Context and Relevance of TSMO Program Planning for WSDOT

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How TSMO ‘thinking’ evolved in WSDOT

Capability Maturity Model (CMM) Assessments. (2014 Original. 2017 Reassessment.)

- **Business Processes:**
  
  Ensure TSMO is included into future planning/scoping of projects. Revisit previously scoped projects to ensure its inclusion.

- **Systems and Technology:**
  
  Establish asset management plan for TSMO systems.

- **Performance Measurement:**
  
  Complete development of a performance measurement framework.

- **Culture:**
  
  Develop an internal and external communications accountability process regarding the expectation of TSMO first inclusion. Highlight TSMO successes in the agency.

- **Organization and Staffing:**
  
  Develop statewide TSMO training program.

- **Collaboration:**
  
  Improve state and regional collaboration efforts that have a shared understanding and managed expectations.
What is the goal of TSMO?

Maximize the safety and efficiency of existing infrastructure and systems

- Focus on reliability
- Aim to defer roadway expanding projects
- Implement strategies quickly at relatively low cost
- Regard existing capacity as an asset that needs to be managed and preserved
- Maximize safety performance of existing system
- Utilize strategies that are multimodal, intermodal and cross-jurisdictional
## Transportation Systems Management & Operations (TSMO)
Managing safety and capacity as an asset

### Example Strategies

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Transportation Systems Management & Operations (TSMO)

Integration of strategies

PASSIVE MANAGEMENT
ADDITIONAL CAPACITY STILL AVAILABLE THROUGH OPTIMIZATION OF THE SYSTEM. ROADWAY EXPANSION NOT CONSIDERED FOR VEHICLES.

- Road and Weather Information
- Truck Parking
- Emergent Development
- Weigh In Motion
- Basic Transportation Services
- Land Use Planning
- Traveler Information
- Data Collection and Sharing
- Performance Monitoring
- Partnership Agreements
- Truck Platooning
- Multi-Modal Development
- Response to Localized Needs
- Signal Optimization
- Work Zone Management
- Safety Analysis & Countermeasures
- Corridor Planning
- Cameras
- Speed Management
- Integrated Corridor Management
- Access Management
- Commute Trip Reduction
- Park and Ride Lots
- Traffic Incident Management and Incident Response
- Ramp Metering

ACTIVE MANAGEMENT
SYSTEM FULLY OR NEARLY OPTIMIZED. NO ADDITIONAL CAPACITY AVAILABLE. PERSON THROUGHPUT MAXIMIZED. STRATEGIC ROADWAY EXPANSION CONSIDERED.

- Congestion Pricing
- Adaptive Signal
- Freight/Rail Bypass
- Bus on Shoulder
- 1st/Last Mile Autonomous Shuttles
- Park and Ride Management
- Automated Traffic Management Systems
- Landuse Development
- Express Bus
- Regional Corridor Management

OPERATE

MANAGE DEMAND

EXPAND

Overview of Current State of TSMO Program Planning

Within Traffic Operations, planning efforts include program planning:

– ITS
– Low Cost Enhancements
– Incident response

But there is no overarching strategic plan for Traffic Operations that links programs, workforce, performance management, etc.

Moreover, no formal relationship of TSMO Program Planning related to Statewide Plans and Programs exists:

– Moving Washington
– Corridor Sketch Initiative
– Practical Solutions
Emerging TSMO-related Activities in WSDOT

• Workforce Development
  – TSMO Website
  – TSMO Curriculum Development
  – Statewide TSMO Working Group
• Business Processes
  – Integrated Scoping
• Collaboration
  – Community Involvement
• Performance Measurement
  – Mobility Performance Framework
Why TSMO Program Planning Now

Strategic planning is needed to:

1. More effectively deliver current funding with existing resources
   • Tie on-going efforts together, working synergy
   • Identify need for new ones
2. Allow us to identify and leverage for additional resources needed
Challenges with TSMO Program Planning

• Maintaining on-going efforts while forging new directions requires lots of resources, focus and endurance
  Example – Balancing focus on established programs like Incident Response versus new efforts like corridor operational planning with local agencies.

• How to incorporate the various levels of maturity that TSMO integration is at within the agency
  Example – Within Traffic Operations versus Project Development

• Resource availability

• Commitment not only to development of the plan but most importantly implementation of the plan which includes continued planning efforts
WSDOT Program Planning going forward

- June: TSMO Program Planning Workshop held

- July/August: Research completed on other DOT related efforts, aligning expectations and establishing resource commitment

- September: RFP development
  Phased development and implementation

- Beginning of 2019: WSDOT program planning effort kicked off
Our Team

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Engineering Division

Thor Dyson
Operations Division

Sondra Rosenberg
Planning Division

David Gaskin
Stormwater Program

Tracey Larkin
William Hoffman
Districts

Jessen Mortensen
Steve Cooke
Rodney Schilling
Kevin Maxwell
Seth Daniels
Juan Hernandez

Denise Inda
Ken Mammen
Clifford Lawson
District 1: Mary Martini
District 2: Vacant
District 3: Boyd Ratliff
RTC FAST of NV
Washoe RTC
Tahoe Regional Planning Agency
Carson Area Metropolitan Planning Organization

TCT

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TSMO Program Planning Efforts

- **TSMO Program Plan Development**
  - Engaged Senior NDOT Leadership
  - Working with a TSMO Champions Team (TCT)
  - Completed Business Case with by-in from TCT
  - Will soon complete the Program Plan (Strategic, Tactical and Programmatic Elements)

- **Next Steps – Engagement and Integration**
Our Business Case

WHY TSMO

**Populations**
- 133% increase from 1990-2006, fastest growing state in the nation
- 3 million population by 2026
- 4.3 million projected population by 2026

**Tourism-based Economy**
- Service sector employs about half of Nevada’s workers
- 17.5% of Nevada GDP

**Congestion and Associated Costs**
- $121 billion in wasted time and fuel cost in US per year
- $1,400/60hrs cost of congestion to average driver in Nevada annually
- $1.6 billion value of lost time and fuel in Nevada

**Vehicle Miles Traveled (VMT)**
- 48% from 17.6 billion in 2000 to 26.1 billion in 2015
- 34 billion projected increase of 30% by the year 2030

**Current Challenges**
- Need: Increase in demand, congestion and delay
- Need: Reduction of capacity, transportation safety and reliability

**TSIMO’s Contribution**
- Benefit: Implement solutions on existing roadways and collaboration with NDOT to include TSMO strategies such as Traffic Incident Management, Work Zone Management, Special Event Management, and Road Weather Management as well as the design of new infrastructure that can increase efficiency, reduce congestion and crashes and increase the reliability of NDOT roadways to help accommodate this growing population.

- Ohio – Kentucky – Indiana Regional Council of Government benefits from TSMO strategies:
  - Advanced Regional Traffic Interactive Management and Information System (ARTIMIS) program yielded a benefit of 12.1, while the capacity adding project would have had a benefit of only 1.1.
  - Additionally, the ARTIMIS program cost was 1/20 the cost of the capacity adding project.

- Benefit: Easier implementable and cost-effective TSMO strategies, such as real-time traffic information to plan efficient and reliable work trips, encouraging road use on public transportation to reduce the number of vehicles on the road and providing safe alternatives such as connected pedestrian and bike paths will help to reduce congestion and subsequent crashes.

- Benefit: TSMO focuses on easily implementable and cost-effective solutions that have measurable benefits to existing roadways and maximizes the efficiency of new infrastructure. Solutions such as Traffic Responsive Freeway Ramp metering can decrease delay and increase trip reliability which in turn reduces traffic crashes.

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- The Pennsylvania DOT benefits from TSMO strategies:
  - High-benefit cost ratios typically 10:1 and as much as 40:1
  - Ready to implement in lease time (usually within 12 months) and for less money than adding lanes, highly visible, many times but not always, and noticeable improvements
  - Quantifiable reduction in delay and improvement in travel time reliability
  - Measurable safety improvements
  - Improvements that continue to provide value even when long-term construction projects are completed.

- The Colorado DOT benefits from TSMO strategies:
  - High-benefit cost ratios typically 10:1 and as much as 40:1
  - Ready to implement in lease time (usually within 12 months) and for less money than adding lanes, highly visible, many times but not always, and noticeable improvements
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- The Nevada DOT Pilot program:
  - Way2Care Pilot Project aims to reduce incident response times by leveraging real-time predictive analytics to identify high-risk incident locations so that agencies such as NDOT, EPS-NHP, and RTC PART can take proactive preventive measures accordingly.

- Benefits to TSMO focuses on easily implementable and cost-effective solutions that have measurable benefits to existing roadways and maximizes the efficiency of new infrastructure. Solutions such as Traffic Responsive Freeway Ramp metering can decrease delay and increase trip reliability which in turn reduces traffic crashes.

- Washington DC Multimodal Transportation:
  - Washington DC area decreased daily VMT by approximately 14,000 miles through the use of TSMO strategies such as Multimodal Transportation Management

- NDOT Advanced Traffic Management:
  - NDOT is currently implementing an Advanced Traffic Management System in I-15 as part of Project Neos. This system will alert drivers of incidents on the corridor, help them make informed decisions to choose a safer and shorter route to their destination and therefore reduce the chance of secondary crashes. Similar systems have seen a reduction in secondary accidents of up to 20%.
Why TSMO and Why Now?

- **Future of the DOT**
  - All future gains MUST include operations & management

- **Support from upper management and an appetite for change**

- **Current synergy with NDOT Planning and Performance based decisions making**

- **User Focused Approach**
Opportunities and Challenges

• **Current synergy with NDOT Planning**
  – One Nevada Plan and Integration with MODA
  – Performance based decisions making
  – Help to better position operations projects/programs

• **Collaboration and Consensus has been tough**
  – Engagement of the TCT has been mixed
  – Change is always difficult
FHWA Primer Workshop Goals and Takeaways

• Educate Traffic Operations and NDOT as a whole
  – You don’t know what you don’t know
  – Helped to open our eyes

• Understand TSMO on a Federal Level

• The need for collaboration is essential

• Buy-in of the TSMO plan

• Flexible upon DOT’s specific needs

• TSMO Success Stories
Putting TSMO into Practice

• **Case Study from Iowa DOT** was compelling.
  – Brought back Scott Marler, Director of Operations, for a TCT meeting.
• **Focused Business Case** is essential to success
• **Tactical Elements** alone do not make a plan.
• **Program Plan** allows TSMO to grow and integrate throughout the DOT

- **Efficient & Effective**
  - More efficient and effective use of the existing network capacity

- **Alleviate Bottlenecks**
  - Alleviates bottlenecks without new construction

- **Safer System**
  - A safer system for travelers and responders to traffic incidents

- **Improved Mobility**
  - More reliable service for commuters and shippers, thereby enhancing economic competitiveness

- **Enhanced Mobility**
  - Enhanced customer mobility and outreach via state-of-the-art technologies

- **Value Performance Measures**
  - The same data collected to support operations can also be used as part of performance management
How we are going to get there

1. **DEC 2014**
   - First step towards TSMO: CMM assessment workshop and identification of action items required to advance to the next level

2. **FEB 2017 – APR 2017**
   - Develop a State of the Practice Document for TSMO

3. **APR 2017 – JUN 2017**
   - Develop a framework for TSMO Program in Nevada

4. **JUN 2017 – SEP 2018**
   - Develop a NDOT TSMO Plan and performance measures based upon the framework, and engage the NDOT Planning Division

5. **SEP 2018 – DEC 2018**
   - Develop a TSMO Review Tool and associated training based upon the TSMO Plan

6. **DEC 2018 – FEB 2019**
   - Outreach and Training for NDOT and partnering agencies

7. **FEB 2019 – MAR 2019**
   - Reassess the TSMO, CMM Workshop and perform an ongoing assessment of the TSMO Program
Thank You

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