MDOT
Michigan Department of Transportation

# Transportation Systems Management & Operations (TSMO)
# Implementation and Strategic Planning

## Organizational Alignment/Practices/Challenges

TSMO
TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS
Providing Safe, Reliable Mobility for all Users of Michigan Highways

# What is TSMO?

- Transportation Systems Management &Operations
  - Multimodal transportation strategies to maximize the efficiency, safety, and utility of existing and planned transportation infrastructure. Activities such as:
  - **Traffic incident management**
  - **Traffic signal coordination**
  - **Transit signal priority and bus rapid transit**
  - Freight management
  - **Work zone management**
  - Special event management
  - **Road weather**
  - Congestion pricing
  - Managed lanes
  - Ridesharing
  - Parking management
  - Electronic toll collecting
  - **Traveler information systems**

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## 1909 – Detroit, MI.

## Highway expansion?


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# TSMO 1920 – Detroit MI.
# First traffic control in the nation


- Program purpose: To encourage and promote the **safe and efficient** management and operation of integrated, intermodal surface transportation systems to serve the mobility needs of people and freight and foster economic growth and development.
- "Management and Operation strategies can improve how existing transportation systems interface with the communities they serve"

(FHWA)

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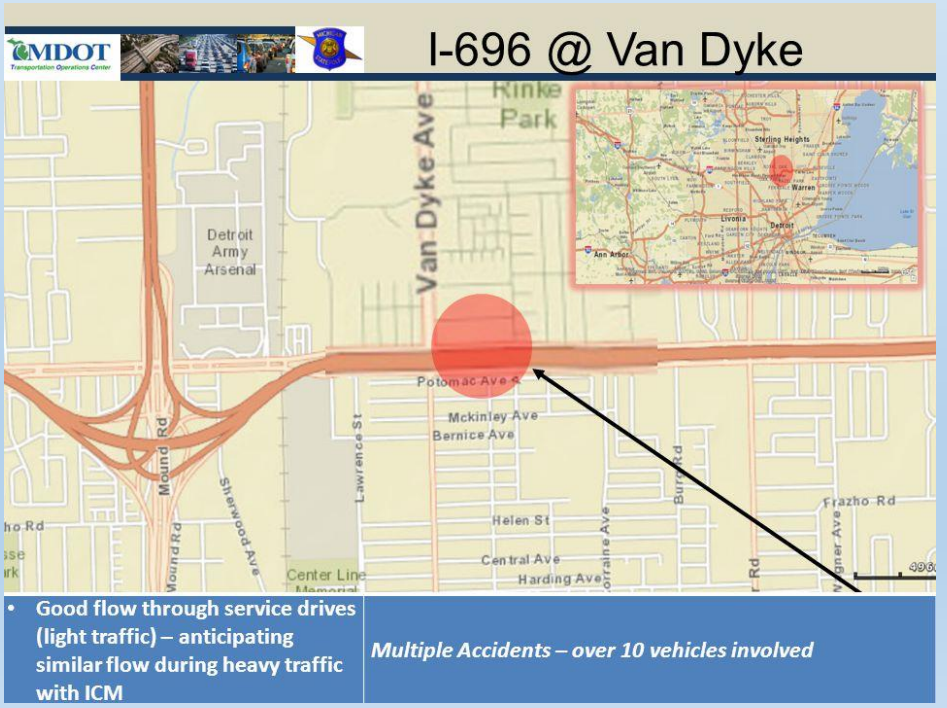
# TSMO=SAFETY & MOBILITY

# Congestion is how we got to TSMO



**Active Traffic Management**
**ATM**

# MDOT/FHWA SHRP2 L06 Capability Maturity Model Workshop Results - February 2013

| Dimension | Level | Priority Actions |
|---|---|---|
| Business Processes | 2+ | 1. Develop TSMO business case for external audiences (outside MDOT) & program planning SLRP/STIP<br>2. Develop a statewide TSMO plan incorporating regional/multimodal stakeholders |
| Systems & Technology | 2 + (arterials)<br>3 – (freeways) | Identify needed technical IT and systems engineering capacities to maintain and improve program. |
| Performance | 3 + (I-94)<br>2 (remainder) | |
| Culture | 2 | |
| Organization & Staffing | 2+ | |
| Collaboration | 2+ | 1. Develop MOU with MSP regarding incident management policy and practices.<br>2. Outreach to potential partners to capitalize on/improve TOC-related resources for both transportation and emergency management. |

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# MDOT TSMO Business Case

Business Case - Develop a **TSMO business case document for external audiences** (outside MDOT) including MDOT benefit/cost analysis for all TSMO projects, programs, and activities, including ITS infrastructure/operational investment.

Short, concise (1-2 pages)

- Multiple variations of same message oriented toward targeted audiences
- **General public/motorist**
- **Politicians/Legislators/Policy-Makers**
- **Executive Staff/Decision Makers**
- **MDOT Technical Staff**
- **Transportation partners (locals, MPOs, suppliers, academia, etc.)**

Topical areas: ITS Strategies, Traffic Signal Coordination, Connected Vehicles, Traveler Information, Work Zone Management, TIM, Ramp Management, Managed Lanes, Special Event Management, Active Traffic Management, Road Weather Management, Integrated Corridor Management, Transit Management, Variable Speeds Limits, Freight Management, Truck Parking, Harmonization Traffic Flow

Include Benefit/cost materials and summarized Western Michigan report

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# Tired of Sitting in Traffic? Us too.

The Michigan Department of Transportation (MDOT) is implementing innovative solutions that reduce congestion and increase safety simply by improving the day-to-day operations of the roads we've already built. These solutions use advanced technologies and partnerships to increase mobility, reliability, and safety. Cost-effective and quick to implement, they also provide high benefit-to-cost ratios when combined with traditional means of building and maintaining the state transportation system. Plus, these solutions build on and strengthen MDOT's current longtime services, such as clearing crashes and plowing snow. Some examples of these solutions and their benefits are listed to the right.


## Efficient commutes

Optimally timed traffic lights help motorists flow more smoothly through intersections. This traffic light harmonization can reduce travel times by 8 to 20 percent.

## Reliable commutes

Michigan Traffic Incident Management Effort (Mi-TIME) provides important training on quickly and safely clearing incidents, decreasing delay by up to 45 percent.

## Safer roads

Technologies to safely manage construction zones help decrease the number of work zone crashes, injuries, and deaths on Michigan roadways.

## Easier-to-use traveler information

MDOT's Mi Drive website (www.michigan.gov/drive) and mobile app provide 24/7 traffic and incident information.

## Michigan's reputation as a leader

Planet M (www.planetm.com) promotes innovation in transportation mobility technologies across the state of Michigan.

## Fewer wasted gallons of gas

Travelers won't have to waste gasoline idling in congestion, enhancing livability and sustainability.

## Better, faster, cheaper, safer, and smarter

These solutions allow MDOT to more cost-effectively reduce congestion, increase safety, and provide Michigan residents with noticeable benefits ***NOW.***

**To learn more about MDOT's operational solutions, please visit: www.michigan.gov/mdot**


| MDOT | → | MDOT TSMO |
|---|---|---|
| Providing the highest quality, integrated transportation services for economic benefit and improved quality of life. | Mission | TBD |
| MDOT will be recognized as a progressive and innovative agency, with an exceptional workforce that inspires public confidence. | Vision | TBD |
| Leadership ▪ System Focus ▪ Safety Partners ▪ Workforce ▪ Customer Centered Innovative & Efficient | Strategic Areas of Focus | *Capability Maturity Model Dimensions:*<br>Business Processes<br>Systems & Technology<br>Performance Management<br>Culture ▪ Organization/Workforce<br>Collaboration |

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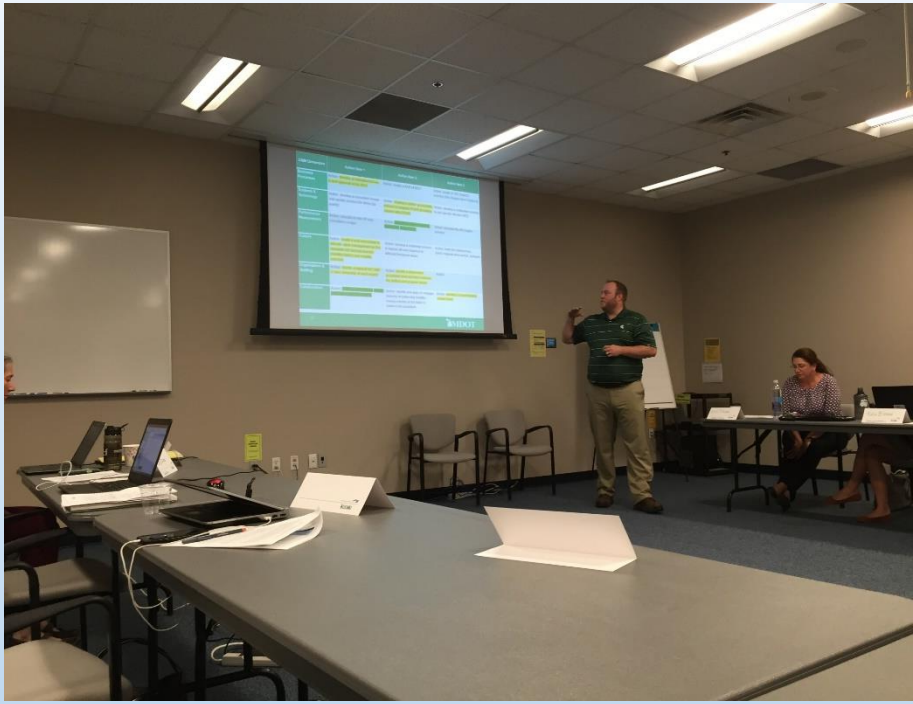
# MDOT TSMO Workshop - September 2016



**Sponsors:** Tony Kratofil, Kim Avery, Mark Geib

**Core Team:** Steve Cook (Lead), Janine Cooper, Mark Bott

**10 – TSMO Business Area Leads:** Angie Kremer (TIM), Chris Brookes (WZ), Jason Firman (Congestion Mgt), Garrett Dawe (Safety), Jen Foley (Modal), Melissa Longworth (Weather Mgt), Elise Feldpausch (Field Assets), Hilary Owen (TOC), Michele Mueller (CAV), Collin Castle (Data)

and ~60 MDOT Subject Matter Experts

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# MDOT TSMO Strategic Business Plan Workshop Template

## TSMO Business Plan Strategies

| **Business Processes** | **Systems & Technology** | **Performance Management** | **Culture** | **Organization/Workforce** | **Collaboration** |
|---|---|---|---|---|---|
| Planning, Programming, Budgeting, Implementation | Systems Engineering, Standards & Interoperability | Measures, Data, Analytics & Utilization | Technical Understanding, Leadership, Outreach, and Program Authority | Structure and Capability Development | Partnership with Other Public & Private Entities |

## TSMO Business Plan Strategic Actions

| Business Subject Area / Strategic Dimension | Traffic Incident Management | Work Zone Management | Congestion (Recurring) Management | Safety (All Modes) | Modal Interaction & Integration | Weather Management | Field Equipment Asset & Functionality Management (Signals, ITS) | TOCs & Traveler Information Systems | Connected & Autonomous Vehicle Systems | Data Collection, Storage, Utilization, Analytics & Decision Support Systems (TAMS & DUAP) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Business Processes** | | | | | | | | | | |
| **Systems & Technology** | | | | | | | | | | |
| **Performance Management** | | | | | | | | | | |
| **Culture** | | | | | | | | | | |
| **Organization/ Workforce** | | | | | | | | | | |
| **Collaboration** | | | | | | | | | | |

***2-3 SMART Action Items Each***

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# MDOT TSMO Mission

- Operate and manage an optimized, integrated transportation network by delivering high quality services for safe and reliable mobility for **all** users

# MDOT TSMO Vision

- Integrate Operations as a core MDOT program united with the execution of MDOT's overall mission
- Inspire public confidence as a progressive and innovative national leader in the management and operations of our transportation system
- Collaborate across program areas, leveraging technology and resources to achieve the best possible results
- Maintain a sustainable and engaged operations workforce with exceptional knowledge, skills, and abilities

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# MDOT TSMO Strategic Areas of Focus

- Evaluate and Streamline Information Technology Processes
- Integrate Operations across All Business Areas
- Integrate the Operations of Intelligent Transportation Systems (ITS) and Signals
- Adapt Processes, Products, and Training to Advances in Technology
- Enhance Communications and Outreach to External and Internal Stakeholders
- Prioritize Resources to Meet Critical Emerging Needs
- Drive Progress with Meaningful Performance Measures

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# Results of TSMO Business Area Breakout Meetings – Action Items

| CMM Dimension | Action Item 1 | Action Item 2 | Action Item 3 |
|---|---|---|---|
| **Business Processes** | **Develop a process in the scoping manual to require an analysis of existing congestion & mobility management for applicable projects** | **Establish a process/mechanism/equation to give greater funding priority to quick and low cost projects that address congestion management for key bottlenecks** | |
| **Systems & Technology** | **Increase real-time, remote communications with MDOT assets (signals)** | Improve detection at intersections for better counts | Explore advancing before-and-after measures in performance data |
| **Performance Measurement** | Obtain an endorsement from leadership on departmental standards for congestion | Include a congestion performance measure as part of the criteria for prioritizing future work | Incorporate other information into analytics tool |
| **Culture** | Enhance outreach internally and externally to promote/sell innovative approaches, in order to help make congestion management a greater priority | Improve software support (example of Synchro missed payment) | Maintain the central office resource of leadership in congestion & mobility (Jason's group) |
| **Organization & Staffing** | Ensure each region has at least one Synchro power user and each TSC has one reviewer level | Provide opportunities for Planning and Traffic Operations personnel to network (as a model look at the quarterly freight coordination meetings) | **Evaluate or update system needs for additional signal engineer positions** |
| **Collaboration** | Develop a Planning and Traffic Operations group to meet regularly to further facilitate communication and the sharing of work | Investigate opportunities to collaborate with local agencies on operational funding (such as CMAQ) | Explore greater technical integration of signal systems with partner agencies |

# "Commonalities"
# Actions that Span Across Multiple Business Areas

1. Improve IT Processes and MDOT-DTMB Interactions
   *(John Jersey)*
2. Data Management & Integration; Performance Measures
   *(Allison Balogh)*
3. Function Integration – especially TOCs, Signals, ITS, CAV, and Operations/Maintenance
   *(Hilary Owen)*
4. Funding Integration – "The Operations Template"
   *(Mark Bott)*
5. Outreach & Business Cases
   *(Elise Feldpausch)*

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# TSMO Challenges/Considerations

- Leadership Support
- Awareness and Education
- Strategic Plan
- Determine Your Needs
- Funding


# TSMO Business Areas - Step Going Forward

1. Initiate the “Commonalities” Action Items.
2. Continue implementation of the individual TSMO Business Area Action Items currently in process.
3. Complete TSMO Business Case Outreach Products for Public, Legislators, External Partners, and MDOT Management & Staff
4. Complete MDOT TSMO Implementation and Strategic Plan documentation – November 2017

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**“Providing the highest quality integrated transportation services for economic benefit and improved quality of life”**

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