TMC Pooled Fund Study

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NEWSLETTER OF THE TRANSPORTATION MANAGEMENT CENTER (TMC) POOLED FUND STUDY http://tmcpfs.ops.fhwa.dot.gov

What's Inside

How to Join

State transportation agencies interested in joining the TMC Pooled Fund Study can submit funding commitment online at the Transportation Pooled Fund Program web site at: *http://www.pooledfund.org.*

Other agencies should complete and submit the TMC Pooled Fund Study commitment form downloadable at the TMC Pooled Fund Study web site at: *http://tmcpfs.ops.fhwa.dot.gov.*

An Introduction to the Transportation Management Center Pooled Fund Study

The Transportation Management Center (TMC) Pooled Fund Study, founded in 2000, provides an opportunity for transportation agencies to collectively take on issues and challenges that are common among agencies that manage and operate TMCs. The TMC Pooled Fund Study also provides an opportunity to facilitate the interaction, sharing of information, and successful practices with a broader audience to advance and improve upon the current state-of-the-practice related to the management, operation, and performance of TMCs.

The study focuses on issues facing TMCs, transportation management systems (e.g., traffic signal control systems, freeway management systems), and multi-modal TMCs, and brings together regional, State, and local traffic management agencies, in concert with the Federal Highway Administration (FHWA), to:

- Identify human-centered and operational issues;
- Suggest approaches to addressing identified issues;
- Initiate and monitor projects intended to address identified issues;
- Provide guidance and recommendations and disseminate results;
- Provide leadership and coordinate with others with TMC interests; and
- Promote and facilitate technology transfer related to TMC issues nationally.

To build off and leverage investments that the TMC Pooled Fund Study has made in the past four years, the members identified six critical initiatives and a corresponding series of projects that need to be pursued to develop the resources and tools agencies need to address and overcome the challenges they are facing and to improve and advance the current state-of-practice. The six critical initiatives identified by the members are:

- Improving Day-to-Day Operations of TMCs
- Enhancing Business Management of TMCs
- Developing TMCs and Managing Their Evolution
- Developing and Delivering Roadway and Travel Condition Information
- Developing, Training, Hiring, and Contracting for TMC Staff and Services
- Knowledge and Information Sharing

Within these initiatives, the number of actual projects to be pursued will be determined annually based on the resources that are available for new projects. These new projects are expected to vary based on the challenges that TMCs are facing, their evolving needs, and their collective priorities.

Annual Meeting Held in June 2004

The TMC Pooled Fund Study members held an Annual Meeting from June 8 to 10, 2004. 24 TMC practitioners from 19 member agencies met at the Minnesota Department of Transportation's Regional Transportation Management Center (RTMC) in Roseville, Minnesota. The annual meeting opened with a tour to the research labs in the ITS Institute at the University of Minnesota in the morning on June 8. The tour included demonstrations of two research labs. First, the members visited the driving simulator in the HumanFIRST Program. Second, a demonstration of the ITS Lab traffic monitoring center and simulator was given in the ITS Laboratory.

Members convened in the afternoon for the core TMC Pooled Fund Study business. Marthand Nookala, Director of Operations, Safety and Technology, Minnesota Department of Transportation (DOT), welcomed all participants and provided opening remarks. He noted the importance of TMCs in various aspects and the challenges TMCs are facing and acknowledged the accomplishments of the TMC Pooled Fund Study. The agenda for the first day included review of the TMC Pooled Fund Study financial and program status, progress reports and presentations on current TMC Pooled Fund Study projects, and review and discussion of the TMC Pooled Fund Study Communication Plan.

Minnesota DOT's Regional Transportation Management

Annual Meeting Attendees

Day 2 of the annual meeting was dedicated to discussion and selection of new projects to be initiated in 2005. Nine project proposals were developed for consideration and reviewed by the members prior to the annual meeting. At the annual meeting, project proposals were reviewed, revised, prioritized, and selected through an iterative process. Five top-ranked projects were selected to initiate in 2005. Day 2 was concluded with a technical tour of the Minnesota DOT's state-of-the-art RTMC facility.

The activities on Day 3 include a series of presentations related to Minnesota DOT's experience in transportation management. The presentations included the I-394 high occupancy toll (HOT) lane project, the Northwest Passage Transportation Pooled Fund Program, the Twin Cities Ramp Metering Study, and the RTMC software and applications. The meeting was concluded at noon.

The next TMC Pooled Fund Study annual meeting will be held in June or July 2005 in Providence, Rhode Island.

Membership

Membership in the TMC Pooled Fund Study consists of twenty-six public agencies and the FHWA. Agencies may join at anytime during the year by committing funds at a level deemed appropriate by the members. The study has been approved for 100 percent SP&R funding. Any non-commercial agency or organization that is responsible for the management and operation of any portion of the surface transportation system is welcome to join the study. Such agencies and organizations may include cities, counties, toll authorities, turnpike authorities, port authorities, and corridor coalitions.

Current members are the FHWA and the following agencies:

- Arizona DOT
- California DOT
- Connecticut DOT
- DC DOT
- Delaware DOT
- Florida DOT
- Georgia DOT
- I-95 Corridor Coalition
- Illinois DOT
- Indiana DOT
- Kansas DOT
- Michigan DOT
- Minnesota DOT
- Mississippi DOT
- Missouri DOT
- Nebraska Department of Roads
- Nevada DOT
- New Jersey DOT
- New York DOT
- Pennsylvania DOT
- Rhode Island DOT
- Texas DOT
- Utah DOT
- Virginia DOT
- Washington DOT
- Wisconsin DOT

New Projects Selected for 2005

The TMC Pooled Fund Study members reviewed, revised and prioritized nine project proposals based on the prioritized list of needs at this year's annual meeting. Five top-ranked projects were selected to initiate in 2005 based on the funds that are currently available. They are:

Recovery and Redundancy of TMCs

The objective of this project is to scan and synthesize current practices and state of the practices as related to redundancy and recovery of TMCs. This project will also highlight technical issues to considered, lessons learned, and recommended practices on the concepts, methods, and procedures for planning, design, develop and implement recovery plans and redundancy of TMCs.

Integration of TMC and Emergency Management

This project will examine issues and synthesize the state of practices, benefits, and challenges related to the integration of emergency management and TMCs with respect to operational, institutional, technical and procedural aspects.

TMC Clearinghouse Support Services, Phase 2

The purpose of this project is to provide continued and improved support services for the TMC Clearinghouse that is being created in the initial phase of the project. This project will also evaluate the feedback and recommend enhancement from the user and improve the features and functions of the clearinghouse.

Procuring, Managing, and Evaluating the Performance of Contracted TMC Services

The project will develop a technical document that provides guidance and recommended practice to TMC owners and managers to determine their outsourcing needs, activities and the methodologies being utilized to operate and maintain the transportation management systems. This document will also include a compendium of best practices for the outsourcing of TMC maintenance and operations activities and a comparison matrix for benefits of various methodologies that might be applied to functional areas of the total systems.

Statewide, Multi-state and Regional TMC Concept of Operations and Requirements

This project will develop a handbook that provides technical guidance and recommended practices on how to develop and use a concept of operations and requirements throughout the life cycle of a regional, statewide, or multi-state TMC. This project will build off the current TMC Pooled Fund Study project on Developing and Using Concept of Operations in Transportation Management Systems.

Two additional projects also received significant interest at the 2004 annual meeting. Due to funding limitation, these projects remain on the Pooled Fund Study wish list. The TMC Pooled Fund Study is seeking additional participation from other agencies to allow these projects to be funded. The projects on the wish list are:

Requirements and Position Description for TMC Support Staff

This project will build off of information already compiled for operators in a previous TMC Pooled Fund Study effort and fill the need for guidance to transportation operating agencies in developing knowledge, skill, and ability (KSA) requirements and job classifications and descriptions for the TMC maintenance technicians, technology and engineering support, system administrators, and clerical, supervisory, and management personnel.

Development and Delivery of Additional TMC Workshops

The focus of this project is to provide continued and improved support services for the development and delivery of additional workshops beyond the pilot workshop developed in the Phase 1 effort. This Phase 2 project will seek improvement in developing, delivering, and supporting TMC workshops based upon feedback from the audience as well as experience and lessons learned from the pilot workshop and other similar efforts around the country.

Member News - Winners of ITS America TOC/ TMC Award

ITS America's Transportation System Operations and Planning (TSOP) Forum recognized the winners of the Transportation/Traffic Operations Centers (TOCs) or Transportation Management Centers (TMCs) award at the ITS America Annual Meeting in San Antonio, Texas in April 2004. The Minnesota DOT Regional Transportation Management Center (RTMC) and the Rhode Island DOT Transportation Management Center (TMC) are the winners of the 2004 TOC/TMC Recognition Award.

Congratulations to Nick Thompson of Minnesota DOT and Cynthia Levesque of Rhode Island DOT for being selected for this well deserving award and for their dedication, commitment, and for serving as their local champion for advancing the practices of their TMCs.

Feature: Configuration Management for Transportation Management Systems Handbook

Publication Number: FHWA-0P-04-013, EDL# 13885

Configuration Management (CM) describes a series of processes and procedures developed in the information technology community to establish and maintain system integrity. It is an integral part of the systems engineering process. While some of the terms used in CM may be unfamiliar to transportation professionals, the core concepts and practices of CM are not technically complex. Rather, they represent sound practices in developing and maintaining any system.

There are two fundamental purposes of CM – to establish system integrity and to maintain system integrity. The importance of CM in establishing and maintaining a functionally sound transportation management system cannot be overstated. However, CM can consume significant amounts of resources including staff time and money. For this reason, developing a CM program that fits the needs of a particular system is vital to its success. In other words, CM programs are not one-size-fits-all entities.

Many agencies are just now becoming aware of the need for CM. In a CM survey in 2000, it was found that only 27% of signal control systems and 62% of freeway management systems reported using CM at all. In developing an earlier NCHRP synthesis report on the topic NCHRP (Synthesis 294 – Configuration Management in Transportation Management Systems), significant anecdotal information about what happened when agencies did not use CM was collected. In one case the agency was upgrading their central control software, and the new contractor actually had to reverse engineer several protocols for field devices because of a lack of documentation.

The Configuration Management for Transportation Management Systems Handbook provides guidance for transportation professionals who are either (a) seeking to improve change management in a traffic management system or regionally integrated intelligent transportation system by introducing formal CM or (b) using CM currently and require a technical reference to support their activities.

There are many reasons that personnel involved with transportation management systems should be interested in CM. A CM program will ensure that:

- documentation (requirements, design, test, and acceptance documentation) for items is accurate and consistent with the actual physical design of the item.
- an accurate, up-to-date baseline of the system exists, if needed for disaster recovery.
- administration of change decisions are handled with a system-wide perspective in mind.
- requirements are tracked throughout the life cycle through acceptance and operations and maintenance, thereby creating an accurate record of the status of the system.

This 220-page handbook is divided into ten chapters in three key sections:

Section 1 – General Introduction to CM & Transportation Management Systems. This section provides general information describing CM and presents an overview of the current practices in CM and transportation management systems. As such, this section is well suited as an introduction to those new to this area or management personnel. The following chapters form section 1:

- Chapter 1. Introduction
- Chapter 2. Configuration Management and Transportation Management Systems – Current Practices

Section 2 – Technical Guidance – CM & Transportation Management Systems. This section provides detailed information on how to implement CM in transportation management systems. It is intended for a technical audience of individuals who are responsible for implementing a CM program. The following chapters form section 2:

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"With almost 20 years experience in the design, implementation, modification and expansion of our system, the benefits of being quickly able to recover from problems by returning to an earlier working state are enormous. Our system has been very dynamic, and there is always some area where we are working on an improvement or upgrade, while still actively managing traffic."

"As in any large, complex system, CM can provide a constant understanding of the current state of the system….The key factor in CM is having a central repository of information for reference as personnel changes occur over the life of the system. It is also a great aid in maintaining the system when items are replaced for repair. Technicians should have ready access to configuration data when installing or re-installing standard system components."

- Comments obtained from Spring 2000 survey of transportation agencies

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- Chapter 3. Configuration Management Processes
- Chapter 4. Configuration Management Plan
- Chapter 5. Configuration Management Baselines

Section 3 – Guidance for Implementing a CM Program. The purpose of this section is to provide guidance to help transportation professionals implement or improve a CM program to support a transportation management system. This section goes beyond the technical details of CM to consider such issues as resources required to sustain a CM program, tools available to support CM, and so forth. This section provides material appropriate for both technical personnel and management to consider in framing an agency's program. The following chapters form section 3:

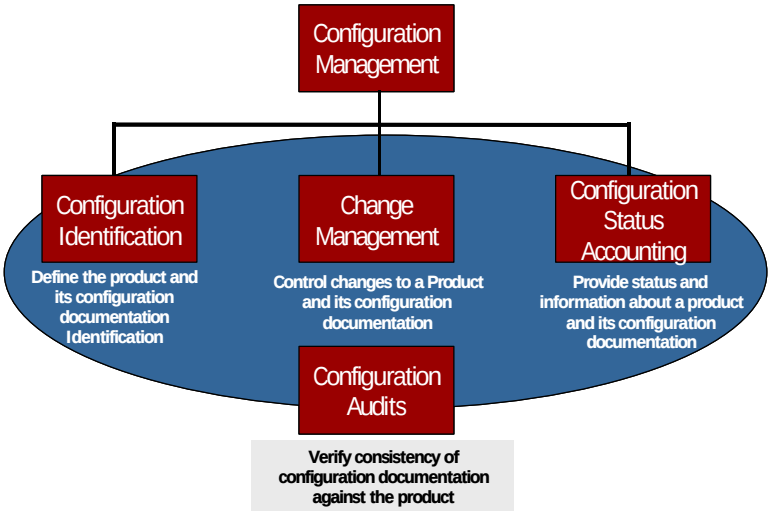
- Chapter 6. Configuration Management Program – Making it Work in Your Agency
- Chapter 7. Configuration Management and the System Life Cycle
- Chapter 8. Configuration Management Tools
- Chapter 9. Resources to Support Configuration Management Programs

Finally, the handbook concludes in chapter 10 with a presentation and discussion of nine guiding principles for CM and transportation management systems.

Transportation professionals and managers will likely use this handbook in several different ways:

- To make them aware of what CM is and why it's important.
- To help guide them in implementing a configuration management process.
- To serve as a resource guide for agencies that have already begun their CM program and want further information.

This handbook, however, is not intended to be a step-by-step blueprint for setting up configuration management system for individual agencies, because CM is not a "one size fits all" process. Instead, it explains the standard and the process, and provides examples of how other people did it.



Configuration Management Guiding Principals

- Identify the context and environment in which CM is to be implemented and develop an appropriate CM Plan accordingly.
- Define procedures describing how each configuration management process will be accomplished.
- Conduct training so that all responsible individuals understand their roles and responsibilities and the procedures for implementing configuration management processes.
- All items are assigned unique identifiers so that one item can be distinguished from other items.
- Configuration documentation defines the functional, performance, and physical attributes of a system.
- A baseline identifies an agreed-to description of the attributes of an item at a point in time and provides a known configuration to which changes are addressed.
- Each change is uniquely identified.
- Consider the technical, support, schedule, and cost impacts of a requested changed before making a judgment as to whether or not it should be approved for implementation and incorporation in the item and its documentation.
- Implement a change in accordance with documented direction approved by the appropriate level of authority.

In addition to developing the Configuration Management handbook, a number of related resources were developed to assist key individuals within agencies gain a better understanding of the need for configuration management programs and their resource requirements. These supporting materials are geared toward different audiences, and can be used by traffic management, ITS, or other staff who are involved with, make decisions that influence, or allocate resources throughout a systems lifecycle. These materials will help these individuals gain an appreciation and support for the need and importance of CM activities and practices. These supporting materials include:

- Configuration Management Fact Sheet
- Configuration Management Primer
- Configuration Management Tri-Fold Brochure
- Configuration Management Technical Presentation

The Configuration Management Handbook and supporting materials are available at the TMC Pooled Fund Study web site at *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=24&new=2* or through the U.S. DOT's Electronic Document Library (EDL) at *http://www.its.dot.gov/itsweb/welcome.htm.*

The Configuration Management handbook will also be used as a primary resource for the forthcoming NHI Course No. 137042, "Configuration Management for Transportation Management Systems." More information about course content and availability will be available soon on the NHI's web site. This 2-day course is will be available in the fall or winter of 2004.

Project Progress Reports

Brief descriptions of the current projects are provided in the following paragraphs. Project progress reports are updated quarterly. An electronic copy of the current quarterly progress report is available on the TMC Pooled Fund Study web site at *http://tmcpfs.ops.fhwa.dot.gov/*.

Coordinated Freeway and Surface Street Operational Plans and Procedures

The objective of this project is to develop a document that provides technical guidance and recommended practices on how to: (1) prepare plans, coordinate activities, develop procedures, and protocol to use in managing travel, controlling traffic, and providing services related to coordinating travel on freeways and arterial roadways; and (2) identify the institutional issues, agreements, technologies, support services, traffic control plans, analysis techniques and tools, support programs, and other factors that may be appropriate to consider in the various phases associated with planning, managing travel, and providing services. The TMC Pooled Fund Study champions for this project are Mark Newland of Indiana DOT and Kamal Hamud of District of Columbia DOT.

Chapters of the draft technical document developed for this project are currently available on the project web site at: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=48&new=0.* The target completion date is December 2004. For more information, contact James Colyar at (202) 493-3282 or james.colyar@fhwa.dot.gov.

Transportation Management Center Business Planning and Plans Handbook

The purpose of this project is to develop a handbook that provides guidance and best practices on how to develop a TMC business plan. The handbook will also outline the various business planning models that have been successfully employed by transportation agencies to ensure the long-term sustainability of transportation management centers and associate ITS applications. The TMC Pooled Fund Study champion for this project is Monica Kress of Caltrans.

Draft chapters of the handbook is currently available on the project web site: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=54&new=0.* The final handbook and supporting materials are expected in the winter of 2004. For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

Developing and Using Concept of Operations in Transportation Management Systems

The objective of this project is to develop a document that provides technical guidance and recommended practices on the need for and how to develop and use a concept of operations throughout the life cycle of a transportation management system. The TMC Pooled Fund Study champion for this project is Manny Agah of Arizona DOT.

The draft version of the document is currently available on the project web site at *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=38&new=0.* The final technical document and supporting materials will be released in December 2004. For more information, contact Emiliano Lopez at emiliano.lopez@fhwa.dot.gov.

TMC Operator Requirements, Position Descriptions, Phase 2 – Interactive Software Tool

The purpose of this project is to develop an interactive software tool that will embody the content material developed in the previous project, supplemented as necessary, and provide the functionality needed by TMC managers and other users to support development of useful position requirements and descriptions for TMC operator positions. The project champion is Mark Demidovich of Georgia DOT.

Preliminary design of the prototype tool is available on the project web page at *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=55&new=0.* Software testing will commence in October 2004. Final software tool will be released in the spring of 2005. For more information, contact Tom Granda at (202) 493-3365 or thomas.granda@fhwa.dot.gov.

TMC Operator

Impacts of Dynamically Displaying Messages on Changeable Message Signs

The purpose of this project is to develop preliminary guidance to practitioners for dynamically displaying messages on CMS and identify and recommend changes or new provisions to the MUTCD. This project will build upon the TMC Pooled Fund Study project *Changeable Message Sign Operation and Messaging Handbook.* The TMC Pooled Fund Study champion for this project is Jeff Galas of Illinois DOT. The final research report and a white paper identifying recommended practices and potential changes to the MUTCD will be available in the spring of 2005. Project web site: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=31&new=0.* For more information, contact Tom Granda at (202) 493-3365 or thomas.granda@fhwa.dot.gov.

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Transportation Management Center Operations Manual

The purpose of this project is to develop a technical document that provides guidance and recommend practices to assist in initiating, developing, maintaining, and using TMC Operations Manuals. The technical document is intended to serve as a detailed reference that would address the concepts, methods, processes, tasks, techniques, and other related issues for practitioners to consider in developing an operations manual for a TMC. The TMC Pooled Fund Study champion for this project is Peter Vega of Florida DOT.

This project was kicked off in August 2004. A final technical document and supporting materials (including a primer, fact sheet, tri-fold brochure and presentations) are expected in the fall of 2005. Project web page: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=58&new=3.* For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

TMC Performance Monitoring, Evaluation and Reporting Handbook

The purpose of this project is to develop a handbook that will serve as a technical reference that provides guidance and recommended practices on the need for, how to initiate, sustain, and use information generated from monitoring, evaluating, and reporting on the performance of a Transportation Management Center (TMC) and its roles, responsibilities, functions, and support services as related to traffic management. The TMC Pooled Fund Study champion for this project is Mark Newland of Indiana DOT.

This project was kicked off in August 2004. A final handbook and supporting materials (including a primer, fact sheet, tri-fold brochure and presentations) will be available in the winter of 2005. Project web page: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=62&new=3.* For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

TMC Staffing and Scheduling for Day-to-Day Operations

The purpose of this project is to develop a technical document that will assist TMC managers in making staff workload and schedule decisions, performing future staffing forecasts, estimating timelines for personnel procurement and recruiting, and analyzing staffing costs and productivity. The technical document will provide guidance and recommended practices for effective workload analysis and staffing assessment as they related to TMC management. A simplified software tool (such as a spreadsheet) will also be developed to assist in making staff workload decisions. The project champion is Manny Agah of Arizona DOT.

This project will be initiated in October 2004. A final technical document, a spreadsheet tool, and other supporting materials will be available in the spring of 2006. Project web page: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=63&new=3.* For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

TMC Clearinghouse Development and Initiation

The purpose of this project is to establish a central clearinghouse (one stop) located on an internet web site that houses a comprehensive database of TMC related resources. This TMC clearinghouse is also intended to facilitate the sharing of information among practitioners and the dissemination of innovative tools, processes, problem solving efforts, and capacity building efforts to assist TMC practitioners in performing their duties and achieving the goals and objectives of their respective TMCs. The project champions are the TMC Pooled Fund Study Co-Chairs Nick Thompson of Minnesota DOT and David Kinnecom of Utah DOT.

This project will be initiated in November 2004. The TMC Clearinghouse web site in expected to be formally released to the public in the fall of 2005. Project web page: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=61&new=3.* For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

TMC Workshop Development and Proposal for Delivery

This project is intended to promote the TMC Pooled Fund Study effort and increase the awareness of TMC Pooled Fund Study products and tools to a broader audience base. The focus of this project is holding a pilot TMC workshop in the summer of 2005. Particular themes of the workshop will focus on current and future TMC Pooled Fund Study activities and other topics that are recommended. Project champion is John Corbin of Wisconsin DOT. Project web page: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=64&new=3.* For more information, contact Raj Ghaman at (202) 493-3270 or raj.ghaman@fhwa.dot.gov.

Workshop Discussion

Now Available – TMC PFS Publications

Managing Travel for Planned Special Events Handbook and Supporting Materials

These materials provide an overview of the institutional, procedural, program and technical issues associated with managing travel for these types of events. They emphasize the importance and benefits of proactively managing travel for planned special events to improve travel safety, mobility and travel time reliability across all surface transportation modes and roadway facilities. The *Managing Travel for Planned Special Events Handbook* leads practitioners step-by-step through all phases of managing travel for planned special events with recommended policies, regulations, planning and operations processes, impact mitigation strategies, tools and personnel resources, and technology applications. This audience may include transportation engineers, planners, transit providers, law enforcement officers, public safety personnel, and event organizers who are involved with these decisions or actions related to policies, programs, advanced planning, stakeholder coordination, and management of day-of-event activities for planned special events.

The companion Presentation, Tri-Fold Brochure, Fact Sheet, and Frequently Asked Questions were developed to facilitate conveying key messages and concepts contained in the handbook. These materials highlight successful practices, identify the benefits, encourage the utilization and integration of these concepts, methods, procedures, and techniques contained in the handbook into the programs, policies, and procedures of agencies to proactively managing travel for planned special events.

These materials can be accessed on the FHWA Planned Special Events Traffic Management Program web page at: *http://www.ops.fhwa.dot.gov/program_areas/sp-evnts-mgmt.htm,* the TMC Pooled Fund Study web page at: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=59&new=0,* or through the ITS Electronic Document Library at: *http://www.itsgov/itsweb/welcome .htm.*

Directing Traffic at a Planned Special Event

Transportation Management System Maintenance Concept and Plans Handbook

This handbook provides recommended practices and guidance to assist agencies with systematically integrating maintenance into their program planning, resource allocation, policies, system planning and design, and other related activities that occur throughout the life cycle of their transportation management systems. It provides an overview of the institutional, procedural, program and technical issues associated with the maintenance of a transportation management system. It also describes the importance and provides guidance on developing a maintenance concept, maintenance program, and multi-year maintenance plan that collectively provide the policies, resources, environment and procedures necessary to support transportation system operation.

Signal Maintenance

This handbook can be accessed on the TMC Pooled Fund Study maintained web page at: http://tmcpfs.ops.fhwa.dot.gov/dfprojects/new_detail.cfm?id=27&new=2 or through the ITS Electronic Document Library at *http://www.its.dot.gov/itsweb/welcome.htm.*

Guidelines for TMC Transportation Management Operations Technician Staff Development

One of the primary purposes of the Guidelines for TMC Transportation Management Operations Technician Staff Development is to provide TMC managers with the ability to assemble position descriptions that reflect the true requirements of the TMC in a way that will help human resource specialists and civil service personnel classify and hire the right people to get the job done. This report uses requirements matrices to show the relationships between TMC functions, operations personnel tasks, and the knowledge, skills, and abilities a person must possess to accomplish the required tasks. Training requirements for operations personnel are discussed. A comparison of the operations personnel positions to the current federal job classification system is also presented; the comparison provides insight into human resource considerations such as compensation requirements.

A spreadsheet tool in Microsoft Excel format was also developed to assist TMC managers and human resource personnel with developing position descriptions for their TMCs. The report and the spreadsheet tool are available on the TMC Pooled Fund Study web page at *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=26&new=0.*

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CMS Operation and Messaging Handbook

The Changeable Message Sign Operation and Messaging Handbook is a consolidation of the most current and best information on the design and display of effective changeable message sign (CMS) messages for incident and roadwork events. This handbook was written for personnel in state, regional, and local transportation agencies that have responsibility for the operation of and/or message design for large permanent or portable CMSs. It is designed to help both new and experienced users of CMSs at various levels of the agency including: a) entry level personnel, b) personnel very experienced with traffic operations, and c) managers. It provides very specific information for entry-level personnel, reminders for experienced personnel, and higher-level information for managers regardless whether or not they work in one of the TMCs in the state. This handbook can be accessed on the TMC Pooled Fund Study maintained web page at*: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=25&new=2.*

CMS in Operation

Configuration Management for Transportation Management Systems

Configuration management describes a series of processes and procedures developed in the information technology community to establish and maintain the operation of systems. The Configuration Management for Transportation Management Systems Handbook and support materials (a primer, fact sheet, tri-fold brochure, and technical presentation) have been developed to identify the key aspects, issues for agencies to consider, and benefits, and profile successful practices. They also describe why and identify opportunities for how agencies may benefit from and why they should consider or use various CM procedures, techniques, tools, or requirements into their policies, programs, and day-to-day operation. These materials will be invaluable to transportation professionals who may be involved with, or responsible for decisions that are made and actions that may be taken, during any phase in the life cycle of a transportation management system.

These materials can be accessed on the TMC Pooled Fund Study web page at*: http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=24&new=2* or through the ITS Electronic Document Library at: *http://www.its.dot.gov/itsweb/welcome.htm.*

Now Available – New Publications

AMBER, Emergency, and Travel Time Messaging Guidance for Transportation Agencies

The FHWA has released guidance on messages posted on changeable message signs (CMS). This report provides assistance and direction to transportation officials in planning, designing, and providing various types of traveler information messages using CMS. Specifically, these guidelines address messaging for travel time information, emergency or security warnings, and child abduction (AMBER) alerts. This document also reports on the findings of interviews with a number of representatives from State Departments of Transportation (DOT's) and FHWA Division Offices across the country. This report is available at http://www.ops.fhwa.dot. gov/TravelInfo/resources/cms_rept/ cmspractices.htm.

Delaware TMC Evaluation Report

The FHWA has made available the report An Evaluation of Delaware's DelTrac Program: Building an Integrated Transportation Management System. The report documents both the successes of the DelTrac program and the lack of success of the specific ITS project that was to deploy the DelTrac Infrastructure. The report is available online at http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//14019.html.

Case Study: Innovative Procurement and Implementation Process

A recent case study released by the U.S. DOT profiles a unique procurement process used by the Connecticut DOT that helped to eliminate common problems such as improperly defining system requirements and inappropriately managing changing requirements. In a recent study conducted by the Volpe Center, researchers found that intelligent transport-tation systems (ITS) projects that included the development of software, the integration of systems, or both continue to experience a significant number of delays. However, the study also revealed that staffs at state DOT's are addressing these issues using innovative processes. This case study describes one such unique procurement process used by the Connecticut DOT. The report can be accessed at http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//14044.html.

Traffic Congestion and Reliability: Linking Solutions to Problems

This report provides a snapshot of congestion in the United States by summarizing recent trends in congestion, highlighting the role of unreliable travel times in the effects of congestion, and describing efforts to curb congestion. In particular, the Report develops a framework for understanding the various sources of congestion, the ways to address congestion by targeting these sources, and performance measures for monitoring trends in congestion. The report is available at http://www.ops.fhwa.dot.gov/congestion_report/index.htm.

Calendar of Events

TMC Pooled Fund Study Events

September 14, 2004 — **Project Team Conference Call – 11:00 AM EDT**
Project Team Conference Call for the Developing and Using Concept of Operations in Transportation Management Systems. For more information, visit: *http://tmcpfs.ops.fhwa.dot.gov/cfprojects/new_detail.cfm?id=38&new=0.*

September 20, 2004 — **TMC PFS Member Quarterly Conference Call – 2:00 PM EDT**
Meeting of PFS members to review and discuss TMC PFS financial and membership status, project progress reports, development of new projects for 2005, and schedule of next meetings. For more information, visit: *http://tmcpfs.ops.fhwa.dot.gov/meetings.cfm.*

December 2004 — **TMC PFS Member Quarterly Conference Call – Time: TBD**
For updated information go to: *http://tmcpfs.ops.fhwa.dot.gov/meetings.cfm.*

June/July 2005 — **TMC PFS Annual Meeting**
2005 Annual Meeting in Providence, Rhode Island. More information forthcoming.

Other Events

October 4-6, 2004 — **IEEE ITS Conference,** Washington D.C.

October 18-24, 2004 — **11th World Congress on ITS**, Nagoya, Aichi, Japan

December 3-4, 2004 — **National Conference on Managing Travel for Planned Special Events**, New Orleans, LA

January 9-13, 2005 — **TRB 84th Annual Meeting**, Washington, D.C.

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Contribute articles for inclusion in the next newsletter by January 15, 2005 to: ming_shiun_lee@urscorp.com