

Improving Transportation System Operations and Reliability by Enhancing Agency Capabilities

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THE CHALLENGE, THE SOLUTION, AND HOW TO GET THERE

The Challenge: Managing and Operating a Safe, Reliable, and High Performing Transportation System under Varying Conditions

Having the organizational and institutional capability to meet the challenge is as important as solving problems with new technologies and projects. Causes of disruptions to the system will vary depending on the urban or rural nature of the community, as highlighted in Figure 1. How well is your transportation system working and how well can your agency respond when there is a disruptive event? For example:

Road Weather:

- Do you have the types of road weather information you need through existing systems and technology?
- Does coordination between maintenance, Traffic Management Center operations, and other management and operations units work well?

Planned Special Events:

- Have the appropriate partners including the event or venue managers been included in the planning for events?
- How does your agency train and keep capable staff including those at the TMC to manage these events “behind the scenes”?

Traffic Incident Management (TIM):

- Are TIM needs (e.g., equipment, training, etc.) collectively assessed, reviewed, and acted upon on a routine basis?
- Do you have a formal TIM program that is supported by a multidiscipline, multi-agency team or task force, which meets regularly to discuss and plan for TIM activities?

Traffic Signals:

- Do you have a sustained budget for traffic signal operations and upgrades?
- Do you have performance measures to help make the case for those investments?

Work Zones:

- How well does your agency coordinate between multiple projects in a corridor?
- Does your agency quantify work zone performance?

Addressing the challenges under each of these conditions and situations can happen more effectively when supportive processes, systems, and structures are in place in an agency or institution. If they are not, your agency will be held back in your efforts to be effective and innovative in delivering a safe and reliable transportation system.

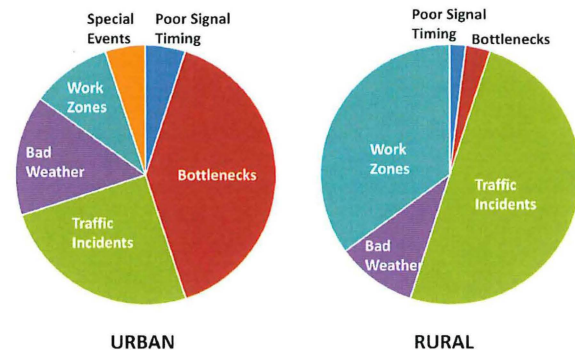


Figure 1: The distribution of causes of traffic congestion are different in urban areas and rural areas. (Source: based on Table 3-1, page 15 of “The 21st Century Operations-Oriented State DOT,” NCHRP 20-24(21), published in July 2006)

The Solution: Evolving Transportation Institutions that Deliver Higher Levels of Programs and Services

Many agencies are focusing on their transportation operations programs to address those planned and unplanned events that impact road and travel conditions and have an effect on overall system performance and reliability. **Operational strategies and technologies alone will not solve the congestion challenge. Effective business, organizational, technical, cultural, and collaborative processes are key aspects of the institutional evolution agencies need to undergo in order to improve their programs, systems, and services.**

Effective institutional and organizational processes are essential to support an effective Transportation Systems Management and Operations (TSMO) program. They reflect the leadership support, internal cooperation, and agency priority on customer service, fiscal efficiency and responsibility. Improving an organization’s capability to implement effective TSMO actions means that the organization must improve the key processes that drive the TSMO program.

How to Get There: The Capability Maturity Frameworks

Drawing from the research conducted under the second Strategic Highway Research Program (SHRP2), the Federal Highway Administration (FHWA) has developed a set of tools to help States and metropolitan agencies address process improvements that are critically needed to effectively deploy TSMO strategies and actions.



These tools are known as the TSMO Capability Maturity Frameworks (CMFs), and were developed based on a capability maturity model used prominently in the information technology sector. The frameworks allow assessment of current agency capabilities in six areas of TSMO:

- Traffic Management
- Planned Special Events
- Road Weather Management
- Traffic Incident Management
- Traffic Signal System Management
- Work Zone Management

Within each key program area tool, six dimensions are important to support effective TSMO from an organizational or institutional perspective:

1. Business processes
2. Systems and technology
3. Performance measurement
4. Organization and workforce
5. Culture
6. Collaboration

Each dimension includes a set of assessment questions to guide an agency/region in determining its level of capability. Capabilities can range from Level 1 to Level 4 as shown in Table 1.

After assessing its current capabilities with one of the tools, the stakeholders can use the tool to create a tailored action plan for improving agency/region capabilities.

The Benefits of Applying the CMF Tool:

“The Self-assessment acted as a great motivator to improve coordination among agencies to help advance “Smart Corridors” initiatives.” (Source: Ali Zaghari, Deputy District Director, Traffic Operations at Caltrans, District 7)

“NITTEC used the action items from the workshop during follow-up meetings to prioritize efforts for the coming year.” (Source: Athena Hutchins, Executive Director, NITTEC)

How to Use the Frameworks Effectively

A collaborative process is recommended for using the CMF in any of the six program areas. Typically, an agency program area champion will pull together stakeholders in the agency or region for a day-long workshop to walk through the framework. Stakeholders may include transportation planners, traffic engineers involved in design and operations, transit agencies and operators, emergency response personnel, and traffic and emergency operations staff in the region. The outcomes of the workshop are a consensus of the current capabilities across all the dimensions, and an initial list of prioritized actions. The champion may convene future meetings or identify existing forums where the identified actions will be championed and implemented.

The frameworks are not intended to create benchmarks of an agency’s capabilities, but rather provide a resource for agencies to identify appropriate actions for improving TSMO. While periodic assessments are not required, revisiting the CMF online tool on a regular basis is recommended when significant organizational change occurs or prior to major investments.

An interactive online CMF tool is available for each of the six program areas at <http://www.ops.fhwa.dot.gov/tsmoframeworktool/index.htm>

Get involved:

For more information or to host a workshop for your agency or region, please contact the FHWA leads for this activity:

- Traffic Management: Jim Hunt (jim.hunt@dot.gov)
- Planned Special Events: Laurie Radow (laurel.radow@dot.gov)
- Road Weather Management: Roemer Alfelor (roemer.alfel@dot.gov)
- Work Zone Management: Jawad Paracha (jawad.paracha@dot.gov)
- Traffic Incident Management: Paul Jodoin (paul.jodoin@dot.gov)
- Traffic Signal Systems Management: Eddie Curtis (eddie.curtis@dot.gov)

Table 1. Capability Maturity Framework Process Overview

Process Improvement Areas		Capability Levels			
Dimensions or Process Areas	What is it	Level 1 Ad-Hoc, Low Level of Capability	Level 2 Managed, Medium Level of Capability	Level 3 Integrated, High Level of Capability	Level 4 Optimized, Highest Level of Capability
Business Process	Plans, Programs, Budgets	Statement of Capability			
Systems & Technology	Approach to Building Systems		Step 1 Self-Assessment. Work with your stakeholders to assess where you are in terms of the capabilities in each area		Step 2 Identify areas of improvement and the desired levels of capability to improve program effectiveness
Performance Measurement	Use of Performance Measures				
Workforce	Improving Capability of Workforce				
Culture	Changing Culture and Building Champions		Step 3 Identify actions that you need to take to move to the desired levels of capability		
Collaboration	Improving Working Relationships				

