TRANSPORTATION SYSTEMS MANAGEMENT & OPERATIONS (TSMO)

Joseph Hunt - Dallas District
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
TxDOT Statewide TSMO Program Planning Structure

Statewide Strategic Plan

District Program Plans

Example Tactical Plans

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

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

- All remaining district TSMO program plans, to be developed starting FY'18 through FY'20.
“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)
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.
Texas Administrative Code (TAC) Title 43, Part 1, Chapter 9, Subchapter C

Contract 58-8IDP5001
Kimley-Horn
  Work Authorization #1
  Work Authorization #2
  Work Authorization #3

Contract 58-8IDP5002
Arcadis
  Work Authorization #1
  Work Authorization #2

Contract 58-8IDP5003
DKS
  Work Authorization #1
  Work Authorization #2
  Work Authorization #3

Contract 58-8IDP5004
AECOM
  Work Authorization #1
  Work Authorization #2
  Work Authorization #3
TSMO Consultant Assignments

Kimley-Horn
- WFS, ABL, WAC, FTW, BWD
- DAL, PAR, TYL, ATL
- SAT, PHR, LRD, AUS, CRP, SJT
- BRY, YKM, LFK, HOU, BMT
- ELP, ODA, LBB, AMA, CHS

Traffic Operations Division (TRF)
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.
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”
Example Operations 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
Statewide Project Team – Points of Contact

- TxDOT – Statewide Project Manager (PM)
  - Marco Cameron (TRF), PE,
    (Marco.Cameron@txdot.gov)

- TxDOT – Statewide Contract Administrator
  - Tamika Griffin (PEPS),
    (Tamika.Griffin@txdot.gov)

- TxDOT - Work Authorization PM
  - Designated by District/Division that requested the work authorization (WA)

- Consultant - Project Managers
  - Bob Edelstein, PE,
    (Bob.Edelstein@aecom.com)
  - Koushik Arunachalam, PE,
    (Koushik.Arunachalam@arcadis.com)
  - Renee Hurtado, PE,
    (Renee.Hurtado@dksassociates.com)
  - Tom Fowler, PE,
    (Thomas.Fowler@kimley-horn.com)
The metro districts and El Paso will be among the first districts to kick off WAs, and have already identified their respective WA PMs. The urban and rural district WA PMs will be confirmed at a later time, prior to the respective WA kick off; estimated fall 2019.

WA Project Managers

- Austin District: John Nevares, PE
- Dallas District: Joe Hunt
- El Paso District: Eduardo Adame, PE
- Fort Worth District: Carlos Molina, PE
- Houston District: Valerie Taylor, PE
- San Antonio District: Matt Sneed, PE
**TxDOT Project Manager Activities**

- Leadership and Guidance
- Communication
- Contract File Maintenance and Records Retention
- Knowing the Scope of Work
- Budgeting
- Invoicing
- Progress Meetings
- Initiating Contract Actions
  - Requesting & Executing TSMO Work Authorizations

Progress Meetings

- Progress meetings must be organized and facilitated by the TxDOT PM. These meetings can be conducted in person or by phone. The provider is expected to provide the majority of the content to review and discuss, including the following:
  - overall project status
  - specific deliverables
  - budget updates
  - project schedule
  - current or anticipated problems
  - any invoicing issues
  - Historically Underutilized Business (HUB) or Disadvantaged Business Enterprise (DBE) goal.

- The TxDOT PM will establish a structure that the meetings will follow, typically at the initial WA kickoff meeting.

Work Authorization (WA) – Weekly Progress Meeting

- Weekly scheduled meetings (30 – 60 min) ensure consistent communication between PM and the provider, and that project stays on track.

- Participants typically to include the provider team for the WA, TxDOT PM for the WA as well as other members of the project team and subject matter experts.
Progress Meetings cont.

Statewide Project Team – Monthly Progress Meeting

- Monthly scheduled meetings (30 – 90 min) among statewide project team facilitates collaboration, best practice sharing and consistency among all work authorizations being carried out under the four contracts.

- Participants typically to include select representatives from each of the provider teams of the four statewide contracts, the TxDOT PMs for the work authorizations as well as other members of the project team and subject matter experts.
Progress Reports

- The provider is required to submit monthly written progress reports as a project deliverable.
- The deadline to submit progress reports should be clear.
- Progress reports will be expected, even if the provider does not submit an invoice for the month.
- Progress reports are a means of communication from the provider and the detail of the report will depend on the complexity of the project.

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<tr>
<th>Contacts</th>
<th>District Support</th>
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<tbody>
<tr>
<td><strong>Henry Wickes</strong>, PE, TM Engineering Branch Supervisor</td>
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<td><strong>David McDonald</strong>, Traffic Incident Management (TIM) Coordinator</td>
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**Michael Chacon**, PE, Director, Traffic Operations Division (TRF)
**Brian Fariello**, PE, Director, TRF - Traffic Management Section (TM)
Contact

TxDOT – Traffic Safety Division

Joe Hunt
Joseph.Hunt@txdot.gov

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

TxDOT TSMO Webpage:  
https://www.txdot.gov/inside-txdot/division/traffic/tsmo.html