

## MAKING A TSMO PROGRAM THE LIFEBLOOD OF A DOT

By: Maryland Department of Transportation State Highway Administration

*“Transportation Systems Management and Operations (TSMO) is the lifeblood of our organization, and our force-multiplier – it connects all our dots. Every project we currently have in our record construction season has elements of TSMO, and TSMO will drive how we design and implement future programs and projects.”*

*Greg Slater, MDOT SHA Administrator*

### BACKGROUND

The Maryland DOT State Highway Administration (MDOT SHA) has become an industry example of how an agency can adapt to a changing transportation environment that fully commits to Transportation Systems Management & Operations (TSMO) principles.

The TSMO Strategic Implementation Plan outlined several business processes, most of which have resulted in pursuing activities the agency previously wouldn't have embarked upon, such as:

- Developing a Reliability Roadmap and related processes (and tools) that are now helping to provide a travel-time reliability analytical framework and inform transportation decisions.
- Including TSMO alternatives in long-range planning studies and incorporating TSMO components in existing build alternatives.
- Developing a TSMO Combined Freeway and Arterial Operations Plan to integrate two major operational components within MDOT SHA that have operated on parallel policies and procedures.
- Developing a Mobility Data Business Plan.
- Developing an Integrated Corridor Management (ICM) ConOps for the I-95 Corridor linking Baltimore and Washington.

### SYSTEMS AND TECHNOLOGY

The Capability Maturity Model (CMM) workshops and the associated TSMO Strategic Implementation Plan identified a number of areas where technology might enable future opportunities - and MDOT SHA has capitalized on many of those opportunities including:

- Embarking upon a statewide telecommunications strategic planning effort to enable a backbone and network architecture that is future ready.
- Development of the US 1 Innovative Technology Deployment Corridor program.

### PERFORMANCE MEASUREMENT

A key element of the TSMO Plan was to develop data- and performance-driven approaches to support TSMO planning, programming, implementation, and evaluation decisions. This culture-change can be readily seen in several performance driven areas including:

- The Annual Mobility Report and Mobility Dashboard that demonstrates a focus on applying a performance-based approach to providing a high quality and reliable highway system.
- The CHART Program, with over 70,000 assists last year, and is a primary contributor to an annual user cost savings of \$1.5B as documented in annual CHART benefit reports.
- The deployment of Virtual Weigh Stations to monitor commercial vehicle operations, with an archival tool that allows users to search for trends and repeat overweight offenders.

### CULTURE

- Formalizing internal MDOT SHA policies that enable continuity of culture even in an environment where political and financial forces might challenge an organization in the future.
- Implementing a communications and outreach plan with the goal of mainstreaming the TSMO message across the organization.

# CASE STUDY: MAKING A TSMO PROGRAM THE LIFEBLOOD OF A DOT

## COMMUNICATIONS PLANNING AND EXECUTION

Based on a key action item identified in the CMM organizational self-assessment, MDOT SHA's Office of Communications has developed a TSMO Communications and Outreach Plan. This plan includes four goals, reflective of some of the comments made elsewhere in this application:

- (1) Increase awareness within MDOT SHA as to what TSMO is, including strategies, technologies, issues, and ongoing initiatives related to TSMO in Maryland
- (2) Create a culture around TSMO at all levels within MDOT SHA by collaborating between offices and initiatives to successfully implement the TSMO Strategic Plan
- (3) Develop communication and outreach strategies to inform both internal and external audiences of TSMO updates and issues
- (4) Create consistent messaging for MDOT SHA's TSMO efforts that are specific to each audience and supports/complements other MDOT SHA outreach efforts such as the CAV communications plan, major project outreach plans, and other internal/external communication plans

## IMPLEMENTATION OF TSMO TRAFFIC RELIEF PROJECTS

Several innovative TSMO traffic relief projects are being implemented to ease congestion, reduce travel times, and improve the quality of life for the citizens of Maryland. These projects have all been initiated within the last two years and have been the direct result of multi-disciplinary efforts that include planning, operations, and other key stakeholders (*see the following figure*).

- ✓ **Public Private Partnership (P3)** – The I-495 and I-270 P3 Program is a historic effort to reduce congestion for millions of Maryland travelers by working with the private sector to design, build, finance, operate, and maintain improvements on both I-495 and I-270. A review is currently underway to look at existing and future traffic, roadway, and environmental conditions to identify alternatives and assess potential impacts of implementing managed lanes.
- ✓ **I-270 Innovative Congestion Management** – Through a Progressive Design-Build contract, this project includes highway and TSMO improvements to increase capacity and vehicle throughput while also addressing safety concerns and bottleneck issues. TSMO strategies such as adaptive ramp metering and active traffic management are currently being deployed to improve overall traffic operations throughout the corridor.
- ✓ **Smart Signals** - MDOT SHA has dedicated \$50.3 million to deploy cutting-edge smart traffic signals to improve arterial traffic operations and ease congestion for approximately 700,000 drivers per day on 14 major corridors across the state. This new adaptive signal system uses real-time traffic conditions and software that adjusts the timing of traffic signals, synchronizes timing along the entire corridor, and uses artificial intelligence to optimize traffic flow.
- ✓ **Baltimore Beltway (I-695) TSMO Project** – This \$151 million project will deploy hard shoulder running and other active traffic management strategies along 19 miles of the Baltimore Beltway.
- ✓ **SOC Reconfiguration Project** – MDOT SHA is currently undertaking a major renovation effort that will reconfigure and upgrade the existing CHART Statewide Operations Center to facilitate improved information management, communications, and functionality for the future.
- ✓ **US-1 Innovative Technology Deployment Corridor** – An outcome from the CAV Strategic Action Plan, a project is underway to pilot test a wide range of Dedicated Short Range Communications (DSRC) and traffic control technologies and will include meeting the national Signal Phase and Timing (SPaT) challenge. Technologies planned for deployment include: DSRC roadside units, DSRC-capable traffic signal controllers, fiber communications, arterial CCTV, DMS, and additional detection infrastructure.

## FURTHER INFORMATION

NOCoe Knowledge Center: <https://transportationops.org/knowledge-center>