



Maryland Transportation Systems Management and Operations

TSM&O Program Plan Roundtable

FHWA/ National Operations Center of Excellence

December 13, 2016

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Agenda



- Introductions/Background
- Overview of TSM&O Strategic Plan
- Prioritization of Strategies
- Org Set-up, Stakeholders,
- Communications & Outreach
- Next Steps

Introduction



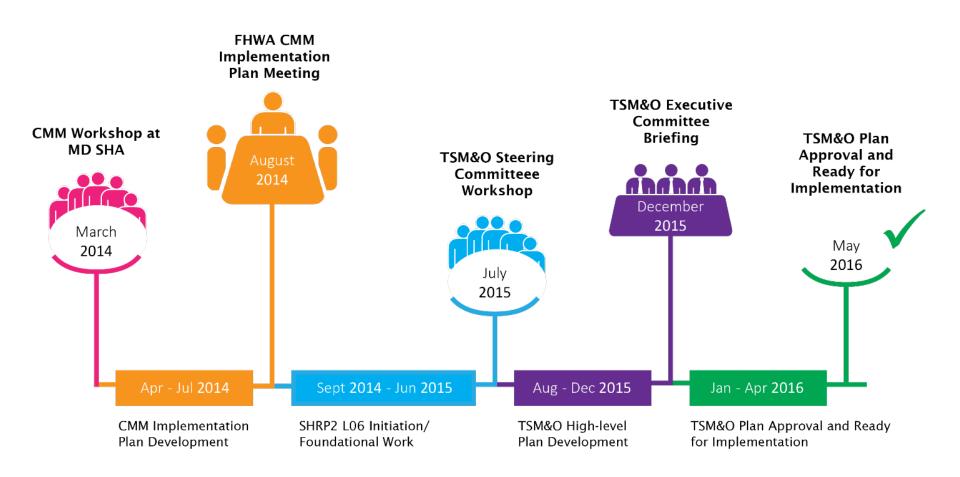
The Maryland TSM&O Strategic Implementation Plan

- Summarizes a business case for TSM&O
- Establishes mission, vision, goals,
 objectives and performance measures
 for TSM&O within MDOT/SHA
- Identifies strategies and projects required to implement TSM&O
- Recommends resource needs to carry out plan



Leading up to this plan





Strong Foundations for TSM&O

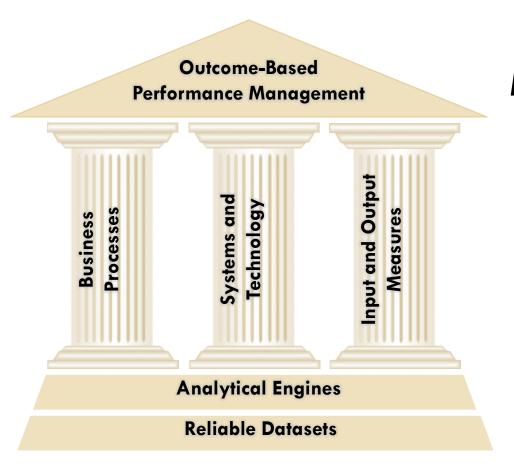




Introduction

MDOT SHA TSM&O Plan





An integrated approach to programmatic optimization of planning, operations, and maintenance in implementing new and existing multi-modal systems, services, and projects to preserve capacity and improve the security, safety, and reliability of our transportation system.

TSM&O Plan Structure







Pete K. Rahn, MDOT Secretary Gregory C. Johnson, P.E., SHA Administrator

Vision: Maximize mobility and reliable travel for people and goods within Maryland by efficient use of management and operations of transportation systems

Mission: To establish and maintain a TSM&O program and implement supporting projects within Maryland SHA improving mobility and reliability for all people and goods through planned operations of transportation facilities

Goal 1.

Develop and implement a sustainable TSM&O program at SHA

Goal 2.
Improve travel time
reliability for both people
and freight

Goal 3.

Objective 3.2.

Develop a TSM&O

Program

Monitoring System

Develop data- and performance-driven approaches to support TSM&O planning, programming, implementation and evaluation decisions Goal 4.

Improve the travelling public's experience on Maryland highways

Objective 1.1.
Incorporate TSM&O oriented practices in routine planning and programming business processes by 2018

Strategy 1.1a.

Identify and Implement

means of incorporating M&O into relevant agency Objective 1.2.

Promote culture supporting TSM&O both inside and outside of SHA and raise overall TSM&O awareness

Strategy 1.2a. dentify staffing resources within SHA

Coordinate TSMO activities with other modes, MPOs, are local agencies with dear

Strategy 1.1b.

Strategy 1.2b.

Strategy 1.1c.
Develop modifications to the SHA Project Development rocess (PDP) to accommodate TSM&O

Strategy 1.1d. Pevelop a comprehensive ITS asset management process Objective 2.1.
Develop freeway
and arterial master

plans by April 2018

Strategy 2.1a.

Strategy 2.1b.

Strategy 2.1c.

Stay apprised of new pplications, systems, and echnologies and plan to

relop Arterial System Master Plan

lop Freeway Master

Develop Integrated Corridor Management (ICM) plans by December 2018

Objective 2.2.

Strategy 2.2a. ccus on integrated freeway and arterial management and operations

Strategy 2.2b.
Develop ICM Program Master
Plan for consistent
consideration of ICM on
corridors that possess attribute
necessary to apply ICM

Objective 3.1.
Implement a
comprehensive, system
level performance
measurement program
to monitor mobility
and reliability target:
by June 2017

Strategy 3.1a.

Develop a data supported system for performance reporting

Strategy 3.1b.

Continue participation in research and collaboration efforts to advance TSM&O practices through TRB, PHWA, AASHTO, ITS

America, University research

Objective 3.3.

Coordinate and ensure TSM&O is considered in SHA's

Asset Management

Program

Strategy 3.2a. Strategy 3.3a. Incorporate TSM&O linto Transportation Asset beith and challenges and TAMP Implementation and TAMP Implementation.

Objective 3.4.
Include reliability in existing traffic analyses and travel forecasting modelling tools

Strategy 3.4a.
Develop modelling tools that
effectively incorporate trave
time reliability and can be
used to provide a framework
for evaluating tradeoffs of
various TSM&O operational
strategies

Objective 4.1.

Objective 4.1.

Achieve a user cost savings of at least \$1 billion annually by effective congestion management and TSM&O

Strategy 4.1a.

Provide reliable and accessible real-time modal choice information to travelers and other stakeholders at all times

Strategy 4.1b.

Coordinate activities with other modes, MPOs, and local agencies to incentivize thanging travel behavior.

Objective 4.2.

Enhance travelling public's knowledge and understanding of TSM&O operational strategies and their

respective benefits

Strategy 4.2a.

Develop education and outreach tools, including use of web-based and social sedia applications, targeted to the travelling public

Conduct regular surveys targeted towards the travelling public to determin level of customer satisfactio with SHA's application of TSM&O operational

Strategy 2.1d.

Work with MdTA, MDOT/
MVA, and the private sector
to develop and implement a
connected and automated
vehicle program in Maryland

Strategy 2.1e.
Establish a framework for a institutionalized approach to support funding and deployment of operational approvements (including freight)

TSM&O Plan

Vision: Maximize mobility and reliable travel for people and goods within Maryland by efficient use of management and operations of transportation systems

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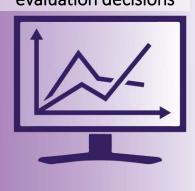
GOAL 1. Develop and implement a sustainable TSM&O program at SHA



GOAL 2. Improve travel time reliability for both people and freight on both arterials and freeways



GOAL 3. Develop
data and
performance driven
approaches to
support TSM&O
planning,
programming,
implementation and
evaluation decisions



GOAL 4. Improve the travelling public's experience on Maryland highways by enabling customers with information & choices



Strategy Implementation Template











Goal 1 - Develop and implement sustainable
TSM&O program within SHA to implement TSM&O

Responsible offices

Office of Planning & Preliminary Engineering (OPPE) with support from Office of Traffic & Safety (OOTS), and Office of CHART

Resources needed

Staff hours, travel time reliability analysis tools, deterministic models, MD SHA managerial support

Timeline

1.1a.II. by Q 3 2016 1.1a.III. by Q 3 2016 1.1a.III. by Q 1 2017 1.1a.IV. by Q 2 2017

Dependencies Strategies 1.2a. and 1.2b.

Existing plans supported by strategy

SHA Business Plan strategies 2.1.4, 2.1.5, 2.1.7 Maryland Transportation

Plan – Quality of Service goal MDOT Excellerator,

Tangible Result #2

Objective 1.1 - Incorporate TSM&O oriented practices in routine planning and programming business processes by 2018

> Strategy 1.1a - Identify and implement means of incorporating TSM&O into relevant agency policies

Action items

- 1.1a.l. Evaluate the inclusion of reliability in MDOT mission, vision, and strategic plans.
- 1.1a.II. Develop a policy and procedure for TSM&O Draft policy statement needs to address establishing TSM&O structure (office/functional area responsibilities). The procedure will include an institutional framework for TSM&O – including roles for steering and executive committees.
- 1.1a.III. Incorporate planning for operations in all processes within SHA - Maryland Transportation Plan 2035 and SHA Business Plan.
- 1.1a.IV. Identify methods for evaluating capacity vs. TSM&O options considering: service issues, network scale, time to implement, incremental improvement options capital operating and maintenance costs, cost-effectiveness related to relevant performance measures.

Deliverables

- 1a. Policy and Procedure to establish TSM&O structure for evaluating the benefits operational projects, side-by-side, with capacity projects.
- · 1b. Inclusion of reliability in appropriate plans.
- 1c. Incorporation of TSM&O in SHA business processes.
- 1d. Report documenting quantitative improvements in travel times/speeds for Maryland based on identified TSM&O improvements. Comparison of existing eligible improvements to assess if mobility needs are met through new TSM&O projects.

Outcome

 TSM&O processes become institutionalized in the State Highway Administration.

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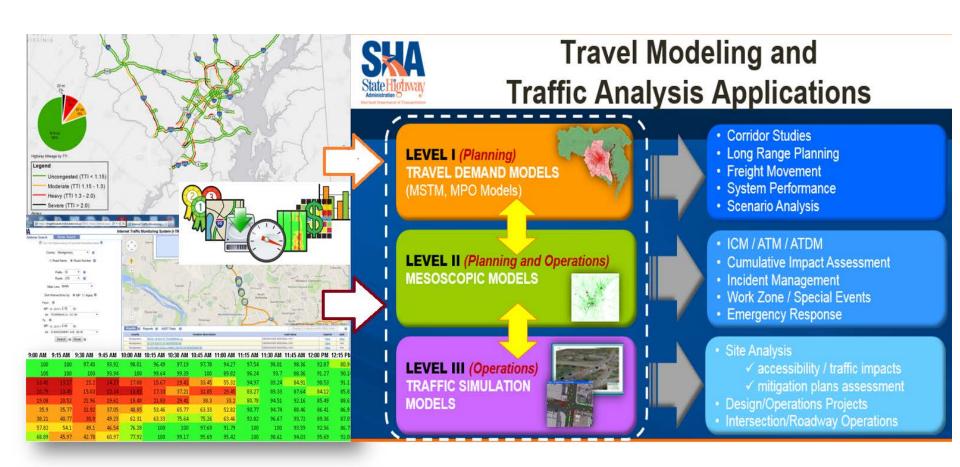
NEPA for TSM&O Projects



- SHA has developed a Freeway/ Arterial Congestion Management program that looks at low cost improvements for highly congested/ unreliable hotspots/ segments
- With Practical Design Policy, SHA identifies TSM&O
 Strategies / Active Traffic Management (ATM)
 alternatives as mid term solutions
- TSM&O alternatives are either part of Build Alternatives or, an alternative by itself in ongoing project planning/ feasibility studies
- Ongoing projects on I-270 and I-95 provides opportunity to review NEPA aspects for TSM&O elements.

TSM&O Data/ Analytics





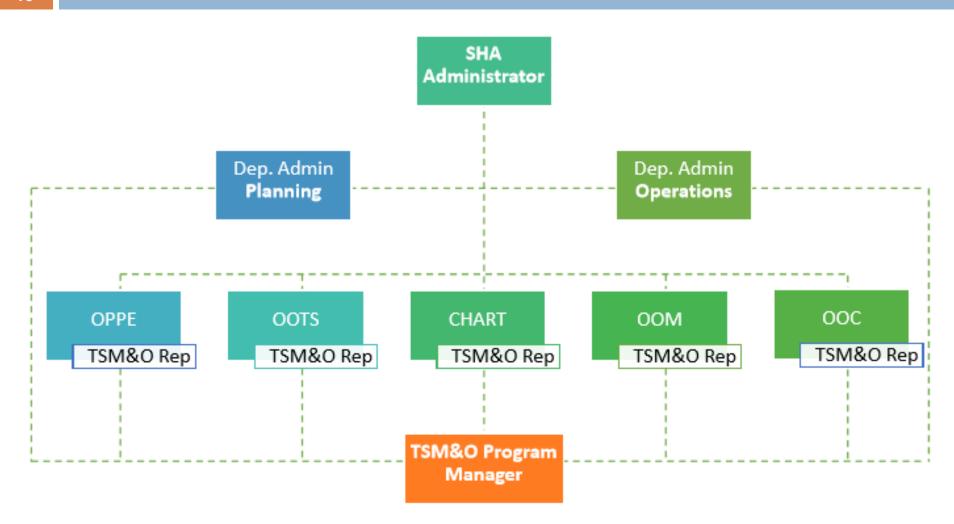
Priority Strategies and Actions



- 1.1c Develop modifications to the SHA Project Development Process (PDP) to accommodate TSM&O
- 2.1a Develop Arterial System Master Plan
- 2.1d Work with MdTA, MDOT, and the private sector to develop and implement a connected/automated vehicle program in Maryland
- 2.1e Establish a framework for an institutionalized approach to support funding and deployment of operational improvements on freeways and arterials
- 2.2a Focus on integrated freeway and arterial management and operations

Organizational Setup





Internal & External Stakeholders/ Partners





SHA Executive Level: State Highway Administrator; Deputy Administrator/Chief Engineer for Planning, Engineering, Real Estate, and Environment; Deputy Administrator/Chief Engineer for Operations.



MVA Management: Administrator and Chair of MDOT Connected/Automated Vehicle Task Force.



Maryland Transit

Administration:
Core Operations;
Operations Control
Center; Maryland Rail
Commuter (MARC) and
Commuter Bus
Operations; Office of
Planning.



Maryland Transportation Authority (MdTA): Deputy Executive Director; Division of Operations.



Maryland Aviation
Administration:
Operations and Maintenance.



Maryland Port Administration: Operations.

State, Regional, County, and Local

Traveling Public and representative advocacy groups

Professional Organizations

USDOT units addressing TSM&O

Special Event Venues

Partner
Disciplines and
Organizations

Business/ Economic Dev. Organizations

Academic and Research Institutions

National Weather Service

TSM&O Implementation

Some of the identified expected impacts and/or concerns of key external partners include



Need for awareness of TSM&O

skepticism as to its value

What about bicyclists?

Will TSM&O have unanticipated adverse impacts that might lead to speeding, cut-through traffic, or other unsafe conditions?

What about

pedestrians?

How will the TSM&O the TIP process?

Will TSM&O meet

capacity needs?

Program blend in with



TSM&O Implementation

External Partner Communications and **Outreach Plan**

Strategic Plan Implementation Near Term Priority Actions



- Developing an Integrated Freeway & Arterial Master Plan
- Developing a Performance Based Decision Support
 Approach along with Data & Analysis infrastructure
- Advance TSM&O policies, programs and projects thru' implementation pilot
- Streamline processes with ongoing initiatives such as practical design, CV/AV work etc.
- Continue internal and external TSM&O communication and outreach

Cyber-Security



- The CHART ATMS operates within the MDOT Enterprise Network
- The MDOT network is firewall protected, with quarantine servers and regularly updated security software to prevent direct access into the network
- To counter cyber attacks on individual devices or sub-systems, default passwords are always changed, and the system polls devices regularly to restore central server control
- After Action Reviews (AAR) are conducted for near-incursions (we never had a successful incursion into the system)
- Admittedly, these security measures are a result of architecture decisions made in developing the CHART system, but they could be advantages to incorporating cyber-security into our TSM&O planning.

Special Events – Lessons Learned



- Maryland regularly has special events; the Star Spangled Spectacular, Washington Metro maintenance surges, Casino openings, Inaugurations, Port of Baltimore "Fleet Week".
- The key to success is coordination with stakeholders.
- It's important to include local media as a stakeholder.
- Many of the tools we currently use, Dynamic Message Signs, web sites, media broadcasts, are quite successful in preparing the pubic.
- For major events CHART Prepares an "Operations Plan" which discusses the disposition of Transportation Management resources, and is distributed to all agencies involved.
- MDOT SHA is looking to prepare After Action Reports for more events, with the understanding that it takes additional resources to prepare these reports and conduct reviews.

Operations in Context of Active Work Management



- The Maryland DOT State Highway Administrator has asked SHA personnel to develop more active work zone management capabilities
- Maryland has implemented a statewide Lane Closure Permit (LCP) system, which enables SHA to manage lane closure permit applications, and then activates lane closures for management in real-time.
- SHA with UMD CATT help has developed work zone management tools and dashboards
- SHA is working on a Work Zone Prioritization tool thru' a FHWA SHRP2 implementation project

TSM&O and Maintenance



- In Maryland, the Traffic Management Center (the Statewide Operations Center) functions as the Emergency Operations Center, fully coordinating with Maintenance activities.
- The Traffic Management program develops and supports the management system, the Emergency Operations Reporting System (EORS), used by Maintenance personnel.
- Maintenance and Traffic Managers also use Automatic Vehicle Location and Vehicle Mounted Cameras to support fleet management.
- Close coordination is maintained, and personnel are primarily responsible within their respective disciplines.

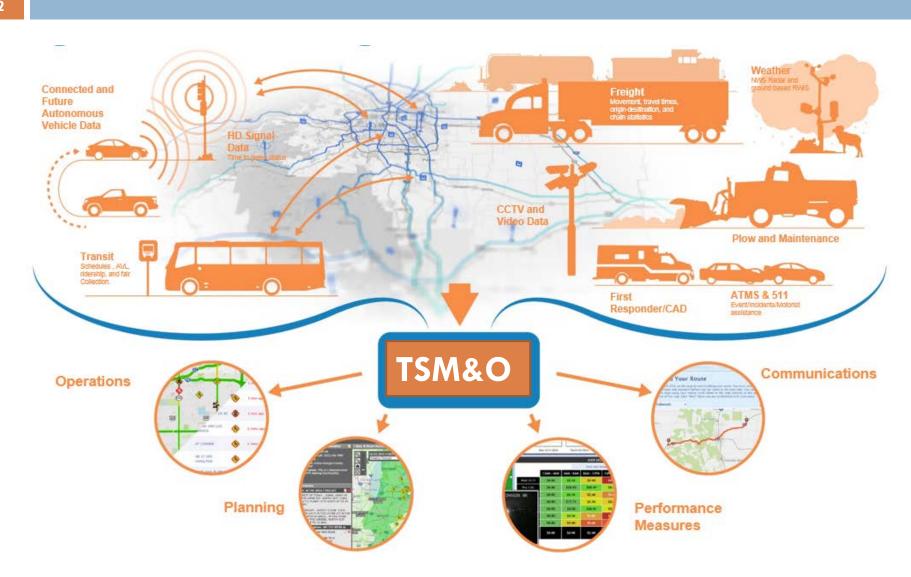
Reliability Metrics



- Mobility Report Analyzes system performance by calculating the Planning Time Index for key roadways
- The CHART Traffic Incident Management program is reviewed for Number of Responses, Response Time, Clearance Time and Reduction in Delay
- Performance is report both to leadership and the public, through the Attainment Report and the Excelerator Program.

The Road Ahead ...





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