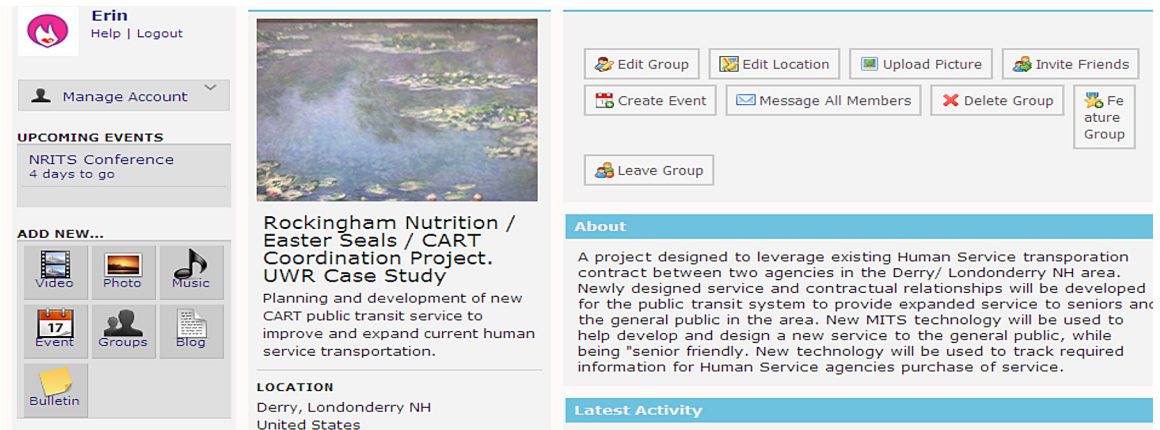
Easter Seals had originally requested to lead the pilot project for the M-ITS Trip-Booking software. Due to a loss of funding, their scope was altered to leading the pilot project that investigated the usability of the M-ITS Portal Website as a coordination tool. The M-ITS Website was designed to incorporate tools commonly found in social networking sites, as coordination requires agencies to interact with each other. Where geography and time prevent these interactions from occurring in person or by phone, the M-ITS Website should help facilitate communication between coordinating agencies. The M-ITS Website was designed to act as a portal for all M-ITS users, and user functionality would be based on user-defined roles.

To that end, Easter Seals used the M-ITS website as an effective communication device for mobility coordination. Easter Seals, along with five other agencies, used the M-ITS website to create a private, closed-loop group which they used to schedule meetings and have discussions. Each user had a unique username and password, and each username and password granted access to certain parts of the M-ITS Portal based on security settings.

Figure 4-2 shows the different tabs to which users would have access. The Operations tab opens up to a subset of tabs that includes Client and Trip Management (Subproject A), Scheduling and Dispatching (not part of the pre-deployment project), and the Trip Board Portal for coordination.

Figure 4-2*M-ITS Web Portal*

Easter Seals and its partners were able to use the website to facilitate the implementation of a fixed-route system for the Derry, New Hampshire, region. The website allowed the group to communicate regularly without having to travel to each other's locations for meetings. Figure 4-3 shows the group that Easter Seals created on the M-ITS Portal.

Figure 4-3*Easter Seals Group*

Since Easter Seals changed its role in the project, KTI was assigned to test the M-ITS Trip Board and Vendor portals. The Trip Board is a shared bulletin board on which participating entities can share travel requests and proposed itineraries. The Trip Board Portal allows agents (riders, vendors, and coordinating entities) to post trip information, research trip options, offer services, monitor service delivery, and settle disputes using web-based chat and bulletin board tools. The

Vendor Portal is a secured page that only vendors can access. From there, they can accept trips that have been posted on the Trip Board and also manage trips they have already accepted. Figure 4 4 outlines the system design for this subproject.

Figure 4-4

Trip Board/Vendor Portal

MART'S Integrated Traveler Services

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Trip ID	Vehicle	Name	Phone	SEGMENT	Return Trip	P/U Time	Appt Time	P/U Address/Entrance	P/U City	Drop Address/Entrance	Drop City	Miles	Funding Source	Group ID	One Way	Comments
T297908	Taxi	ALLEN, AALIYAH	(665)610-5706	OUTBOUND	0000A	1100A		HOME 8, GREENWICH STREET	BELMONT	OLEAN MEDICAL GROUP, 535, MAIN 535, MAIN STREET	OLEAN	27.63	MA		No	AS E(1)
T297909	Taxi	ALLEN, AALIYAH	(665)610-5706	INBOUND	1200P	0000A		OLEAN MEDICAL GROUP, 535, MAIN 535, MAIN STREET	OLEAN	HOME 8, GREENWICH STREET	BELMONT	27.63	MA		No	AS E(1)
T297910	Taxi	BURROWS, WENDY	(716)548-2174	OUTBOUND	0000A	1045A		HOME 11735, DOWD RD	FILLMORE	OLEAN GENERAL HOSPITAL, 515, M 515, MAIN STREET	OLEAN	37.15	MA		No	E(0)
T297911	Taxi	BURROWS, WENDY	(716)548-2174	INBOUND	1215P	0000A		OLEAN GENERAL HOSPITAL, 515, M 515, MAIN STREET	OLEAN	HOME 11735, DOWD RD	FILLMORE	37.15	MA		No	E(0)
T297904	Taxi	LANE, RANDY	(665)593-8493	OUTBOUND	0000A	0145P		HOME 54, WELLSVILLE ST.	BOLIVAR	RUMMEL 20, South Main St.	ANDOVER	21.95	MA		No	E(0)
T297905	Taxi	LANE, RANDY	(665)593-8493	INBOUND	0245P	0000A		RUMMEL 20, SOUTH MAIN ST.	ANDOVER	HOME 54, WELLSVILLE ST.	BOLIVAR	21.94	MA		No	E(0)
T297900	Taxi	MURPHY, ESTHER	(665)808-7178	OUTBOUND	0000A	1000A		HOME 25, MADISON ST. APT 3	WELLSVILLE	WELLSVILLE COUNSELING CENTER, 4220, Bolivar Road	WELLSVILLE	1.40	MA	S1059	Yes	AT E(0)
T297902	Taxi	MURPHY, ESTHER	(665)808-7178	INBOUND	1100A	0000A		WELLSVILLE COUNSELING CENTER, 4220, BOLIVAR ROAD	WELLSVILLE	HOME 25, MADISON ST. APT 3	WELLSVILLE	1.40	MA	S1060	No	AT E(0)
T298836	Taxi	PALMITER, JAYNE	(665)368-3270	OUTBOUND	1030A	0000A		STRONG MEMORIAL HOSPITAL, 601, 601, Elmwood Avenue	ROCHESTER	ALTERNATE 69, GENESEE ST.	ROCHESTER	2.53	MA		Yes	BL E(0) dr. sandra m. i

Subproject C

Project Description

The M-ITS Billing Management design ties together the service delivery and payment aspects of the trip. Through this module, M-ITS users can manage fare payments, collections, billing, and reimbursements, depending on their affiliations. This subsystem ensures that only authorized users (with the appropriate levels of security) will be able to access financial information. This subproject evaluates the feasibility of implementing a billing system the size and scale of which are proposed in Phase I. The proposed M-ITS billing system will provide transit providers, brokers, and funding agencies with on-line billing operations. The user will be capable of accessing a centralized billing system that allows various users to perform billing and reimbursement tasks. The report specifically addresses the issues of inter-agency billing, client self-payment, the handling of vouchers, bus passes, etc., and the handling of a brokered billing system where a funding source pays a broker who, in turn, pays the provider(s).

The study was designed to limit its scope to the current HST billing functions and other mechanisms of payment used by MART for other funding sources, as well as to look at on-line payment mechanisms such as PayPal, Bill Me Later, credit/debit card payments, etc. The M-ITS project team worked with MART, DDS, and HST to prepare this study.

Project Implementation

M-ITS Billing Management is a vital subsystem. Specifically, this system study will guide the design of the following components:

- Payment management
- On-line billing
- Fare card/voucher management
- Rider accounting
- Audit management
- Centralized repository

Each individual entity that is reimbursed through the process of periodic billing can export their data into the (potentially Web-based) centralized billing database. Once the data are in a centralized database, all the billing, invoicing, and re-imburement functions can be performed on that server.

Milestones Achieved

Table 4-1

Milestones and Deliverables

Milestone/Deliverable	Target Date
Stakeholder kickoff meeting	July 14, 2009
Individual project team-requirement meetings	Ongoing 2009–present
Subproject A kick-off	August 1, 2009
Presentation at National Rural ITS Conference	August 23–27, 2009
Subproject B kick-off	September 1, 2009
UWR-MSAA demo partial deployment kick-off meeting	September 10, 2009
Detailed project plan*	September 30, 2009
Procurement plan*	October 31, 2009
Feasibility study kick-off	November 1, 2009
Face-to-face USDOT project review meeting	December 31, 2009
Detailed design document*	March 31, 2010
Subproject A completion – Guild of St. Agnes	July 1, 2010
Subproject A completion – Town of Acton	August 30, 2012
Subproject B completion	October 15, 2010
Feasibility study completion	December 31, 2010
Quarterly FTA progress reports	Quarterly from October 31, 2009, thru present
Self-evaluation report*	June 30, 2010
Final project report*	October 30, 2012

* Deliverable documents due to FTA

Results of Pre-Deployment Projects

Table 4-2

Results of Subprojects

Deliverable	Description	Acceptance Criteria Met
M-ITS Trip Management Subproject A	TRIMS functionality customized and integrated into M-ITS Portal for Web-based trip booking and client management.	<ul style="list-style-type: none"> • Integration complete • All functionality works properly • Stakeholder satisfaction with usability
M-ITS Trip Board Subproject B	Vendor portal Trips page customized and integrated into M-ITS Portal for vendor notification and acceptance of requested trip.	<ul style="list-style-type: none"> • Integration complete • All functionality works properly • Stakeholder satisfaction with usability
M-ITS Portal Subproject B	M-ITS website, which will act as a portal for all M-ITS users. Function availability will be based on user defined roles.	<ul style="list-style-type: none"> • All Web pages completed, integration with M-ITS applications complete and functional • User role functionality working properly • Stakeholder satisfaction with usability
Billing Feasibility Study Subproject C	Study on a centralized billing repository for all state HST brokers and participating M-ITS agencies. Functionality for touch-card fare reconciliation will also be included.	<ul style="list-style-type: none"> • Acceptable amounts of data • Compiled written report • MART review • State review

M-ITS Phase II— Alternative Funding Projects

Alternative funding has been a substantial part of the Phase II Implementation of the UWR/MSAA M-ITS system. These projects are modules of the M-ITS Portal that were not able to be built with the Phase II funding received. However, these projects would not have been possible without the “pre-deployment phase” and should be included as part of the project closure document. Project descriptions for the following alternative funding projects are described in summary below.

Same-Day Scheduling Project

A new Same-Day Scheduling Management system was funded through a New Freedom grant and was designed to enable people with disabilities and of low income who are living in the communities covered by MART, the Franklin Regional Transit Authority (FRTA), and the Worcester Regional Transit Authority (WRTA) to receive same-day rides offered by their respective RTAs. All of the RTAs offer various forms of public transportation services such as fixed-route, ADA/paratransit, and shuttles. They also coordinate transportation for several Council on Aging centers. MART and FRTA also operate brokered transportation for Department Medical Assistance (DMA), DDS, etc. In addition to these forms of transportation, one or more of these agencies offer access to taxis at their intermodal transportation centers.

This project has the following objectives:

1. Make low-cost paratransit options available for same-day service.
2. Allow fixed-route schedules to be integrated into traditional paratransit schedules, so that an automated same-day scheduling algorithm can determine same-day capacity to take new rides.
3. Ensure open access to information through new communication tools such as cell phones, PDAs, interactive voice response (IVR,) etc.
4. Integrate taxi services for single-point access for short- and long-term service when public transportation is not available, and include that in same-day scheduling.
5. Attempt to reduce the cost of taxi service by allowing competitive bidding and pre-negotiated rates.

This project requires the following actions: interface with the existing M-ITS system at MART; establish the necessary business rules to implement such a system; set up the necessary hardware, software, and processes; implement the system by integrating it with MART's existing Web-based software applications; and market the new services. The project is expected to be fully implemented by the summer of 2013.

MOVET – MART's One-Call Center for Veterans

In the summer of 2011, the U.S. Department of Transportation joined with the Departments of Veterans Affairs, Labor, Defense, and Health and Human Services to establish the Veterans Transportation and Community Living Initiative (VTCLI), an initiative that will improve transportation options and mobility for America's veterans, service members, and their families. As announced by the U.S. Secretary of Transportation on December 19, 2011, MART received an FY2011 award allocation of \$2,000,000 under FTA's discretionary Section 5309(b) Veterans Transportation and Community Living Initiative, "an initiative that will improve transportation options and mobility for America's veterans, service members, and their families."

MART, in partnership with several veterans' agencies, Cape Cod Regional Transit Authority (CCRTA), and Metrowest Regional Transit Authority (MwRTA), are building a One-Call/One-Click Travel Management Coordination Center (TMCC) service that will enable veterans and their families in Massachusetts to better understand and coordinate the transportation options available to them and allow them access to lower-cost public transportation options. The available travel options will include public transportation, mass transit, volunteer transportation services, carpools and shared rides, commuter rail, and inter-city private bus services. MART's One-Call Center for Veterans (MOVET) project will provide vital transportation support to potentially 400,000 veterans in Massachusetts and their families when seeking jobs, education, healthcare, and other services. It will bring all of the above-mentioned transportation options together in a single, statewide system that will enable veterans (including family members and advocates) and a veteran agency or veterans' group to either call one phone number or use one website to arrange transportation for employment, education, events, medical appointments, social activities, children's transportation, and other activities.

This project is a veteran-focused expansion of the MSAA/UWR TMCC One-Call Center initiative. The M-ITS Web portal will be expanded to cover all functions required in the MOVET project. The funding secured under an FTA VTCLI grant is being used to procure additional software modules, hardware components, and in-vehicle software and hardware to reach full operating potential and support dedicated availability to veteran agencies. The MOVET project addresses the specific needs of all veterans and their families.

The overarching project goals are to expand MART's One Call/One Click TMCC to include resources for veterans, active service members and military families and promote the use of this resource within the local military community. Through this project, FTA is looking for MART to improve and/or create partnerships between transportation providers and the veterans and military communities. According to FTA and its partners, the successful completion of this project will include completion of an operational one call/one click center; project area and grantees having a better understanding of the transportation needs of veterans, service members and military families; and grantees and partners improving coordination to meet these needs.

Fare Card Project

C/W REST had originally been assigned to test trip-booking software from an agency point of view. During Phase II, the scope was modified so that its partnering agency, DDS, could use this opportunity to use the newly-created MART fare card. Four DDS employees were trained on the fare card software on the M-ITS website, and 11 DDS clients who use MART transportation were selected to use the fare cards rather than the current paper tickets to track payments when taking trips.

Figure 5-1

Fare Card System

HBSS

Bus Pass Pre-Paid Subscription Ticket Home | Trip Review | Usage Review | Logout

Enter a Card Number: 111 Search User: ADMIN Role: System Admin

Card Detail
 Purchase Return/Cancel Renewal
 Issuing Agency: NONE Issued By: Issued Date: 04/05/2010 For Month: MAY 2010 Renewal Date:
 Bus Pass Type: REDUCED Card Value: \$16.00 Coordinator: NONE

Payment Detail
 Mode of Payment: NONE Cash Tended: Change Returned: Check Amount:
 Check Number: Funding Source: SELF

Conditional (Optional)
 Route Specific: Yes No Provider/Operator: NONE Region: NONE
 Comments: Origin: NONE Destination: NONE

Save Edit Cancel Return To List Renewal Reset

Search
 Issue From Date: 3/26/2010 Issue To Date: 4/5/2010
 Renew From Date: Renew To Date: Go

Details of Issued Bus Passes

BusPass Type	Card Number	Issuing Agency	Issued By	Issue Date	Start Date	Expires On	Route#	Activity	Program	Coordinator	Funding Source	Card Value	Mode of Payment	Payment Record	Balance	Comments
REGULAR	150	MART	mctc_admin	03/26/2010	04/01/2010	04/30/2010		Purchase		NONE	SELF	\$20.00	NONE	Detail	\$0.00	
REGULAR	151	MART	mctc_admin	03/26/2010	04/01/2010	04/30/2010		Renewal		NONE	SELF	\$20.00	NONE	Detail	\$0.00	
REGULAR	152	MART	mctc_admin	03/26/2010	04/01/2010	04/30/2010		Purchase		NONE	SELF	\$20.00	NONE	Detail	\$0.00	
REGULAR	153	DDS	mctc_admin	03/26/2010	04/01/2010	04/30/2010		Purchase		NONE	SELF	\$20.00	NONE	Detail	\$0.00	
REGULAR	154	MART	mctc_admin	03/29/2010	04/01/2010	04/30/2010		Purchase		NONE	SELF	\$20.00	NONE	Detail	\$0.00	
REGULAR	155	MART	mctc_admin	03/29/2010	04/01/2010	04/30/2010		Purchase		NONE	SELF	\$20.00	NONE	Detail	\$0.00	

Issued Bus Pass Summary

Lessons Learned

Stakeholder Participation Influences Change

Time, clarity, and experience can bring about great change. During Phase II of the M-ITS project, three stakeholders requested a change of scope: Easter Seals, C/W REST, and KTI.

Easter Seals

The original scope for Easter Seals was to test the trip-booking software from a provider's point of view. Easter Seals would be providing transportation to an area daycare, but before the project could be implemented, this daycare lost its funding. Not wanting to lose its position as a stakeholder, Easter Seals asked if it could change the scope of the project to use the M-ITS Portal as a communication tool for mobility coordination. Once the change of scope was approved, Easter Seals began coordinating meetings with other transit agencies to create new flex routes in areas that were in need of transportation. Easter Seals, along with these other agencies, used the M-ITS Portal as a centralized location for communication. Using the M-ITS Portal, they created a private, group chat board on which they could share ideas with one another, post maps of routes, and coordinate face-to-face meetings. Easter Seals, in conjunction with its local planning commission and local Meals-on-Wheels agency, implemented a new flex route created by coordinating its efforts on the M-ITS website. The flex route was funded through CART, the local public transit agency, with support from the local Meals-on-Wheels agency, and operated by Easter Seals Special Transit Service. The agencies used the M-ITS website to create the basis of a new flex-route system servicing two towns, five days a week, to replace and update existing practices for standing-order trips.

KTI

KTI had initially been assigned a kiosk project. When MART did not receive full funding for the UWR project, the kiosk project had to be canceled. Since Easter Seals was no longer testing the M-ITS Portal from a provider's point of view, this project was now available for another stakeholder. KTI asked to change its scope to testing the usability of the M-ITS Portal from a vendor/provider perspective. KTI provided many suggestions that improved the Trip Board and Vendor Portal pages.

C/W REST

C/W REST had been assigned a project that would have allowed them to use the trip-booking software from an agency point of view. Due to a lack of resources, this scope had to be changed. DDS, who is a partnering agency to C/W REST, was able to use the fare card project for its clients. Four DDS staff members received training so that they could use the fare card system, and 11 DDS clients were selected to use fare cards to track trips that were taken on MART vehicles. This allowed MART to increase integration with the UWR project and also created more funding for Phase II.

Findings and Conclusions

The main findings of the project are as follows:

- Even though several agencies (Easter Seals, C/WREST, Guild of St. Agnes, Town of Acton, KTI) stepped forward to be test sites for software provided, funding cuts and staffing issues derailed the effort required to assist them.
- The main offering in all cases except Acton was “booking rides” on a Web-based system instead of sending faxes.
- The Town of Acton project was more successful in implementing a Web-based trip booking and scheduling/dispatch system to manage three vehicles from three different agencies and coordinating rides among them.
- Though originally not designed, but a side project of using the M-ITS site, M-ITS was used as a mobility management communication tool.
- The billing study successfully identified issues and challenges in the Payment Management, On-line Billing, Fare Card/Voucher Management, and Rider Accounting functions.

Overall, the implementation and testing phase proved to be very challenging even though we were offering free software and services and, except for ESSTS and the Town of Acton, other agencies were not able to maximize the benefits due to logistics issues.

Benefits

While the benefits in labor savings were significant, the biggest challenge in any automation projects is the same: requiring people to change the way they do things. Having so many funding cuts and staffing-related back-outs created a lot of challenges for us. However, the silver lining is the Acton project, where the benefit of this subsystem is that it automates an existing relationship between Acton and its funding agency, the Lowell RTA. Granting coordinating agencies access to Web-based software that allows them to manage their clients and book trips means that the information can be transferred electronically to their providers. The other big benefit was to observe how multiple groups can coordinate and develop new transportation system (ESSTS-Rockingham shuttle) using the communication tools developed in M-ITS.

Self-Evaluation Report

Introduction

This self-evaluation report was prepared as part of the M-ITS project for the phased implementation of a TMCC in December 2010. The initial project funding was provided by a grant from an MSAA and UWR initiative to fund a series of demonstration projects to test the technical and institutional feasibility of an enhanced and coordinated human-services transportation system. The MITS project was divided into two phases: Phase I—TMCC system planning and design and Phase II—TMCC system deployment

The second phase of the M-ITS project was only partially funded. As a result, the scope of deployment was reduced to focus on implementing only the critical, core elements that could be used to secure additional funding to complete the M-ITS TMCC system deployment. MART planned and proposed the M-ITS project to the USDOT, together with a large team of project partners, to support MART's vision to improve the coordination of human-service transportation locally, regionally, and nationally. In that regard, we see this self-evaluation report as a snapshot depicting the current state of affairs, taken during the early stages of the project's deployment. The information and experience gathered during the course of this project will certainly serve as an asset in the continued development of the M-ITS Project.

Evaluation Approach and Methodology

Implementation Goals

To meet the funding requirement for Phase II, we are proposing a scaled-down version of the system proposed in Phase I. By concentrating resources on the critical components of the system, we created the foundation for an enhanced IT solution for human-services transportation that is scalable and replicable. We used the funding to make an immediate impact on the transportation services provided in Massachusetts and to continue the coordination momentum that this project has proliferated in the regions surrounding the state, as well as to lay the groundwork to allow alternative sources of funding, including private and local matches, to be used to implement this project in the future.

Central to the M-ITS system is an overarching Web-based methodology that can allow the M-ITS system to be used anywhere, anytime, by anyone, without the need to modify or purchase a software system. The following components of the system were proposed in Phase I:

1. Web-based trip reservation and booking system
2. Trip Board Portal capable of posting/downloading trips
3. Feasibility study for a centralized billing system

The main project goals were to implement a fully-functional Web portal that can be used for mobility management (chat, forums, discussion groups, etc.), trip booking/client management, and a Trip Board Portal to download/upload trips to a bulletin board. Other main project goals were to generate a feasibility study for the billing system that would support the full implementation of the TMCC design, conduct three pilot projects to implement the components of the TMCC design, and find alternative funding for the non-funded components of the TMCC Phase I design.

Expected Outcomes

The expected outcomes were for MART to work with the project stakeholders using HBSS (the technology partner) to implement the Web portal. In this regard, all stakeholders would have access to the portal. The portal would serve as the technological backbone for all pilot projects and would act as the project website. Also, the stakeholders would generate a billing feasibility study. As additional funding sources are found through existing relationships with stakeholders, more elements of the TMCC would be implemented using this funding.

- 1. Pilot Project 1:** Easter Seals would implement a pilot project for Web-based trip bookings. An independent agency user would use the Web-based trip-booking software through the M-ITS Portal to send trips to the local transportation provider to facilitate transportation from home to the agency for eligible clients.
- 2. Pilot Project 2:** C/W REST would implement a pilot project for the Trip Board Portal. C/W REST would use the website to find alternative transportation options for its clients seeking employment transportation for the central Massachusetts region. C/W REST would manage its clients' use of the Client-Management software provided by the M-ITS Portal and would book trips for its clients using the trip-booking software provided on the M-ITS Portal. These trips would be sent to the Trip Board Portal for participating vendors to download and perform.
- 3. Pilot Project 3:** KTI would implement a pilot project for the Trip Board Portal. KTI and MART would be the qualified vendors who would use the Trip Board Portal to identify transportation requests and perform the posted trips.

Evaluation Methods

The evaluation methods for this project were based on both qualitative and statistical data. The goal was to collect both written project evaluation data

and statistical data using the Web portal. The primary sources used for project evaluation were monthly project reports, stakeholder progress updates, a project deliverables list (updated bi-monthly,) data collected through the Web portal, a project implementation time line, and project management meeting notes.

Data Collection

These evaluation data were collected and evaluated by the core M-ITS project team prior to the creation of the self-evaluation and final report. The list of data collected includes the following:

- Twelve monthly project reports summarizing the status of the primary project and three pilot projects each month. These reports outline monthly goals and explain reasons goals were not met, if applicable.
- Four “stakeholder progress” updates summarizing the status of the projects, specifically for stakeholders not involved in the pilot projects. These reports outline the progress of the project in relation to the overall timelines and were used to redefine long-term project goals, if necessary. These reports also contain information on stakeholder participation levels outside of stakeholders involved in pilot projects.
- Twenty-four bi-monthly status reports updating the project deliverables list. These reports have specific dates and times of stakeholder meetings, pilot project meetings, and details regarding the entire project as it progressed over time.
- Web portal-produced reports that detail the number of new members that were added to the M-ITS project, number of users using the system to book rides and take trips, number of trips booked through the system, number of trips downloaded from the Trip Board Portal to a vendor’s computer, and number of forums and groups created on the M-ITS Website to discuss projects and additional funding sources.
- Project management meeting notes outlining the efforts put forth by the M-ITS project team to secure additional funding resources.

Data Analysis

The M-ITS project team performed a SWOT analysis on the data collected. The SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in a project. It involves specifying the objective of the project and identifying the internal and external factors that are favorable and unfavorable to achieve that objective.

Table A1-1*SWOT Analysis*

Strengths	<ul style="list-style-type: none"> • Implemented all technological components to sustain continued development of project. • Built strong relationships with stakeholders who participated in pilot projects. • Able to successfully identify alternative funding opportunities.
Weaknesses	<ul style="list-style-type: none"> • Not consistent with marketing and outreach, which caused confusion among external partners regarding project status. • Did not maintain strong stakeholder support from those who were not directly involved in pilot projects.
Opportunities	<ul style="list-style-type: none"> • Once an alternative funding source becomes available, in a position to move forward with rest of implementation of TMCC

Results and Conclusions

Results

The results are that the portal achieved the working relationships that were outlined in the expected outcomes. Several alternative funding-source alternatives were evaluated and may come to fruition. The billing feasibility study was completed. The outcomes for the pilot projects are as follows:

- 1. Pilot Project 1** – Easter Seals lost its funding to implement the pilot project in conjunction with the Children’s Nutrition Center. The agency lost funding and closed its doors and was unable to participate in the M-ITS project. Two additional agencies (daycare centers) were approached to replace the Children’s Nutrition Center as the pilot project for Web-based client management and trip booking. These two agencies were not invested stakeholders and did not act in a sufficiently fastidious manner during implementation. As a result, they were not successful pilot agencies.
- 2. Pilot Project 2** – CW/REST implemented a pilot project for the Trip Board Portal. CW/REST used the website to find alternative transportation options for its clients seeking employment transportation for the central Massachusetts Region. CW/REST manages its clients using the Client-Management software provided by the M-ITS Portal and books trips for its clients using the trip booking software provided by the M-ITS Portal. These trips were supposed to be sent to the Trip Board Portal for participating vendors to download and perform but, while using the system, CW/REST lost some funding and no longer had a need for the Trip Board Portal. Instead, it used a fare card managed through the trip booking software to fund transportation for its clients.
- 3. Pilot Project 3** – KTI would implement a pilot project for the Trip Board Portal. MART is the qualified vendor for the Trip Board Portal to identify transportation requests and perform the posted trips. KTI is not actively using the trip board because the trip volume through the portal has not exceeded MART’s capacity to service the trips.

Conclusions

Based on the results and analysis, the M-ITS project was a successful preliminary implementation of the Phase I TMCC design. The two major successes were the full implementation of the technological requirements and the successful identification of alternative funding sources. Where the project was unsuccessful was in securing long-term stakeholders that were committed to fulfilling the proposed TMCC design. Marketing and outreach were the weakest components of this project.

GLOSSARY

ADA	Americans with Disabilities Act
AVL	Automatic Vehicle Location
IT	Information Technology
ITS	Intelligent Transportation Systems
MART	Montachusett Area Regional Transit Authority
MDT/C	Mobile Data Terminal/Computer
M-ITS	MART's Integrated Traveler Services
MSAA	Mobility Services for All Americans
PDA	Personal Device Assistant
TMCC	Transportation Management Coordination Center
TSP	Transportation Services Portal
UWR	United We Ride



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U.S. Department of Transportation
Federal Transit Administration
East Building
1200 New Jersey Avenue, SE
Washington, DC 20590
<http://www.fta.dot.gov/research>