TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSMO)
Statewide Strategic Plan Rollout
<table>
<thead>
<tr>
<th></th>
<th>Introduction</th>
<th>2 - 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
Purpose of the Statewide TSMO Program Initiative

- Develop a strategic plan to provide statewide vision, mission and goals for TSMO.
- Guidelines for TSMO program planning at the district and regional level.
- Mainstream TSMO in project planning, funding and development procedures.
"As TxDOT moves ahead with the goals of reducing congestion and enhancing safety, it is critical that Traffic Management Systems (TMS) be included on new roadway construction projects." (Memo dated July 1, 2016)

“Each district will be expected to ensure (1) TMS is included in each project’s planning, development, design, construction, maintenance and operation, and (2) provide specific TMS projects where gaps exist between typical road and bridge projects… TRF will also provide Transportation Systems Management and Operations (TSM&O) guidance for the districts” (Memo dated April 7, 2017)
Leadership Objectives

- Traffic Management Systems (TMS) Status Reports
  - District report on current status of TMS completion, and identifies projects included in the Unified Transportation Program (UTP).
  - Serve as status update to TSMO Program Plan goals.
  - Reported to TxDOT administration every 6 months beginning October 2017.
  - Initially required for the metro districts and El Paso only.
  - Starting October 2018, required for all 25 districts – metro, urban and rural.
Leadership Objectives

- Four TMS **performance metrics** implemented in FY 2017, per Chief Engineer’s memo.
  
  - **TMS Asset Operational Uptime** - measure how Districts maintain their traffic management equipment, is the most critical metric to improve in the short-term
  
  - **Incident Clearance Times** - Measure mobility on our system, driven by District incident management processes in collaboration with regional partners
  
  - **Level of Travel Time Reliability** - An FHWA MAP-21 recommendation, to measure impact on the public from traffic management strategies applied to on-system roads e.g. work zone management, DMS, etc.
  
  - **TMS System Coverage** - Measure and understand what portion of on-system roadways are adequately covered with ITS equipment and communications, or where coverage needs to be expanded
WHAT ARE THE MAJOR CAUSES OF CONGESTION?

- Bottlenecks (Predictable Congestion): 40%
- Traffic Incidents: 25%
- Bad Weather: 15%
- Work Zones: 10%
- Poor Signal Timing: 5%
- Special Events/Other: 5%

Transportation Planning Process

Traditional Focus

- Long term
- Capital investment
- Project orientation
- Capacity deficiencies
- Link improvements
- Environmental impacts
- Recurring congestion (from forecasts)

Needed (In Addition)

- Significant collaboration
- Consideration on non-recurring congestion & operations
- An objectives-driven approach
- Performance based focus on outcomes
- Network and region-wide applications
- Include on-going costs for operations & maintenance

Source: FHWA, SHRP2 Reliability resources
Providing Effective, Safe and Reliable Transportation

- Building the necessary infrastructure
- Keeping in a state of good repair (maintenance & reconstruction)
- Operating and managing the infrastructure on a day-to-day basis

Core attributes of planning process (LRTP, TIP); have been for decades

Operations should be integrated into the traditional planning & programming processes

“Mainstreaming”

New construction will continue to be important. But we can’t build our way out of congestion!

Source: FHWA, SHRP2 Reliability resources
## Table of contents

<table>
<thead>
<tr>
<th></th>
<th>Introduction</th>
<th>2 - 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
What is TSMO?

Federal Legislation ("MAP-21") Definition:

“Integrated strategies to optimize the performance of existing infrastructure through the implementation of multimodal and intermodal, cross-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system.”

Source(s): -1.) MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), Title 23 U.S.C. Sec. 101. Definitions and declaration of policy, (30)
What is TSMO?

Mobility Strategies:

- Work Zone Management
- Traffic Incident Management
- Service Patrols
- Special Event Management
- Road Weather Management
- Transit Management
- Freight Management
- Traffic Signal Coordination
- Traveler Information
- Ramp Management
- Managed Lanes
- Active Traffic Management
- Integrated Corridor Management
- Rural Emergency Response
What is TSMO?

Minor Operational Enhancements:

- Also known as low-cost enhancements (LCEs)
- Small, low-cost projects that can be implemented quickly to improve operational safety or reduce congestion on the highway system.
- LCE projects generally target problem areas and allow traffic engineers to quickly respond to emerging roadway safety issues.

- Channelization
- Delineation
- Low-cost safety enhancements
- Signage
- Striping
- Traffic calming

### What is TSMO?

#### Challenge Area
- Work zones on arterials causing increased travel time
- Congested highway in urban area
- Delay on rural connection highway

#### Integrated Mobility Strategies

<table>
<thead>
<tr>
<th>Challenge Area</th>
<th>Integrated Mobility Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work zones on arterials causing increased travel time</td>
<td><strong>Multiple agency coordination</strong> identifies alternate routes</td>
</tr>
<tr>
<td>Congested highway in urban area</td>
<td><strong>Multiple agencies and first responders develop uniform incident management plan</strong></td>
</tr>
<tr>
<td>Delay on rural connection highway</td>
<td><strong>Performance measure</strong> data used to identify bottleneck location</td>
</tr>
</tbody>
</table>
What is TSMO?

TSMO consists of mobility strategies that are supported by a well-defined program of funding, processes, performance measures, and institutional arrangements.
What is TSMO?

- Cultural Shift
- Focus on End User
- Collaboration with Stakeholders
- Optimize Existing Infrastructure
- Recurring & Non-recurring Congestion
- System Reliability

TSMO
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Introduction</td>
<td>What is TSMO?</td>
<td>Why TSMO?</td>
<td>Statewide TSMO Outreach</td>
<td>Statewide TSMO Program Structure</td>
<td>Statewide TSMO Strategic Plan</td>
<td>District TSMO Program Plan Development</td>
<td>Closing / Questions / Contacts</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>2 - 9</td>
<td>10 - 16</td>
<td>17 - 22</td>
<td>23 - 31</td>
<td>32 - 36</td>
<td>37 - 60</td>
<td>61 - 73</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
Why TSMO?

TxDOT Annual Transportation Needs and Budget

~$8 bil.

Source: Texas Transportation Plan 2040
Why TSMO?

Safety

- 20% of all incidents are secondary incidents
- Likelihood of a secondary crash increases by 2.8% for each minute the primary incident continues to be a hazard, increasing the risk to driver and responder lives.

Traffic Incident Management (TIM)

- Reduces congestion
- Improves reliability
- Improves safety - reduces secondary crashes

Managing Incident Duration Can SAVE Lives...

Why TSMO?

Congestion Problem Continues to Get Worse

- $160 billion of wasted time and fuel
- Including $28 billion of extra truck operating time and fuel
- An extra 6.9 billion hours of travel and 3.1 billion gallons of fuel consumed

The average urban commuter in 2014:

- Spent an extra 42 hours of travel time on roads than if the travel was done in low-volume conditions
- Used 19 extra gallons of fuel
- Which amounted to an average of $960 per commuter

National measures of the congestion problem for the 471 urban areas in 2014:

Source: 2015 Urban Mobility Scorecard, by Texas A&M Transportation Institute and INRIX
The Transportation Environment is Changing:

- Changes that may redefine the DOT’s roles and responsibilities (e.g. MAP-21, Connected Vehicles)
- Increased reliance on information and technology
- Increasing customer needs and expectations
- Growing emphasis on measuring performance
- Reduced financial resources
- Technology offers opportunities to better manage congestion and traffic incidents, thus reducing unexpected delay and improving safety.

Source: FHWA, SHRP2 Reliability resources

From 511SF website
Why TSMO?

- Prioritizes funding for mobility strategies
- Cost-saving coordination
- Performance measures for data-driven decisions
<table>
<thead>
<tr>
<th></th>
<th>Introduction</th>
<th>2 - 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
Statewide TSMO Strategic Plan Development Schedule

1. Literature search of existing TSMO guidance documents and state TSMO implementation plans
   - AUG 2016 - SEP 2016

2. Hold Capability Maturity Model (CMM) workshop at outreach events across the state of Texas
   - OCT 2016 - JAN 2017

3. Compile CMM results
   - FEB 2017 - AUG 2017
   - Develop Statewide TSMO Strategic Plan
   - Create TSMO evaluation tool

4. Roll-out events across the state of Texas
   - SEP 2017 - NOV 2017
TSMO State of the Practice

- Gathered an understanding for TSMO capabilities at different state and local agencies
- Helped to identify where TxDOT can improve in TSMO and different strategies for engaging stakeholders
- Provided ideas for alternative ways to structure TxDOT’s statewide TSMO program
Outreach Events: TSMO/CMM Workshop

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE &amp; TIME</th>
<th>NUMBER OF ATTENDEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL PASO</td>
<td>Tuesday, October 18th, 2016 - 8 am to 12 pm</td>
<td>13</td>
</tr>
<tr>
<td>DALLAS-FORT WORTH</td>
<td>Wednesday, November 2nd, 2016 - 1 pm to 5 pm</td>
<td>24</td>
</tr>
<tr>
<td>HOUSTON</td>
<td>Thursday, November 3rd, 2016 - 9 am to 12 pm</td>
<td>22</td>
</tr>
<tr>
<td>SAN ANTONIO</td>
<td>Friday, November 4th, 2016 - 9 am to 12 pm</td>
<td>32</td>
</tr>
<tr>
<td>ITS TEXAS (RICHARDSON)</td>
<td>Wednesday, November 9th, 2016 - 4 pm to 6 pm</td>
<td>33</td>
</tr>
<tr>
<td>AUSTIN</td>
<td>Thursday, November 17th, 2016 - 8 am to 12 pm</td>
<td>22</td>
</tr>
<tr>
<td>WEBINAR</td>
<td>Thursday, January 26th, 2017 - 10 am to 12pm</td>
<td>110*</td>
</tr>
</tbody>
</table>

*It is likely that more than 110 individuals attended the webinar as some attended among a group of individuals from a conference room at their respective locations.

The attendees at each outreach event were generally a collection of personnel from the various TxDOT districts’ Operations and Planning sections, Metropolitan Planning Organizations (MPO), and local transportation agencies.
How to Assess an Agency’s TSMO Capabilities?

**Capability Maturity Model (CMM)**

- Widely used in the Information Technology industry

- When applied to TSMO, it helps agencies identify strengths, weaknesses, and next steps to improvement

- 6 Capability Dimensions:
  - Business Processes, Culture, Systems & Technology, Organization & Staffing, Collaboration, and Performance Measurement
Capability Maturity Model (CMM)

- Business Processes
- Systems & Technology
- Performance Measures
- Culture
- Organization & Workforce
- Collaboration
Capability Maturity Model (CMM)

**Source:** Creating an Effective Program to Advance Transportation System Management and Operations, FHWA Jan 2012
CMM Results – All Participants 2016 - 2017

- Business Processes
- Systems and Technology
- Performance Measurement
- Culture
- Organization and Workforce
- Collaboration

- All TxDOT
- Cities
- County
- MPO/COG/Tollway Authority
CMM Results

National CMM Assessment Results

Source: Cambridge Systematics, Inc. and Parsons Brinckerhoff, Organizing for Reliability - Capability Maturity Model Assessment and Implementation Plans Executive Summary, May 2015.
# Table of contents

<table>
<thead>
<tr>
<th></th>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>2 - 9</td>
</tr>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>

---

TxDOT Statewide TSMO Strategic Plan Rollout  
September 7, 2018
TxDOT Statewide TSMO Program Structure

Statewide Strategic Plan
- TxDOT Statewide TSMO Strategic Plan

District Program Plans
- Austin District TSMO Program Plan
- Pharr District TSMO Program Plan
- Houston District TSMO Program Plan
  - Incident Mgmt Program
  - Work Zone Service Layer Plan
  - Traveler Information Service Layer Plan
  - ITS Project Deployment Plan
  - Wrong Way Driving Program
  - Connected Vehicles Program

Example Tactical Plans
- Traffic Mgmt Program
- Background information and business case for TSMO
- Provide framework for districts and/or regions to develop TSMO program plans
- Identify what central support is available
- Create mission, vision, goals for the district
- Develop protocols for how TSMO will be conducted
- Determine funding and resource needs to implement TSMO
- Identify opportunities for tactical plans
District - Tactical Plans

- District-specific or corridor-specific
- Provide technical details on mobility strategy deployment and operational procedures
- Identify roles and responsibilities for implementing mobility strategy
<table>
<thead>
<tr>
<th></th>
<th>Introduction</th>
<th>2 - 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
Statewide TSMO Strategic Plan

- Provides statewide vision, mission and goals for TSMO.
- Serves as a guideline and checklist for TSMO program planning at district level.
- Basis for best-practice sharing, common technology solutions, and performance measures.
- Describes how centralized support will be provided to the districts’ traffic management systems performance.
- Identifies specific and time-bound actions to mainstream TSMO into project development procedures.
Statewide TSMO Vision:

Improve safety and mobility for all modes of transportation by integrating planning, design, operations, construction, and maintenance activities and acknowledging all opportunities for innovation.
Statewide TSMO Mission:

Through innovation, collaboration, and performance-based decision making, transportation facilities are developed, constructed, maintained, and operated cost-effectively, with the end user in mind.
Statewide TSMO Goals and Objectives:

- **Safety** - Reduce crashes and fatalities through continuous improvement of traffic management systems and procedures.

- **Reliability** - Optimize travel times on transportation systems in critical corridors to ensure travelers are reaching their destinations in the amount of time they expected for the journey.

- **Efficiency** - Implement projects that optimize existing transportation system capacity and alleviate congestion.

- **Customer Service** - Provide timely and accurate travel information to customers so they can make informed mobility decisions.

- **Collaboration** - Proactively manage and operate an integrated transportation system through multijurisdictional coordination, and cooperation between various transportation disciplines and partner agencies.

- **Integration** - Prioritize TSMO as a core objective in the agency's planning, design, construction, operations and maintenance activities.
Statewide TSMO Strategic Plan

- Business Case for TSMO
- TSMO Mobility Improvements
- Vision, Mission, Goals, Objectives
- Program Strategy
- Appendices:
  - Program Plan Table of Contents
  - Chief Engineer’s Memos
Business Case for TSMO

- Population of Texas expected to rise to 45 million by 2040
- Current process for building infrastructure will not be able to keep up with rise in vehicle miles traveled (VMT)
- TSMO is an effective approach for planning and designing innovative and efficient projects

Source: Texas Transportation Plan 2040
Statewide TSMO Strategy

TSMO Program Strategy

Central Office
- Objectives
- Evaluation Metrics
- Timeframe

Districts
- Objectives
- Evaluation Metrics
- Timeframe
Statewide TSMO Strategy

Business Processes
Systems and Technology
Performance Measurement
Culture
Organization and Workforce
Collaboration

CMM Level

All TxDOT  Cities  County  MPO/COG/Tollway Authority

Opportunity for improvement
“Lack of communication in the design/scoping phase with District traffic.”
-San Antonio CMM Response

District responsibility:
Revise the project delivery process to include TSMO activities and TSMO Evaluation

Evaluation Metric:
Include revised process in TSMO Program Plan

Timeframe: 1-2 years
“Need to hold more TSM&O meetings, training, and coordination between all internal sections.”
-TxDOT El Paso CMM Response

**District responsibility:**
Develop staffing plan, including revised position responsibilities, recruitment, and succession, to accommodate TSMO activities.

**Timeframe:** 1-2 years
“Data is available, but not utilized in an appropriate manner. Today we collect data, but hope for better guidance to use it.”

-TxDOT Dallas CMM Response

**District responsibility:**
Develop district-specific performance measures definitions and utilization strategy

**Evaluation Metric:**
Include in TSMO Program Plan

**Timeframe:** 1-2 years
“We have a culture that wants to exceed and use this as another tool to fight traffic congestion [but there is a] lack of understanding across the agency.”

-Austin CMM

Response

Central office responsibility:
Develop an engagement plan and resources for advocating for TSMO

Evaluation Metric:
Implement and send engagement resources to districts

Timeframe: 6-9 months
“Technology [is] upgraded only as needed to repair/replace old.”

-Houston CMM Response

District responsibility:
Consider re-evaluating current ITS processes based on emerging technology.

Evaluation Metric:
Include plan for considering re-evaluating ITS processes in TSMO Program Plan.

Timeframe: 1-2 years
“Large number of cities with different priorities creates internal roadblocks.”
-TxDOT Fort Worth CMM Response

**District responsibility:**
Establish opportunity to engage internal stakeholders, including division support, such as district TSMO working group.

**Evaluation Metric:**
Schedule consistent internal meeting or other opportunity.

**Timeframe:** 12–18 months
Statewide TSMO Strategy

- Example district responsibilities:
  - Identify TSMO coordinator & champion
  - Develop and/or update regional architecture
  - Revise the project delivery process to include TSMO activities and TSMO Evaluation
  - Establish Regional TSMO subcommittee

- Example central office responsibilities:
  - Maintain and support TSMO plans
  - Develop statewide performance measures and utilization strategy
  - Initiate a statewide TSMO meeting
TSMO is a collaborative effort

- Each region may have a different approach to TSMO program planning
- It is important to engage in regional TSMO efforts
- Local agencies, MPOs, and TxDOT districts and central offices will work together to develop the appropriate approach for their region
Who performs TSMO?

**State DOTs**
- Corridor and freeway management strategies.
- Develop processes and institutional arrangements that optimize TSMO throughout the state.
- At the district level, collaborate with local agencies to plan and optimize traffic management strategies.

**MPOs**
- Facilitate coordination and collaboration among various agencies (state and local), in the areas of planning, funding and traffic management.
- Long-range planning to guide the identification, prioritization, and selection of investments, programs, and strategies for the region.

**Local DOTs / Roadway Authorities**
- Corridor and arterial management strategies.
- Transit service coordination with corridor management strategies.
- Provide input to traffic management and operations priorities for region.
- Police, Fire, EMS coordination with traffic management strategies.
http://www.txdot.gov/inside-txdot/division/traffic/tsmo.html
### Rollout Events: Statewide TSMO Strategic Plan

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATE &amp; TIME</th>
<th>NUMBER OF ATTENDEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEXITE MEETING (SAN MARCOS)</td>
<td>Friday, September 8th, 2017 – 8:30 am to 9 am</td>
<td>20</td>
</tr>
<tr>
<td>AUSTIN</td>
<td>Monday, September 18th, 2017 – 9:30 am to 12 pm</td>
<td>21</td>
</tr>
<tr>
<td>DALLAS-FORT WORTH</td>
<td>Wednesday, November 1st, 2017 - 2 pm to 4:30 pm</td>
<td>15</td>
</tr>
<tr>
<td>WEBINAR</td>
<td>Thursday, October 5th, 2017 - 10 am to 10:30 am</td>
<td>*70</td>
</tr>
<tr>
<td>ITS TEXAS (HOUSTON)</td>
<td>Wednesday, November 8th, 2017 - 4 pm to 6 pm</td>
<td>14</td>
</tr>
<tr>
<td>EL PASO</td>
<td>Monday, December 11th, 2017 – 2:30 pm to 4:30 pm</td>
<td>21</td>
</tr>
<tr>
<td>WEBINAR</td>
<td>Wednesday, December 6th, 2017 - 10 am to 12 pm</td>
<td>*60</td>
</tr>
<tr>
<td>HOUSTON</td>
<td>Friday, January 26th, 2018 – 9 am to 11 am</td>
<td>34</td>
</tr>
</tbody>
</table>

*It is likely that more than 130 individuals attended the two webinars as some attended among a group of individuals from a conference room at their respective locations.

The attendees at each rollout event were generally a collection of personnel from the various TxDOT districts’ Operations and Planning sections, Metropolitan Planning Organizations (MPO), and local transportation agencies.
Mainstreaming Operations

“Planning for Operations” – a joint effort between planners & operators to merge operations into traditional planning and programming

- Develop and program operations strategies based on regional goals, objectives & performance measures
- Enhance the process so that operations investments are on par with construction & preservation funding.
- Help meet requirements of MAP 21 (i.e., “promote efficient operations”)

Source: FHWA, SHRP2 Reliability resources
Mainstreaming Operations

TSMO Evaluation:
- Once fully developed, can serve as a checklist to ensure TSMO strategies and supporting infrastructure are considered for inclusion in each project at the earliest stages of development, helping engineers and planners maximize investments by leveraging comprehensive project construction cost. Proposed for inclusion in the new project development and delivery process being developed as part of TxDOT’s MPPM initiative.

Modernize Portfolio and Project Management (MPPM):
- Initiative to replace up to 40 legacy Engineering Operations systems, reducing not only the number of systems and systems maintenance costs, but standardizing and automating manual processes and providing transparency in performance measurement. Among these are the workflows related to the project development and delivery process.
Framework for Effective TSMO

Sources(s): -1.) US DOT, FHWA, -2.) AASHTO, -3) SHRP2 Solutions
Operations is a critical component for managing the transportation network on a daily basis.

- Enhance mobility, reliability, safety, and environment
- Provide a sustainable transportation network
- Support a performance-based approach, focusing on outcomes
- Achieve quick and cost-effective implementation

To be successful, operations need to be “mainstreamed” into the regional planning and programming processes and documentation.
<table>
<thead>
<tr>
<th></th>
<th>Table of contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>What is TSMO?</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
</tr>
</tbody>
</table>
**District TSMO Program Plan Development**

**TxDOT Austin District - TSMO Program Plan Development**

- Supplemental work authorization (WA) to the Statewide TSMO Strategic Plan WA.
- The first District TSMO Program Plan, serving as example to remaining 24 districts.
- Austin District Program Plan Development Process:
  - Kick-off date: August 17th, 2017.
  - Completion date: June 30th, 2018.
source(s):
-1.) Organizational Context to TSMO Planning (FHWA Resource Center)
District TSMO Program Plan Development

- TxDOT has 25 districts.

- Austin (AUS) was the first district to develop a TSMO program plan, using a previously established engineering consultant contract.

- Newly procured engineering consultant contracts will be used to develop the remaining District TSMO Program Plans.

- TxDOT’s Professional Engineering Procurement Services Division (PEPS) procured four (4) consultant contracts during procurement wave 3 (May – Aug’18), each contract for $5M, to be managed by Traffic Safety Division (TRF), and available for statewide use by the districts.

- Starting in Fall 2018 with the metro (El Paso) districts, TSMO program plans will begin to be developed through work authorizations issued under the engineering consultant contracts.

- Following the metro (El Paso) districts, TSMO program plans for the urban and rural districts will be developed.

- Each district will fund and manage the work authorization to develop its respective TSMO program plan, collaborating with local and regional partners.
Consultant Contract Procurement for TSMO

Mar’18: Contract Selection Team (CST) established.

Apr’18: Pre-RFQ [Request for Qualifications] Meeting held with interested consultant firms.

            Consultant Mgmt & Admin (CTR615) training for CST members that need it.

May’18: Kick-off PEPS Procurement Wave 3 (May – Aug’18).

            CST develops contract goals, scope and RFQ questions- for completion by early Jun’18.

Jun’18: PEPS advertises RFQ for the three contracts – $5M each.

            AUS TSMO Program Plan finalized; serves as example for others districts to follow.

Jul’18: CST evaluates consultants’ statement of qualifications (SOQs), and conducts interviews.

Aug’18: CST elected to select four consultants instead of three as initially planned.

            PEPS conducts negotiations with consultants.

Sep’18: Contracts executed; Begin drafting the scope for the work authorizations.

Oct’18: Kick-off work authorizations for the metro (& El Paso) district program plans.

Aug’19: Completion of Metro (& El Paso) district program plans.

Sep’19: Kick-off work authorizations for the urban and rural district program plans.
**Consultant Selection Team Members**

<table>
<thead>
<tr>
<th>CST Members</th>
<th>Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marco Cameron, P.E.</td>
<td>Traffic Safety Division</td>
</tr>
<tr>
<td>Steve Linhart, AICP</td>
<td>Transportation Planning and Programming Division</td>
</tr>
<tr>
<td>Zheng Tan, P.E.</td>
<td>Beaumont District</td>
</tr>
<tr>
<td>Jeremy Dearing, P.E.</td>
<td>Lubbock District</td>
</tr>
<tr>
<td>Darius Samuels, P.E.</td>
<td>Paris District</td>
</tr>
<tr>
<td>Matt Sneed, P.E.</td>
<td>San Antonio District</td>
</tr>
</tbody>
</table>
# PEPS Service Center for Divisions Team

<table>
<thead>
<tr>
<th>Procurement Support</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kori Rodriguez, P.E.</td>
<td>PEPS Service Center for Divisions Section Director</td>
</tr>
<tr>
<td>Raul Ortega, P.E.</td>
<td>Procurement Engineer, PEPS Service Center for Divisions</td>
</tr>
<tr>
<td>Ana Rivera</td>
<td>Contract Specialist, PEPS Service Center for Divisions</td>
</tr>
</tbody>
</table>
Consultant Contract Procurement for TSMO

Engineering Consultant Contracts - Scope of Work

- **Program Planning**
  - Develop business case, vision, mission and goals for TSMO, taking input from internal and external stakeholders.
  - Analysis of business processes, institutional arrangements and mobility challenges.
  - Recommend process improvements, institutional arrangements, projects and services that will improve TSMO capabilities and achieve TSMO goals and objectives.

- **Tactical Planning**
  - Funding, staffing and equipment needed to deploy projects and services (e.g. Traffic Incident Management, Integrated Corridor Management, Traveler Information, Safety Service Patrol, etc.).
  - Concept of operations (ConOps) for mobility strategies; ITS architectures.

- **Program Development and Implementation**
  - Analysis, reporting, meetings, workshops and other actions to integrate (“mainstream”) TSMO into core functions of the agency, such as planning, design, construction, maintenance and traffic operations.
  - Implement processes and institutional arrangements that will improve TSMO capabilities and achieve TSMO goals and objectives.

- **Preliminary Design**
  - Benefit-cost analysis, schematics, device layout, and cost of equipment, installation, and maintenance (i.e. general framework for detailed design).
District TSMO Program Plans– Things to Consider

- TSMO is not new. Districts are already applying certain TSMO strategies and engage in certain aspects of TSMO planning.

- But the processes, performance measures, staffing and funding that sustain TSMO need to be better defined, and mainstreamed statewide.

- Rural areas also benefit from TSMO planning. While congestion is generally a minor concern, traffic safety, special events, and weather are often significant concerns.

- Interstate corridors running through rural districts connect major freight and urban population centers.
District TSMO Program Plans—Things to Consider

- Some states have targeted their TSMO planning efforts toward strategic corridors instead of entire districts or regions.

- Separate regions will have a slightly different approach to TSMO planning, based on size, staffing and transportation challenges being faced.

- Local agencies, MPOs, and TxDOT should work together to determine the best approach for their respective regions. Collaboration is essential.

- Facilitate a CMM self-assessment workshop to establish priority actions for the district/region to consider as part of its future TSMO program plan.
Each district has appointed a TSMO Coordinator and TSMO Champion.

Which local or regional agencies should be involved?

Which existing plans or initiatives should be referenced in or combined with the TSMO Program Plan?... No need to “reinvent the wheel.”

To be successful, early endorsement needed from senior leadership, with full participation from each of the core disciplines of the organization [e.g. planning, design, construction, operations and maintenance].
FHWA-led Workshop: Improving Business Processes for More Effective TSMO

AASHTO is assisting FHWA to deliver customizable workshops in 2018, to provide:
- Education on key program and organizational capabilities that are essential to successful business process development and implementation for TSMO;
- Overview the tools and resources available to agencies, for improving business processes.
- Group exercise where participants will collaborate to develop or improve a discreet TxDOT TSMO business process/scenario, applying what they have learned in the workshop.

TxDOT able to choose one of the following TSMO areas as a focus for the workshop:
- Traffic Incident Management
- Work Zone Management
- Planned Special Events
- Road Weather Management
- Traffic Management
- Traffic Signal Management

Workshop for TxDOT anticipated for late October 2018 in Austin, to coincide with kick-off of the consultant contracts to develop the District TSMO Program Plans.
Program planning resources

National Operations Center of Excellence

- transportationops.org
- Partnership of AASHTO, ITE, and ITS America with support from the FHWA
- Offers a document library, peer exchanges, webinars, on-call assistance, assessments, and other TSMO support via the Operations Technical Services Program.

National Operations Center for Rural Road Safety

- ruralsafetycenter.org

FHWA Resource: What is TSMO?
https://ops.fhwa.dot.gov/plan4ops/focus_areas/tsmo/what_is_tsmo.htm
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Table of contents</td>
</tr>
<tr>
<td>1</td>
<td>Introduction</td>
<td>2 - 9</td>
</tr>
<tr>
<td>2</td>
<td>What is TSMO?</td>
<td>10 - 16</td>
</tr>
<tr>
<td>3</td>
<td>Why TSMO?</td>
<td>17 - 22</td>
</tr>
<tr>
<td>4</td>
<td>Statewide TSMO Outreach</td>
<td>23 - 31</td>
</tr>
<tr>
<td>5</td>
<td>Statewide TSMO Program Structure</td>
<td>32 - 36</td>
</tr>
<tr>
<td>6</td>
<td>Statewide TSMO Strategic Plan</td>
<td>37 - 60</td>
</tr>
<tr>
<td>7</td>
<td>District TSMO Program Plan Development</td>
<td>61 - 73</td>
</tr>
<tr>
<td>8</td>
<td>Closing / Questions / Contacts</td>
<td>74 - 77</td>
</tr>
</tbody>
</table>
Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.

Henry Wickes, PE
TM Engineering Branch Supervisor

Henry Wickes, PE
TM Engineering Branch Supervisor

Adam Chodkiewicz, PE,
Transportation Engineer

Marco Cameron, PE,
Transportation Engineer

Jianming Ma, PE,
Transportation Engineer

David McDonald, Traffic Incident Management (TIM) Coordinator

WFS, ABL, WAC, FTW, BWD

SAT, PHR, LRD, AUS, CRP, SJT

ELP, ODA, LBB, AMA, CHS

DAL, PAR, TYL, ATL

BRY, YKM, LFK, HOU, BMT

Statewide

Michael Chacon, PE, Director, Traffic Safety Division (TRF)
Brian Fariello, PE, Director, TRF - Traffic Management Section (TM)
Contact

TxDOT – Traffic Safety Division

Marco Cameron, PE
Marco.Cameron@txdot.gov

Brian Fariello, PE
Brian.Fariello@txdot.gov

Districts Webpage:

http://www.txdot.gov/inside-txdot/district.html