

Work Zone Management Capability Maturity Framework



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FACTSHEET

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Background

The concept of a capability maturity framework (CMF) emerged from the Strategic Highway Research Program 2 (SHRP2) L01 and L06 projects that promoted a process-driven approach to improve Transportation Systems Management and Operations (TSM&O).

Adapted from the software development world, the notion of CMFs rests on the following three tenets:

- Process matters: Projects fail or do not achieve desired functionality for a variety of reasons unrelated to the technology.
- Prioritizing the right action is important: Is an agency ready, how do they know, and what should they do next?
- Focus on the weakest link: What is holding the agency back in becoming a leader in a particular area?

Building on SHRP2 results, the American Association of State Highway and Transportation Officials (AASHTO) has continued development of this concept and a capability maturity concept was published as part of the TSM&O guidance. SHRP2 implementation

activities have successfully used the overall framework to work with State DOTs to develop action plans to improve their TSM&O capabilities.

To continue the emphasis on capability maturity and to provide program-level guidance, Federal Highway Administration (FHWA) developed additional frameworks that focus on improvement actions for specific TSM&O program areas including:

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

These frameworks are designed for agencies and regions to assess the current strengths and weaknesses and develop a targeted action plan for the program area.

More details can be found of the FHWA Operations web site: <http://www.ops.fhwa.dot.gov/tsmoframeworktool/index.htm>.

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 & Tech	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				

Work Zone Management Capability Maturity Framework

Managing traffic during construction is necessary to minimize traffic delays, maintain motorist and worker safety, complete roadwork in a timely manner, and maintain access for businesses and residents. This framework assesses the capability for effective work zone traffic management including assessing work zone impacts and implementing strategies for mitigating the impacts.

The use of the framework is recommended if an agency has significant upcoming reconstruction and maintenance activities, is considering implementing Work Zone ITS technology, or is in the middle of updating the State's process review for work zones.

In all these instances, the use of the framework will provide a structured approach to review the complex institutional architectures and business processes required to make work zone management a success. By reviewing the "non-technical" issues in detail and implementing the prioritized actions, agencies will increase the capability and sophistication of their work zone management program.

Structure

Consistent with the SHRP2 guidance, the frameworks are all described as a matrix that defines the process improvement areas and levels (from Level 1, low-level to Level 4, optimized high-level) of capability. Following a self-assessment process, specific actions are identified to increase capabilities across the desired process areas. Capabilities are described for the following six areas:

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

Using the Framework

A Work Zone Management CMF and a supporting interactive tool have been developed. The current version of the framework is available at http://www.ops.fhwa.dot.gov/tsmoframeworktool/availableframeworks/work_zone.htm.

A collaborative process is recommended for using the CMFs. Typically, a local agency champion will pull together the stakeholders for a day-long workshop to walk through the framework. Work Zone Management stakeholders may include work zone traffic managers, maintenance staff, traffic operations managers, and construction staff. 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 might then convene future meetings or identify existing forums where the identified actions will be championed and implemented.

The framework is not intended as a benchmarking tool, but rather as a resource for agencies to identify appropriate actions for improving management and operations of work zone management systems. While periodic assessments are not required, revisiting the tool is recommended when significant organizational change occurs or prior to major investments in the area.

Discussion	No score	Level 1	Level 2	Level 3	Level 4
BUSINESS PROCESSES	0 (0/20)	Business processes address work zone management (WZM) on a supervisor level, but fragmented, and are considered ancillary to other agency activities.	Business processes structure and support some work zone management efforts on the project, but capabilities across the agency tends to be uneven and disparate drivers.	Change Actions: Business processes that support work zone management efforts are aligned and institutionalized throughout the organization.	Business processes focus on continuous improvement of institutionalized work zone management efforts and have upper agency management support.
SYSTEMS AND TECHNOLOGY	0 (0/8)	Use of technology and systems to address WZM events generally does not occur.	Change Actions: Use of technology and systems to mitigate work zone safety and mobility impacts as needed is well-maintained across the agency, but the effectiveness of such use is uneven.	Use of systems and technology to mitigate work zone safety and mobility impacts as needed is regularly maintained and updated to improve effectiveness.	Use of systems and technology to mitigate work zone safety and mobility impacts as needed is regularly maintained and updated to improve effectiveness.
PERFORMANCE MEASUREMENT	0 (0/8)	WZM performance measures are non-existent or only output based.	Change Actions: Some customer-based WZM performance measures have been established. Measures computed are occasionally used to make improvements in WZM policies and procedures.	Outcome-based WZM performance is measured at both project and programmatic levels, and is used to make strategic improvements in WZM policies and procedures.	Institutional processes that ensure effective use of technology and systems to meet WZM needs are regularly reviewed and improved as needed.

Figure 1. Screenshot of Tool

Get involved:

If interested in using the framework, or hosting a CMF workshop for your agency or region, please contact the FHWA leads for this activity:

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