



U.S. Department of Transportation  
Federal Highway Administration

# Transportation Systems Management and Operations Program Planning Webinar

Hosted by NOCoE  
September 5, 2018



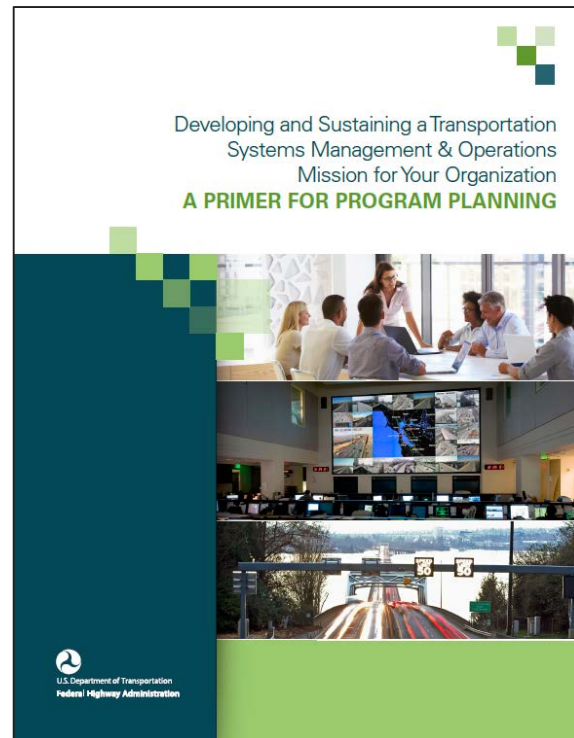
# Webinar Agenda

- Overview of FHWA Primer on Transportation Systems Management and Operations (TSMO) Program Planning
  - ▶ Jim Hunt, Federal Highway Administration (FHWA) Office of Operations
  - ▶ Pat Noyes, Pat Noyes & Associates
- State Perspectives
  - ▶ Washington State DOT, Monica Harwood
  - ▶ Nevada DOT, Rod Schilling
  - ▶ Arizona DOT, Susan Anderson
- TSMO Program Plan Development Roundtable Trends
  - ▶ Daniel Grate, FHWA Resource Center
- Discussion



# FHWA's Primer on TSMO Program Planning

- The Primer provides the rationale for and the key elements of successful TSMO program planning.
- It is intended to help agencies understand:
  - ▶ Why is TSMO program planning important? How can it benefit a transportation agency or region?
  - ▶ What are key elements of effective TSMO program planning, and what steps or activities should be taken?
  - ▶ What would an effective TSMO Program Plan look like?



# Motivation for Primer

- TSMO efforts within a State or region need to move from an ad hoc set of activities or strategies into a cohesive ***program*** that is vital to the mission of the agency to be most effective.
- TSMO program planning helps agencies develop and sustain a formal TSMO program.



# FHWA's Commitment to TSMO

- TSMO Program Planning Primer and series of workshops to support TSMO program planning
- Other projects and documents include:
  - ▶ Mainstreaming TSMO
  - ▶ Integrating Travel Time Reliability in Transportation System Management
  - ▶ Capability Maturity Frameworks
  - ▶ Integrating Business Processes to Improve Transportation System Performance
  - ▶ TSMO in Action
  - ▶ Guidance on planning for TSMO within subareas and corridors



# Understanding TSMO



# What is TSMO?

- TSMO focuses on actively managing the multimodal transportation network to deliver improved safety and mobility outcomes.
- TSMO is an integrated set of strategies to optimize the performance of infrastructure through the implementation of multimodal and multi-jurisdictional systems, services, and projects designed to preserve capacity and improve security, safety, and reliability of the transportation system.

- *Moving Ahead for Progress in the 21st Century (MAP-21)*



# TSMO Strategies and Efforts

- Traffic incident management.
- Traffic signal coordination.
- Transit signal priority.
- Freight management.
- Work zone management.
- Special event management.
- Road weather management.
- Congestion pricing.
- Integrated corridor management.
- Managed lanes.
- Ridesharing programs.
- Parking management.
- Electronic toll collection.
- Traveler information.
- Coordination of highway, rail, transit, bicycle, and pedestrian operations.
- Active transportation and demand management.
- Connected/automated vehicles.





# Why Do We Need TSMO?



Source: iStock/Pavlina2510

- Greater safety.
  - ▶ Variable speed limit systems can reduce crashes.
- More free time.
  - ▶ Transit signal priority reduces transit delay.
  - ▶ Parking management decrease search time.
- Less wasted fuel.
  - ▶ Incident management programs reduced fuel consumption.
- Cleaner air.
  - ▶ A signal retiming projects reduce emissions.
- More livable communities.
  - ▶ Improved access, more mobility choice, more accurate and timely information.



# Shifting Paradigms

## Operations and Maintenance

Operating Completed  
Projects

Reactive

Recurring

## TSMO

Integrated throughout the  
Project Lifecycle

Proactive and Reactive

Recurring and Non-  
Recurring



# Shifting Paradigms

## Operations and Maintenance

## TSMO

Average Travel Time, LOS

Travel Time Reliability

Focus on Highways and  
Jurisdictions

Entire Transportation  
System

Moving Cars and Trucks

Moving People and Cargo

Individual Strategies

Integrated Strategies



# TSMO Program Planning

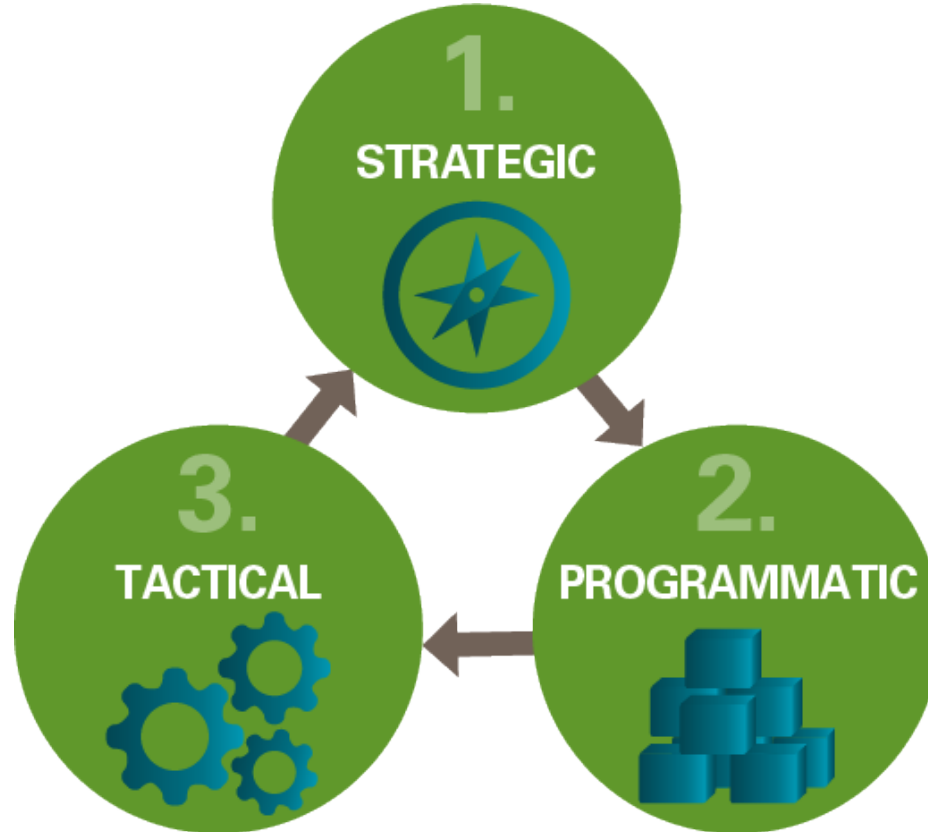


# Why TSMO Program Planning?

- Moves TSMO from an ad hoc set of activities or strategies into a cohesive ***program*** that is vital to the mission of the agency.
- Facilitates ***integration*** and ***mainstreaming*** of TSMO within a transportation organization to support new and evolving roles and responsibilities of these organizations.



# Key Elements of TSMO Program Planning



# Strategic Elements: *Setting Clear Direction and Common Understanding*

TSMO program planning starts with defining a **high-level strategic business case** for TSMO and clearly defining TSMO as a **core part of the agency's mission and vision**.



# Developing the Business Case



- Internal motivation – *Why is TSMO important for the agency?*
- The value to customers – *Why is TSMO important to the traveling public and communities?*
- Issues:
  - ▶ Challenges facing the region.
  - ▶ Cost-effectiveness and benefits of TSMO strategies.
  - ▶ Anticipated future challenges.
  - ▶ Emerging opportunities, such as new data and technologies.

## Florida DOT's TSMO Business Case

TSMO Strategic Plan describes:

- Florida's challenges, including population growth, traffic fatalities, and safety for older drivers in particular.
- Benefit-cost ratios of intelligent transportation system (ITS) technologies.
- Economic benefits associated with ITS investments due to technology sector job creation.

Source: Florida DOT, *Florida Transportation Systems Management and Operations Strategic Plan*, December 13, 2013.





# Developing a TSMO Vision and Mission

- Identifying a vision for TSMO.
  - ▶ Shared direction focused on high-level outcomes.
- Developing a description of the role of TSMO in supporting the agency's mission.

## Maryland DOT's TSMO Program Vision and Mission

### TSMO Program Vision

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

### TSMO Program Mission

*To establish and maintain a TSMO program and implement supporting projects within Maryland State Highway Administration (SHA) improving mobility and reliability for all people and goods through operations of transportation facilities.*

Source: Maryland DOT – State Highway Administration, *Maryland Transportation Systems Management & Operations Strategic Implementation Plan*, August 2016.



# Developing Strategic Goals and Performance Objectives



- Focusing on outcomes to the customer.
- Common steps:
  1. Build off of agreed-upon planning goals.
  2. Gather data and understand baseline conditions.
  3. Collaborate internally and externally.
  4. Define performance targets.

## Denver Regional Continuity of Government – TSMO Goals, Objectives, and Performance Measures

Objectives	Initiatives	Performance Measures
<b>Goal 1: Provide reliable transportation operations for regional travelers</b>		
<i>Daily Operations</i>	<i>Daily Operations</i>	
<ul style="list-style-type: none"> <li>Increase trip travel time reliability on freeways and arterials for all modes</li> <li>Reduce traveler stops and delay due to signal operations</li> </ul>	<ul style="list-style-type: none"> <li>Continue to coordinate signal timing system management across jurisdictional boundaries</li> <li>Continue to coordinate freeway management</li> <li>Expand freeway management</li> </ul>	<ul style="list-style-type: none"> <li>Travel Time Index (TTI)</li> <li>Planning Time Index (PTI)</li> <li>Transit on-time reliability</li> <li>Arterial Progression Index (API)</li> </ul>
<i>Incident Management</i>	<i>Incident Management</i>	
<ul style="list-style-type: none"> <li>Reduce average incident duration time</li> <li>Reduce the occurrence of secondary incidents</li> </ul>	<ul style="list-style-type: none"> <li>Establish Regional Incident Management Process</li> </ul>	<ul style="list-style-type: none"> <li>Average roadway clearance time</li> <li>Average incident clearance time</li> </ul>
	<i>Work Zones and Special Conditions</i>	
	<ul style="list-style-type: none"> <li>Improve work zone/special event management</li> </ul>	<ul style="list-style-type: none"> <li>Number of secondary incidents</li> </ul>
	<i>Cross-cutting</i>	
	<ul style="list-style-type: none"> <li>Coordinate/integrate multi-modal traveler information</li> <li>Expand traffic monitoring capabilities and infrastructure</li> <li>Establish shared monitoring between jurisdictions</li> <li>Expand a shared communications network</li> <li>Establish a shared data warehouse or data management process</li> </ul>	
<b>Goal 2: Provide safe transportation operations for regional travelers and for public safety and construction/maintenance personnel</b>		
<ul style="list-style-type: none"> <li>Reduce traffic injury rates</li> <li>Reduce traffic fatality rates</li> <li>Reduce public safety and construction/maintenance personnel injury/fatalities</li> </ul>	<ul style="list-style-type: none"> <li>Establish Regional Incident Management Process</li> </ul>	<ul style="list-style-type: none"> <li>Traffic fatality rates</li> <li>Traffic injury rates</li> <li>Number of personnel injuries/fatalities</li> </ul>
<b>Goal 3: Provide transportation operations support for non-auto modes of travel</b>		
<ul style="list-style-type: none"> <li>Reduce SOV mode share</li> <li>Reduce per capita VMT</li> <li>Reduce per capita greenhouse gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>Further coordinate/integrate multi-modal traveler information</li> <li>Define criteria for operations improvements and monitoring for bicycle and pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>Single occupancy vehicles (SOV) mode share</li> <li>Annual per capita VMT</li> <li>Annual per capita greenhouse gas emissions</li> </ul>

Source: DRCOG, Regional Concept of Transportation Operations, Adopted August 15, 2012.



# Identifying Strategic Focus Areas



- Geographic:
  - ▶ Scales such as corridors, urban areas, or rural areas.
- Functional areas:
  - ▶ TSMO functions, such as traveler information, incident management, and work zone management.
- Internal capabilities:
  - ▶ Issues such as data management and decision support.
  - ▶ Often identified based on an agency self-assessment.

## Caltrans' Corridor Focus

Caltrans has put significant emphasis on the corridor-level through development of Corridor System Management Plans because it recognizes that these plans are unique in their ability to analyze existing corridor conditions, to forecast corridor performance through scenario testing utilizing complex traffic simulation models on a corridor-wide scope, and to recommend consensus-driven long-range implementation strategies.

Source: Caltrans, *Corridor System Management Plans: Findings and Recommendations*, January 2013.



# Programmatic Elements: *Organizing, Staffing, and Developing Processes to Advance TSMO*

The programmatic elements of TSMO program planning **address the institutional and organizational structure** needed to deliver the TSMO mission for the agency in **coordination with its partners**.



# Defining an Organizational Structure



- Addressees the roles and responsibilities for the TSMO program.
  - ▶ Where is TSMO in the organizational hierarchy?
  - ▶ What organizational unit(s) have primary responsibilities for TSMO?

## Arkansas DOT TSMO Division

When the Arkansas DOT initially conducted a capability maturity model assessment of TSMO for its organization, it recognized a number of weaknesses in how it was organized to advance TSMO. As a result, the agency developed a new transportation systems management and operations division in 2015 to provide focus within the agency. The agency shifted several core functions into the TSMO Division, including traffic safety and operational programs, such as roadway-safety improvements, traffic signal systems, ITS operations, pavement conditions, traffic operations center, incident management, emergency management, and innovative technologies.

Source: Arkansas DOT, *Organization Chart*.



# Organizational Structure Examples



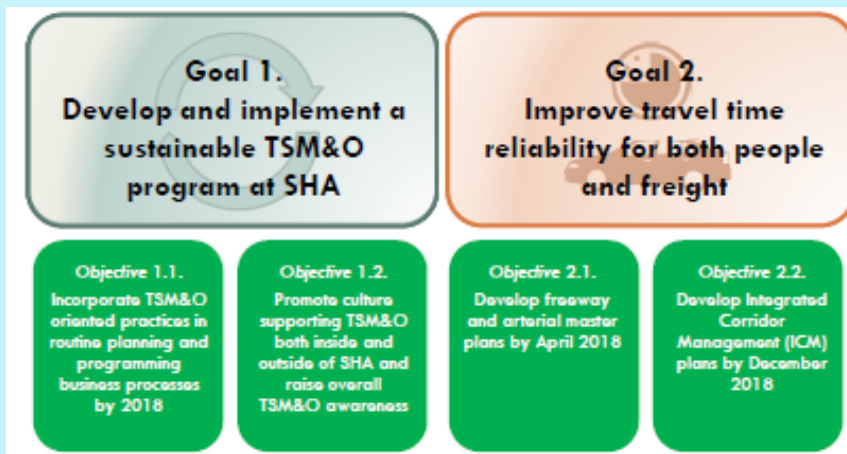
- TSMO Division
  - ▶ Arizona DOT
  - ▶ Colorado DOT
- Operations
  - ▶ Tennessee DOT (Traffic Operation Division under Operations Bureau)
  - ▶ New Hampshire DOT (TSMO Bureau under Operations Division)
- Highway Division
  - Iowa DOT (Systems Operations Bureau)
- Office of Traffic Engineering & Operations
  - ▶ Florida DOT
- Executive Committee
  - ▶ Maryland DOT SHA Administrator chairs Committee



# Developing TSMO Programmatic Objectives

- Programmatic objectives focus on the effectiveness of delivering the TSMO program and business processes and procedures.
- Typically addresses:
  - ▶ Development of plans, programs, or services.
  - ▶ Gaining new staffing capabilities.
  - ▶ Customer service and responsiveness.
  - ▶ Resources.

## Maryland TSMO Program Objectives (Portion)



Other programmatic objectives include:

- Implement a comprehensive, system level performance measurement program to monitor mobility and reliability targets by June 2017.
- Coordinate and ensure TSMO is considered in SHA's asset management program.
- Include reliability in existing traffic analyses and travel forecasting modeling tools.



# Identifying Staffing and Workforce Development Needs



- Identify core TSMO program staff roles, responsibilities, and requirements.
- Identify needed skill sets and career path.
- Identify training needs.
- Consider using contractors or outsourcing.

## Iowa DOT TSMO Staffing Needs in TSMO Program Plan

Iowa DOT identified about 40 staffing positions to support the TSMO Program across multiple functions including:

- Management and Support.
- Systems and Technical Services.
- Traffic Incident and Emergency Management.
- Research and Decision Support.
- Traffic Management Center Services.
- Districts.

Source: Iowa DOT TSMO Program Plan



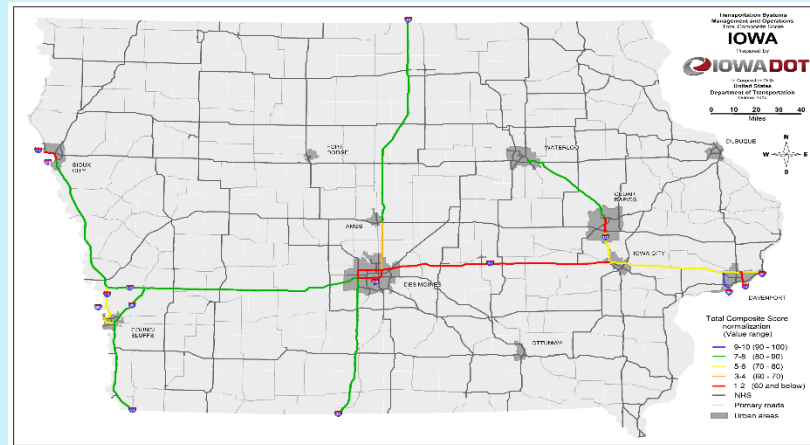


# TSMO Program Resource Management



- Financial resource management considerations.
  - ▶ TSMO-related assets.
  - ▶ Processes and procedures for sustainable funding.
  - ▶ Processes and procedures for prioritizing funding.

Iowa DOT uses Interstate Condition Evaluation for Operations (ICE-OPS) as a Tool for Prioritizing Investments



Source: Iowa DOT.



# Developing Business Processes and Management Strategies

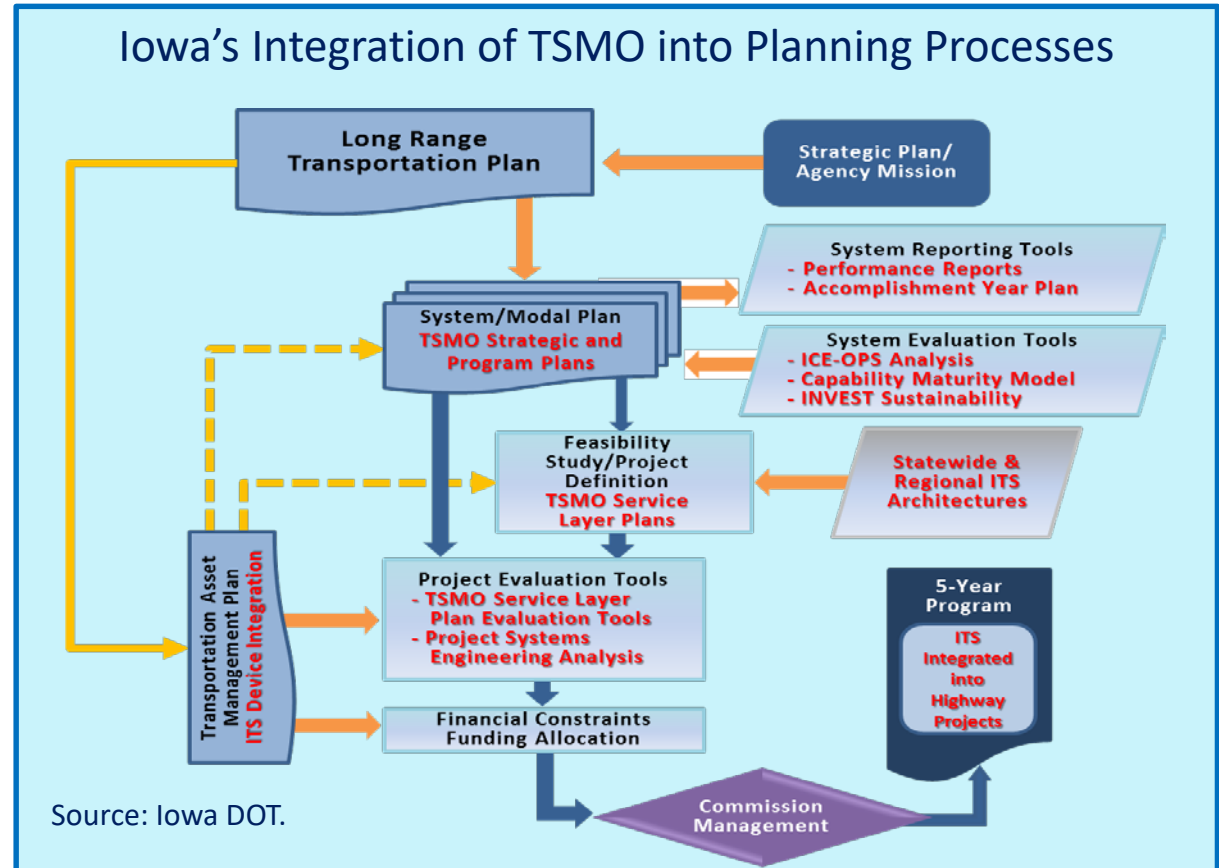


- Organizational and Administrative Processes.
- Procurement and Contract Management.
- Performance Management, Quality Management, and Continuous Improvement.
- Data Management.
- Decision Support Systems.
- Research and Development.



# Integrating TSMO into Agency Planning

TSMO projects, services and activities should be coordinated and integrated with statewide and regional planning.



# Promoting and Embedding a TSMO Culture



- Internal Collaboration:
  - ▶ Planning.
  - ▶ Programming.
  - ▶ Project Development and Design.
  - ▶ Maintenance and Asset Management.
- Collaboration with External Partners.
- Communication, Marketing, and Outreach with System Users.

## Colorado DOT Integration of TSMO Evaluations into Project Development Process

Colorado DOT developed an operations evaluation process as an essential element of the project development process for new infrastructure projects. A TSMO evaluation helps ensure that suggested improvements are included in the project throughout the design process. It consists of:

1. A safety analysis.
2. An operations analysis.
3. An ITS analysis.

Source: Colorado DOT, Lean Case Studies, available on CDOT web site.



# Tactical Elements: Identifying Priority Services, Activities, and Projects

TSMO program planning addresses tactical issues that **lay the groundwork for TSMO deployment**, including the identification of prioritized services, activities, and projects.



# Identifying Prioritized Services, Activities, and Projects



- What services, activities and projects provide the greatest return on investment in meeting our TSMO goals and objectives?
- What services and activities are we performing today that can be leveraged or enhanced to support TSMO?
- What gaps do we currently have that need to be addressed?
- What is the structure of the service delivery program?






# Defining Implementation Policies and Guidelines to Support Service Functions



- May include:
  - ▶ Policies, such as quick clearance for traffic incident management (TIM).
  - ▶ Guidance on public/private initiatives in data sharing.
  - ▶ Decision-making guidelines for implementation of services, projects, or activities.



# Performance Management and Financial Management Across All Three Elements

Element of TSMO Program Planning	Performance Management	Financial Management
 Strategic	<ul style="list-style-type: none"><li>• Strategic goals and performance objectives.</li><li>• Uses measures focused on outcomes for system users.</li></ul>	<ul style="list-style-type: none"><li>• Considers financial resources in developing the strategic and performance objectives.</li></ul>
 Programmatic	<ul style="list-style-type: none"><li>• Programmatic objectives.</li><li>• Uses measures focused on internal processes and activities.</li></ul>	<ul style="list-style-type: none"><li>• Identifies staffing and resources needed for the TSMO program.</li><li>• Identifies sustainable funding sources or approaches for the TSMO program.</li></ul>
 Tactical	<ul style="list-style-type: none"><li>• On-going program monitoring and evaluation in relation to objectives.</li><li>• Uses data to inform specific actions and deployments.</li></ul>	<ul style="list-style-type: none"><li>• Develops near-term (e.g., 5-year) investment plan, including specific actions or projects, along with funding sources.</li></ul>





# Making the Key Elements Work Together: The Resulting TSMO Program Plan



## 1. **Strategic Foundations** -- See Section 5 on Strategic Elements

- a. Why TSMO Matters
- b. TSMO Plan Purpose
- c. TSMO Vision and Mission
- d. Strategic Goals and Objectives

## 2. **The TSMO Program** -- See Section 6 on Programmatic Elements

- a. TSMO Program Objectives
- b. Organizational Structure
  - i. Program Structure
  - ii. Inter and Intra-agency Integration
- c. Business Processes
  - i. Budgeting and Accounting
  - ii. Procurement and Contract Management
  - iii. Administrative Processes
  - iv. Quality Management and Continuous Improvement
  - v. Systems Engineering
  - vi. Performance Management ,including data management and decision support
- d. Resources
  - i. Staffing and Workforce Development
  - ii. Resource Inventories and Asset Management
  - iii. Financial
  - iv. Research and Development
- e. Communication and Collaboration
  - i. Internal Collaboration
  - ii. Collaboration with External Partners
  - iii. Communications, Marketing and Outreach with Users

## 3. **Implementation and Deployment** -- See Section 7 on Tactical Elements

- a. TSMO Services, Projects, and Activities
- b. Annualized Actions and Deployment
- c. Implementation Policies and Guidelines
- d. Performance Assessment

# TSMO Program Planning

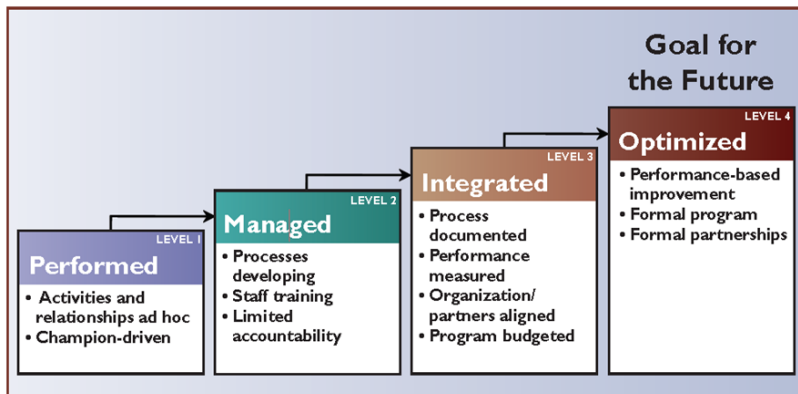
Presentation for NOCoE/FHWA

September 5, 2018

Susan Anderson, PE, PTOE  
Arizona Department of Transportation

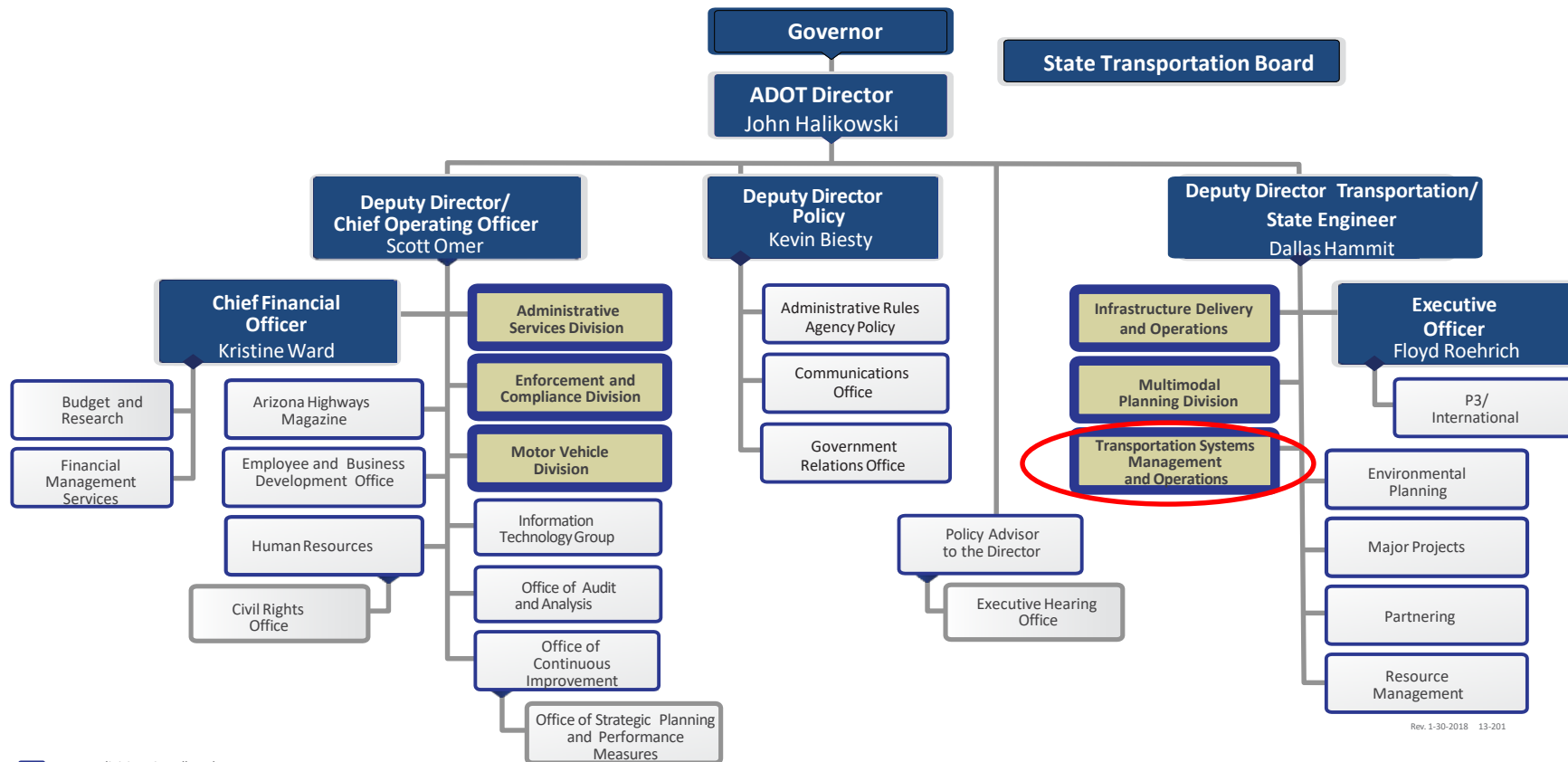
# Capability Maturity Model

- ADOT Self Assessment March 2014
- Highest scores (2.0 on 1-4 scale)
  - Systems and Technology
  - Culture
  - Collaboration
- Weakest score – Business Processes



## The “Dimensions” of Capability





# ADOT TSMO Strategic Plan

	<b>Immediate Recommendations</b> <b>&lt; 2 YEARS</b>	<b>Near-Term Recommendations</b> <b>2-4 YEARS</b>	<b>Long-Term Recommendations</b> <b>4+ YEARS</b>
<b>TRAFFIC INCIDENT MANAGEMENT</b>	<ul style="list-style-type: none"> <li>Develop a provision to require contractors to take TIM training</li> <li>Formalize ADOT's Quick Clearance policy and roles</li> <li>Create joint ADOT/DPS TIM policies and reporting</li> <li>Develop TIM resources (including website training program)</li> <li>Expand ALERT/FSP to other areas</li> </ul>	<ul style="list-style-type: none"> <li>Establish a Statewide TIM Coordinator</li> <li>Update and automate the Statewide Alternate Routing Plan</li> <li>Expand "Move Over"/"Move Minor Crash" signage and education programs</li> </ul>	<ul style="list-style-type: none"> <li>Develop Regional TIM Coalitions</li> </ul>
<b>FIELD MAINTENANCE</b>	<ul style="list-style-type: none"> <li>Evaluate staff compensation</li> <li>Formalize a career path with promotional opportunities</li> <li>Create training matrix for cross training</li> <li>Develop response-time thresholds for maintenance calls</li> <li>Evaluate P3 opportunities for TSM&amp;O maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Refine/create TSM&amp;O asset management process (FIS)</li> <li>Develop a formalized statewide maintenance training program</li> </ul>	<ul style="list-style-type: none"> <li>Develop a computer-based program to support asset management</li> <li>Evaluate and updating training program</li> </ul>
<b>SAFETY</b>	<ul style="list-style-type: none"> <li>Establish a formal Safety Corridor Program</li> <li>Re-evaluate HSIP programming</li> <li>Finalize Safety Analyst/HSM technology</li> <li>Implement SHSP</li> <li>Refine crash form/electronic form submittal</li> </ul>	<ul style="list-style-type: none"> <li>Update SHSP Plan</li> <li>Implement enhanced GIS/web-based crash reporting and analysis</li> <li>Make safety data available to users</li> <li>Analyze routes with high crash rates and identify low-cost countermeasures</li> </ul>	<ul style="list-style-type: none"> <li>Update SHSP Plan</li> </ul>
<b>PROJECT PROGRAMMING, DEVELOPMENT, AND IMPLEMENTATION</b>	<ul style="list-style-type: none"> <li>Identify and evaluate current and future TSM&amp;O funding sources</li> <li>Develop a 5-year Business Plan to identify TSM&amp;O priority projects</li> <li>Refine TSM&amp;O criteria for ADOT programming process</li> <li>Establish regular meetings with MPD for project programming and implementation</li> <li>Update the PA process to include TSM&amp;O</li> <li>Establish funding ranges for TSM&amp;O improvements</li> </ul>	<ul style="list-style-type: none"> <li>Create a process for performance-based prioritization of TSM&amp;O projects</li> <li>Establish a TSM&amp;O Project Development Engineer position</li> </ul>	<ul style="list-style-type: none"> <li>Update 5-year TSM&amp;O Business Plan</li> </ul>
<b>NEXT GENERATION TECHNOLOGY</b>	<ul style="list-style-type: none"> <li>Develop a Data Assessment to define TSM&amp;O data needs and sources</li> <li>Develop CV/AV strategy</li> <li>Develop a 3-year Technology Plan in coordination with ITG</li> <li>Expand communications links to field devices</li> </ul>	<ul style="list-style-type: none"> <li>Develop a Data Management Strategy with ITG</li> <li>Establish a TSM&amp;O Policy/Research Coordinator position</li> <li>Update Technology Plan &amp; Statewide ITS Architecture</li> <li>Formalize ITG technical staff roles</li> </ul>	<ul style="list-style-type: none"> <li>Update 3-year Technology Plan</li> </ul>
<b>PERFORMANCE MEASURES</b>	<ul style="list-style-type: none"> <li>Finalize TSM&amp;O Performance Measures</li> <li>Develop a Reporting Strategy for internal and external annual reporting</li> <li>Formalize MAP-21 reporting requirements for safety and mobility, align TSM&amp;O Performance Measures to AMS</li> </ul>	<ul style="list-style-type: none"> <li>Distribute a State of the System Report for TSM&amp;O</li> </ul>	<ul style="list-style-type: none"> <li>Conduct a 5-year evaluation of TSM&amp;O Performance at ADOT</li> </ul>
<b>OUTREACH</b>	<ul style="list-style-type: none"> <li>Partner with ADOT Communications to support media coverage and public outreach for TSM&amp;O</li> <li>Establish regular meetings with Regional MPOs</li> <li>Develop a TSM&amp;O inreach strategy to promote TSM&amp;O program internally</li> <li>Create a scheduled program to have TSM&amp;O leadership meet at each ADOT District twice per year</li> </ul>	<ul style="list-style-type: none"> <li>Leverage the Policy Coordinator position to support public outreach</li> </ul>	
<b>PARTNERSHIP WITH UNIVERSITIES</b>	<ul style="list-style-type: none"> <li>Develop an annual TSM&amp;O internship program with statewide universities</li> <li>Update TSM&amp;O Research program through the ADOT Research Center</li> </ul>	<ul style="list-style-type: none"> <li>Formalize partnerships with universities to create projects to support data management and performance measurement</li> </ul>	

→ Recommendations that build off one another as part of a larger recommendation

# Capability Maturity Re-Assessment

## ► Significant Impacts

- Creation of TSMO Division
- Re-organization of ADOT Districts

DIMENSION	2014 CMM Score	2016 CMM Score	COMMENTS
Business Processes	1	2-	New TSMO Division created within Arizona DOT has raised awareness of TSMO and is incorporated into the project planning process.
Systems and Technologies	2-	2	ADOT has developed an ITS Statewide Architecture and has funding in place to update the Architecture document.
Performance Measurement	1+	1+	This area is progressing slower than desired.
Culture	2-	2	The TSMO Division has provided training to other divisions to improve understanding of how TSMO integrates with other divisions.
Organization and Staffing	1.5	2+	Development of new TSMO Division has resulted in the consolidation of several key ADOT groups into the TSMO Division.
Collaboration	2	2	Although good collaboration between TSMO Division and Infrastructure Delivery and Operations (IDO) Division, limited opportunities to collaborate with rural jurisdictions.

# TSMO Program Planning

## Current State

## ► Business Processes

- Planning and programming of projects
- TSMO comprehensive, long-term planning document
- Five-year planning cycle is difficult to plan
- Need to collaborate with other Divisions





# TSMO Program Planning

## Current State

- ▶ Systems and Technology
  - Standardization / innovation
  - Integration on regional basis
- ▶ Performance Measurement
  - Depends upon data – current and accurate
  - Use data to identify priority projects
  - Formalizing asset management





# TSMO Program Planning

## Current State



- ▶ Culture
  - Still challenged with understanding TSMO
- ▶ Organization and Staffing
  - Identify opportunities for increased efficiencies
- ▶ Collaboration
  - Opportunities exist to work across Divisions and with regional agencies

# FHWA Program Planning Workshop

▶ December 2017

▶ Benefits

- Brought together stakeholders for TSMO
  - TSMO, IDO, MPD, FMS, P3/Contracts, FHWA-AZ
- Collaboration and communication
- Highlight the role and need for TSMO across agency
- Improved support and interest
- Better defined actions to move forward

# FHWA Program Planning Workshop

## ► Outcomes

- Focus on TSMO staffing resources
  - Identifying unique, specialized skill sets
  - Updating position descriptions
  - Career paths
- Incorporate TSMO into ADOT processes
  - Project Development/Design
  - Asset Management
  - Planning and Programming



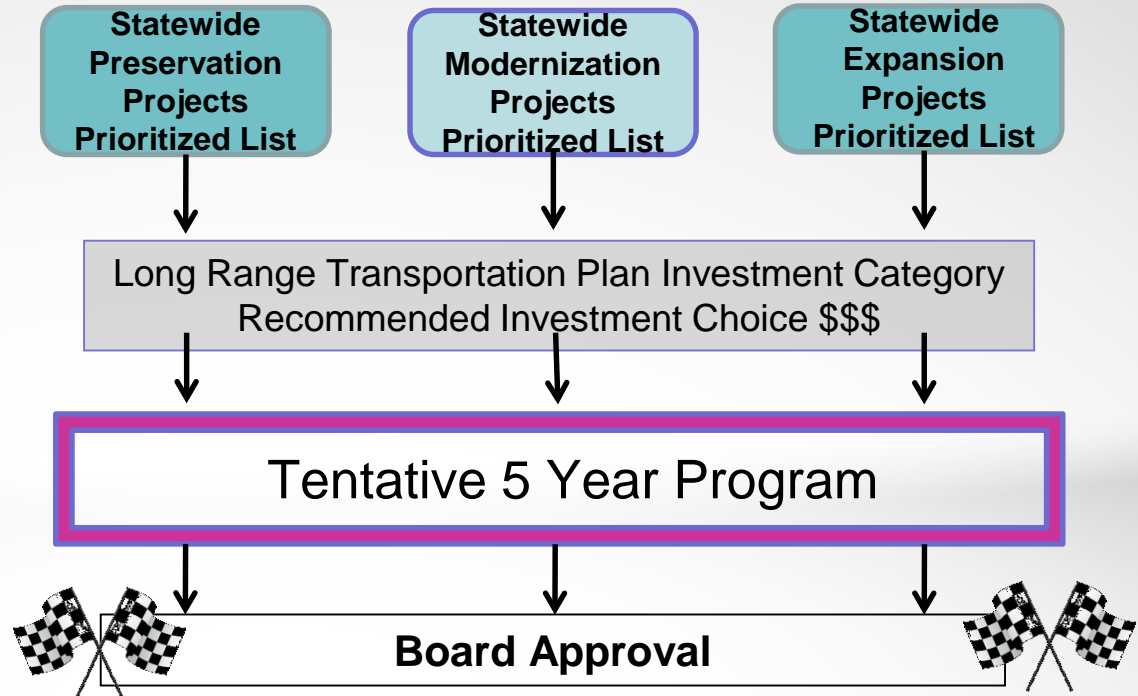
# Program Projects with TSMO Features



- ▶ Must be included in STIP
- ▶ Planning to Programming (P2P) Process
- ▶ Requires TSMO to identify projects
  - One comprehensive list
  - Prioritized, ranked and scored
  - Documented, defensible process needed

# Planning to Programming (P2P)

## Overview



# TSMO Role in P2P Process

## Projects Identified From Studies

Tribal Program  
Planning Assistance for Rural Areas  
Bike / Pedestrian Program  
Project Scoping / Corridor Planning  
Freight Planning Program  
MPO / COG Coordination Program  
Statewide Planning Program  
Rail Planning Program  
Safety Program

+

## Technical Nominations

District  
Pavement  
Bridge  
Traffic Safety Section  
**TSMO**  
Subprograms:

- Stormwater
- Port of Entry
- Rest Areas
- Rockfall/Slope Management

=

## Statewide Pool of Projects



# Additional Challenges / Next Steps

- ▶ Prioritization process for TSMO projects
- ▶ Continue seeking alternatives
  - Procurement
  - Funding
- ▶ Data management
- ▶ Invest in TSMO staff



# Thank you!

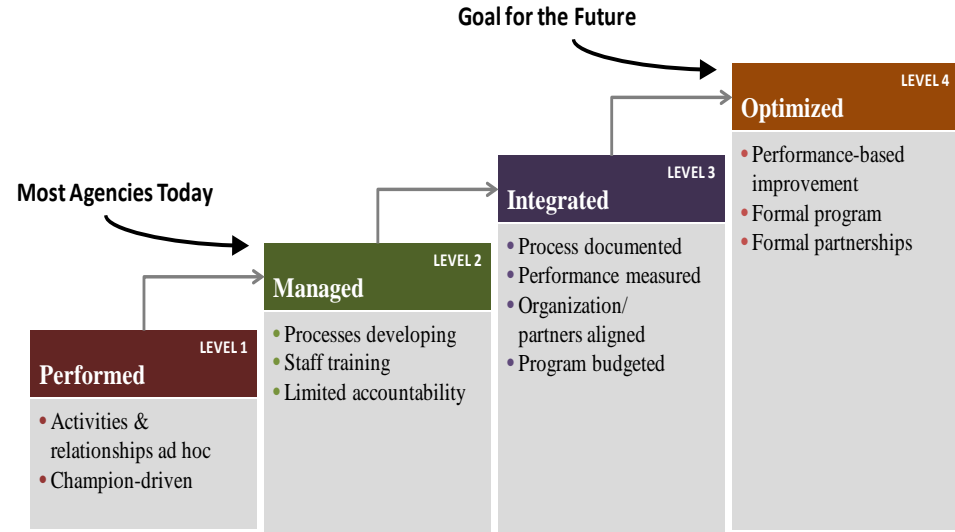
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602-712-6910



# TSMO Program Plan Development Roundtable Trends

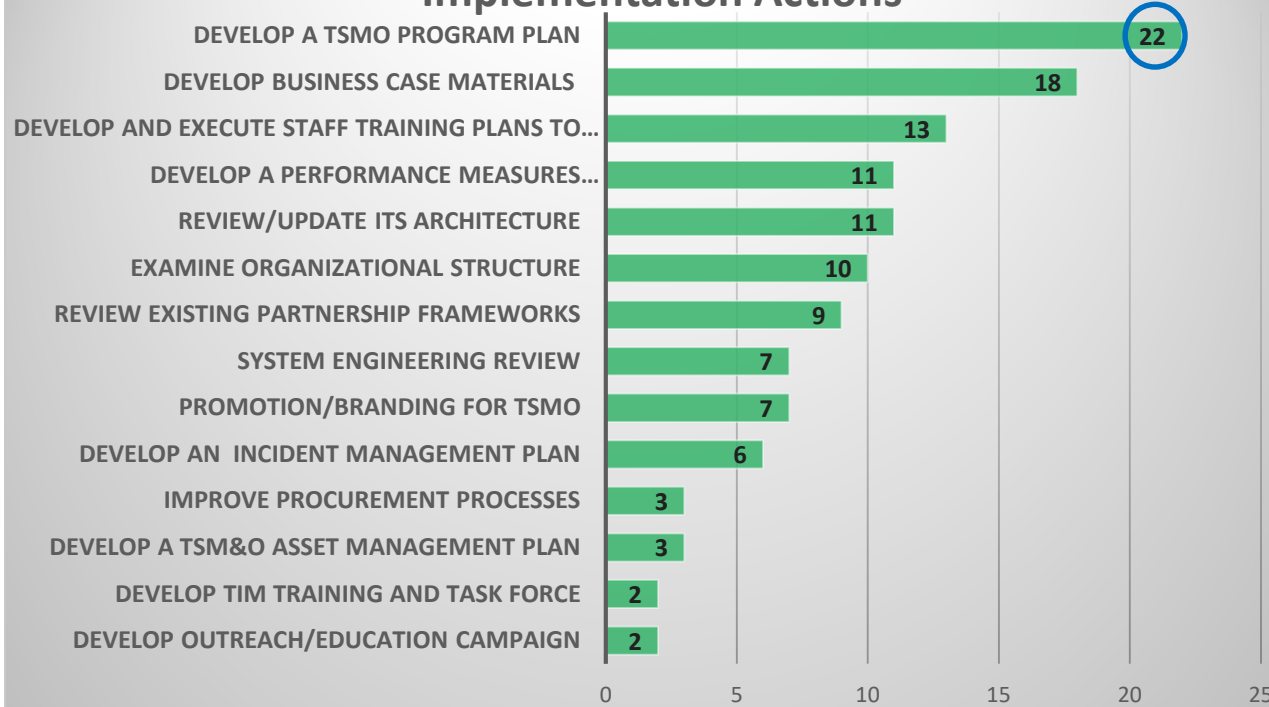


# Capability Maturity Model





## Implementation Actions

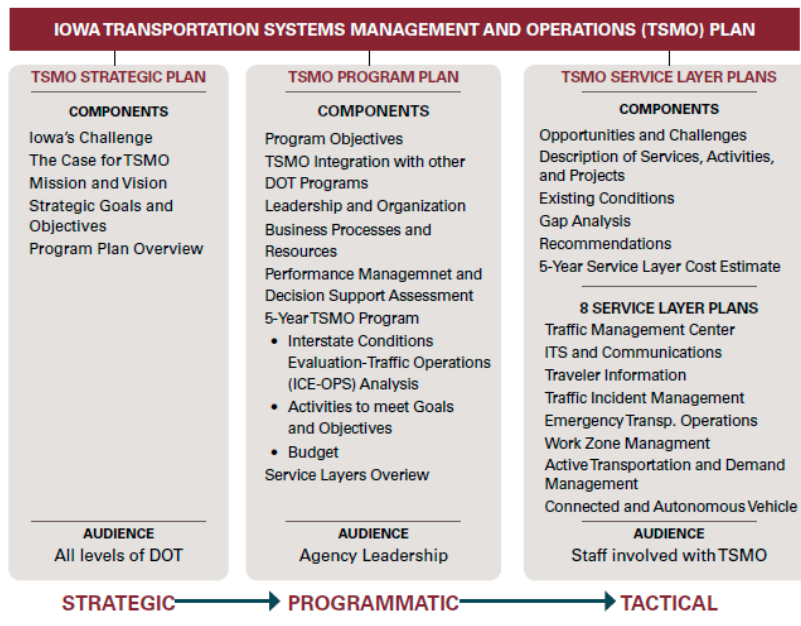


# TSMO Program Plan Development Roundtable Trends

- Four Roundtable with this Theme
  - ▶ Winter 2016
    - IA, MD, SD,
  - ▶ Spring 2017
    - Birmingham MPO, AzTech, TDOT
  - ▶ Winter 2017
    - NCTCOG, WA, DVPRC, NJTPA, ARC
  - ▶ Spring 2018
    - PA, OH, MO



# Plan Examples





**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.I. by Q 3 2016  
 1.1a.II. 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.I. 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.



# ODOT Transportation Systems Management & Operations Plan

Resource Alignment Brief



# ODOT Transportation Systems Management & Operations Plan Plan Summary



Prepared for:



Prepared by:

# ODOT Transportation Systems Management & Operations Plan

Action Implementation Plan



Prepared for:



Prepared by:

May 2017  
Updated December 2017

# Lessons Learned

- TSMO Program Plan Development
  - ▶ Cost: \$0 – 400k
  - ▶ Timeframe: 6-18 months
- Plan Format
  - ▶ Statewide Strategic Plan – High-level Document
  - ▶ Program Plan – Tactical Document
- Plan Approach
  - ▶ “TSMO First” Mantra
  - ▶ Regional
  - ▶ Corridor





# Lessons Learned

- Performance Measures
  - ▶ Before and After Historical Data Assessments
  - ▶ Based on Available Data
  - ▶ Performance Measure Matrix Development
- Communicating TSMO
  - ▶ Leadership Buy-in
  - ▶ Making the Business Case for TSMO (*Telling Your Operations Story*)
  - ▶ Common Areas of focus: WZ, TIM, Signals
  - ▶ Rural Areas: Road Weather Management, EMS, IM, & Freight
- Funding
  - ▶ Dedicated TSMO/Operations Funding
  - ▶ Common Funds Used: CMAQ
  - ▶ Major reconstruction Projects



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# Closing Discussion

