TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSMO)

TxDOT TSMO Program Plan Update
Tom Fowler, PE – Kimley-Horn
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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): 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)
Memos issued by Bill Hale, TxDOT Chief Engineer:

“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)
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
**Statewide Strategic Plan**

- **TxDOT Statewide TSMO Strategic Plan**
  - Initial version issued in Aug 2017
  - Latest version issued in Sep 2018

**District Program Plans**

- **Austin District TSMO Program Plan**
  - Completed in Jun 2018
  - The first district TSMO plan

- **Pharr District TSMO Program Plan**

- **Houston District TSMO Program Plan**
  - Traveler Information Service Layer Plan
  - ITS Project Deployment Plan
  - Wrong Way Driving Program

- **Connected Vehicles Program**

**Example Tactical Plans**

- **Traffic Mgmt Program**
- **Work Zone Service Layer Plan**
- **Incident Mgmt Program**
TSMO Contract Solicitation

- Engineering consultant contracts to be used for TSMO planning.
- Four (4) consultants selected, each for 5 yr./$5M indefinite deliverable contracts; executed in early Oct‘18.
- Statewide project management of the contracts to be done by Traffic Safety Division (TRF).
- Work authorizations (WA) executed through these contracts will be managed and funded by the district / division that requested the WA.
TSMO Consultants Selected

- AECOM Technical Services, Inc.
- Arcadis U.S., Inc.
- DKS Associates
- Kimley-Horn and Associates, Inc.
## TSMO Consultant Assignments

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<tr>
<th>Consultant</th>
<th>Assignments</th>
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<tr>
<td>Kimley-Horn</td>
<td>WFS, ABL, WAC, FTW, BWD</td>
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<td>Kimley-Horn</td>
<td>DAL, PAR, TYL, ATL</td>
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<td>ARCADIS</td>
<td>SAT, PHR, LRD, AUS, CRP, SJT</td>
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<td>AECOM</td>
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<td>AECOM Traffic Operations Division (TRF)</td>
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TxDOT TRF-TM Contacts Providing District Support

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<tr>
<th>Contact Name</th>
<th>Role</th>
<th>Districts</th>
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<tr>
<td>Henry Wickes, PE, PE,</td>
<td>TM Engineering Branch Supervisor</td>
<td>WFS, ABL, WAC, FTW, BWD</td>
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<td>Marco Cameron, PE,</td>
<td>Transportation Engineer</td>
<td>DAL, PAR, TYL, ATL</td>
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<tr>
<td>Barbara Russell, PE,</td>
<td>TM Engineering Lead</td>
<td>SAT, PHR, LRD, AUS, CRP, SJT</td>
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<td>Jianming Ma, PE,</td>
<td>Transportation Engineer</td>
<td>BRY, YKM, LFK, HOU, BMT</td>
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<tr>
<td>Adam Chodkiewicz, PE,</td>
<td>Transportation Engineer</td>
<td>ELP, ODA, LBB, AMA, CHS</td>
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<td>David McDonald, Traffic</td>
<td>Incident Management (TIM) Coordinator</td>
<td>Statewide</td>
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Kimley-Horn Team

Support From:

- Kent Kacir, PE
- Tom Fowler, PE, PTOE
- Amy Avery, PE, PTOE
Stakeholder Driven Approach to TSMO Development
- Engage stakeholders in their environment
- Work side by side with them to develop solutions
- Build on what is in place

Focus on solutions to the most critical problems
- Identify the hot button issues in the Region
- Focus on solving those issues first and grow from there
Contract - 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).
TSMO Program Plan - Work Authorization - *Tasks*

- **Foundational Prerequisites**
  - Get commitments and endorsement from District administration, as well as other key staff and stakeholders.
  - Establish TSMO Program Plan work group.

- **Mission, Vision, Goals and Objectives**
  - Achieve consensus on goals and objectives.
  - Outreach to decision makers, stakeholders, partners.
  - Define role of TSMO Plan in context of other planning docs.

- **Performance Measurement**
  - Assess existing conditions / Conduct Capability Maturity Model (CMM) assessment.
  - Identify performance reporting strategies.

- **Leadership, Organization and Staffing**
  - Define overall staffing plan and organization.

- **Business Processes and Planning**
  - Integrate TSMO into planning processes.
  - Document agency TSMO practices, methods.

- **Resource Positioning and Development**
  - Gap analysis of technical and financial resources.
  - Identify and implement funding strategies.
  - Conduct inventory of data.

- **Services and Projects**
  - Apply Capability Maturity Framework (CMF) to assess current capabilities in various operations strategies (e.g. TIM, ICM).

- **Roles and Responsibilities**
  - Develop Staff Training Strategies/Programs.
  - Establish MOUs with partners regarding data sharing, resource sharing, incident management, etc.

- **Evaluation and Reassessment**
  - Establish reporting requirements and procedures.
**Leadership Engagement Plan**

- Brief document that among other things identifies the key decision makers, issues of concern, overall engagement strategy.
- To secure endorsement from District Administration; and key partner agencies (MPO, RMA, City, etc.)

**TSMO Planning Workgroup Plan**

- Brief document that identifies the members of the workgroup, roles in their respective agency and on the workgroup.

**Workshop/Promotional Materials**

- TSMO workshop - group activities / example scenarios
- Brochures, video clips, etc.
- Presentations overviewing process to develop TSMO program plan
- Capability Maturity Model (CMM) Surveys

**CMM Summary Report**

- Findings and recommendations resulting from CMM

**State of the Practice Report**

- Report of current state of the practice for TSMO in the district compared to other state DOTs, FHWA guidance.

**CMF Summary Report**

- Findings and recommendations resulting from CMF

**Presentation Slides for Meetings/Conferences**

- Project status updates at district or statewide meetings, conferences (ITS Texas, TRF-MNT Conference, etc.)

**Draft Program Plan**

**Program Plan Comment Matrix**

**Final Program Plan**

**Implementation**

- Complete initial implementation actions as needed.
Scope of Work Development - TxDOT Traffic Safety Division, TxDOT Dallas District, TxDOT Fort Worth District

Develop District Program Plan

Identify Tactical Plans and Develop as Needed

Develop TxDOT District Program Plans for Surrounding Districts
Andrew Oberlander
TxDOT Dallas District
Email: Andrew.Oberlander@txdot.gov

Billy Manning
TxDOT Fort Worth District
Email: Billy.Manning@txdot.gov
Contact

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<td>Tom Fowler, PE</td>
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<td><a href="mailto:Thomas.Fowler@kimley-horn.com">Thomas.Fowler@kimley-horn.com</a></td>
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<td></td>
<td>Kent Kacir, PE</td>
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<td><a href="mailto:Kent.Kacir@kimley-horn.com">Kent.Kacir@kimley-horn.com</a></td>
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TxDOT TSMO Webpage

https://www.txdot.gov/inside-txdot/division/traffic/tsmo.html
**TSMO Program Plan - Work Authorization “Keys to Success”**

- **Unified and consistent approach statewide**
  - Guided by Statewide TSMO Strategic Plan
  - Documentation follows similar format that is consistent with TxDOT branding guidelines.

- **Collaboration among consultant teams**
  - Best practices and lessons learned
  - Providing consistent message to stakeholders

- **One on one engagement with each functional group**
  - Such as planning, design, construction, operations, maintenance, as well as MPOs, cities, first responders.
  - Get understanding of the interests, motivations and “pain points” for each functional group
  - Highlight critical processes and objectives of each group.

- **Engage leadership early and often**
  - Secure early endorsement by district engineer / division dir.
  - Provide monthly status report of progress toward developing the plan.

- **TSMO planning documents must be relevant**
  - Highlight connection between TSMO and broader objectives and challenges of the agency, district and region.
  - Achieved through consultant engagement and insight to relevant processes, strategic objectives and functional areas.

- **Stay alert to opportunities to leverage TSMO**
  - Incorporate the TSMO program planning efforts into other initiatives/programs being carried out elsewhere in the agency, district or region.
  - TSMO objectives can be incorporated into existing agency processes (or vice versa) – “don’t recreate the wheel”