

Organization and Workforce Guidance

✓ LEVEL 1 TO LEVEL 2

Why Organization and Workforce is Important

Efficient execution of processes supporting effective programs requires appropriate combination of coordinated organizational functions and technical qualified staff with clear management authority and accountability.

Improvement Target

From	Fragmented roles based on legacy organization and available skills (L1)
To	Relationship among roles and units rationalized and core staff capacities identified (L2)
By	Identifying needed adjustments in organizational structure, staffing roles and responsibilities supportive of TSM&O

Key Sub-dimensions

- [Program Status](#)
- [Organizational Structure](#)
- [Staff Development](#)
- [Staff Recruitment and Retention](#)

Program Status Action Plan (L1 to L2)

Strategy Summary

Identify responsibility for agency TSM&O program—statewide and districts

Key Actions

- A** Identify TSM&O leadership responsibilities and authorities at the central office and regional levels
- B** Clarify TSM&O chain of command to senior TSM&O manager in central office (statewide) and districts/regions and between districts/regions and central office
- C** Clarify relative hierarchy with other program activities regarding key authorities

ACTIONS

Action A: Identify TSM&O leadership responsibilities and authorities at the central office and regional levels

Rationale: To advance TSM&O activities from an ad hoc status towards a formal managed multi-activity program, key technical and management responsibilities must be established—both in the central office (statewide level) and at the district/regional level.

- A.1** Establish agreement among top managers at central office and districts/regions that organizational development is essential to improving TSM&O effectiveness and identify characteristics of formal program as management target.
- A.2** Scope out existing and/or new activities at conceptual level to identify functions and resources to be involved both at district/regional level and statewide (central office) level that supplies support.
- A.3** Identify top management “sponsor” for ensuring progress in development of program concepts.
- A.4** Identify personnel to lead/champion program development with knowledge, skills and abilities (KSAs) appropriate to new function (requiring some technology knowledge and understanding of current organization). Individuals may be in central office or key district for start-up purposes.
- A.5** Clarify internal and external roles and provide authority and resources for next steps, including roles and relationships, both among TSM&O-related units and between them and other related units (including project development and maintenance).

Responsibility and Relationships: Top management and program level managers as identified.

Action B: Clarify TSM&O chain of command to senior TSM&O manager in central office (statewide) and districts/regions and between districts/regions and central office

Rationale: Increasing the effectiveness of TSM&O requires clarification of relationships between senior (division level) management at central office and districts, and individuals responsible for management of TSM&O program development.

B.1 Review existing relationships among central office and relevant district/regional units with responsibilities for TSM&O-related activities for issues regarding access management coordination and access to decision makers with resource control and performance accountability.

B.2 Modify organization and/or reporting as appropriate to provide program level status parallel with top manager with TSM&O responsibility.

Responsibility and Relationships: Chief operating officer and senior management (statewide division level) and top district/regional managers.

Action C: Clarify relative hierarchy with other program activities regarding key authorities

Rationale: Development of an TSM&O organization and workforce—both technical and management—is hampered by an often subsidiary status of the activities and related units to other legacy programs within the agency with regard to authority, management and resources.

C.1 Identify the features needed for full program status within the agency regarding features of organizational structure and staffing, including reporting relationships, staffing decisions, and span of control of senior and middle managers, characteristic of other key mission-related legacy programs such as capacity development and maintenance.

C.2 Identify the needed characteristics of the relationships between district/regional level providers of operations and maintenance services and central office (statewide) support functions regarding responsibilities, authority and reporting, including relationships with external partners such as PSAs and private service providers.

C.3 Develop staged strategy to move TSM&O activities and related units (ITS systems, TMCs, ITS maintenance, programs with external collaboration [incident management, construction work zone management, etc.]) from functional status to program status.

Responsibility and Relationships: Senior TSM&O staff in central office and district/regions working with top management chief operating officer.

Examples/References

- Maryland State Highway Administration CHART Business Area Architecture:
<http://www.chart.state.md.us/downloads/readingroom/CHARTNCDP2008FinalPlan.pdf>

Organizational Structure Action Plan (L1 to L2)

Strategy Summary

Identify basis for efficient consolidation of relevant organizational units

Key Actions

- A Develop organizational structure for TSM&O responding to implications of the concepts of operations of the key strategic activities to be undertaken

- B Identify appropriate relationships, span of control, and nature of accountability among all TSM&O-related units

- C Conduct briefings for non-TSM&O staff in key related units (project development, maintenance, safety) regarding need for cooperation/collaboration

- D Consider development of TSM&O policy group of key internal and external stakeholders to identify and adopt policies for improved TSM&O

ACTIONS

Action A: Develop organizational structure for TSM&O responding to implications of the concepts of operations of the key strategic activities to be undertaken

Rationale: TSM&O has special organizational structure requirements based on its unique features, especially in comparison with the civil engineering and maintenance functions.

A.1 Identify the features of TSM&O activities and services in terms of concepts of operations that, to be effective, need to be reflected in the organizational structure including its real-time activity orientation, its dependence on external collaborators, and its systems and technology intensiveness.

A.2 Compare the features of the concepts of operations and their organizational implications with the current structure of the units that are involved in some aspect of TSM&O, including ITS, systems operations, incident management, maintenance, etc.

A.3 Develop an “organizational concept of operations” rationalizing roles and relationships for the key functions. Interpret the organizational ConOps in terms of desirable horizontal span of control and vertical reporting relationships.

Responsibility and Relationships: Task force of appropriate TSM&O managers at both the central office (statewide) and district/regional level with agency champions and/or top management.

Action B: Identify appropriate relationships, span of control, and nature of accountability among all TSM&O-related units

Rationale: Characteristics of TSM&O dictate real-time cooperation/coordination needs among functions (and related units) and key technical support needs.

B.1 Define key functions associated with moving TSM&O from concept to execution. This includes: (1) direct field operational responsibilities that may be at the district/regional level (planning; protocol development with partners; TMC management, operations and field support; infrastructure and systems deployment; and maintenance) and (2) direct support activities that may be centralized (including planning, systems engineering, procurement, standards development, data archiving, etc.) and functions where coordination is essential (traffic engineering, safety, maintenance, IT, etc.).

B.2 Identify current configuration of these functions and adjustments that may be required or desired to achieve improved effectiveness and the ability to improve continuously.

Responsibility and Relationships: Senior managers at central office (statewide) and district/regional managers, including TMC management (field and district/regional staff and related central office units).

Action C: Conduct briefings for non-TSM&O staff in key related units (project development, maintenance, safety) regarding need for cooperation/collaboration

Rationale: It is important to brief managers and key professionals in key positions in the agency (both central office and district/regional divisions) regarding TSM&O and its key collaboration and support needs from other units as the basis for ongoing cooperation.

C.1 Hold briefing sections for key agency units and clarify the mission, strategies, performance objectives, and current and developing TSM&O strategies. Indicate the areas of needed cooperation and support from other units. These briefings should be both at division and subunit levels.

C.2 Identify key liaison contacts in key units as mechanism to support continuing communication.

Responsibility and Relationships: TSM&O leadership in central office and districts/regions. Establish key relationships between TSM&O units and other support units.

Action D: Consider development of TSM&O policy group of key internal and external stakeholders to identify and adopt policies for improved TSM&O

Rationale: The multidisciplinary nature of TSM&O at the policy, planning, budgeting, design, implementation, and maintenance levels involves a wide range of collaborators/partners and indicates the need to develop the basis for broad discussion and input in the development and execution of TSM&O strategies.

D.1 Review potential participants from key agency units including district/regional representation, senior managers, service delivery partners (public safety agencies) and key private service providers.

D.2 Develop working group with continuing and regular meetings to consider evolving issues.

D.3 Establish “secretariat” function within TSM&O central office unit to develop agendas, minutes and provide meeting support.

Responsibility and Relationships: Central office TSM&O staff (under lead manager). Include participation from key units involved in development and delivery of TSM&O functions, and key public safety entities and private service providers (support contractors, towing and recovery, etc.).

Examples/References:

- Maryland State Highway Administration CHART Business Area Architecture: <http://www.chart.state.md.us/downloads/readingroom/CHARTNCDP2008FinalPlan.pdf>
- “Impacts of Technology Advancements on Transportation Management Center Operations” (FHWA, 2013) includes discussion on KSAs for TMC staff: <http://www.ops.fhwa.dot.gov/publications/fhwahop13008/>
- “Institutional Architectures to Improve Systems Operations and Management” (SHRP 2 L06): <http://www.trb.org/Main/Blurbs/165285.aspx>
- “Managing Change in State DOTs: Innovations in Strategic Leadership and Measurement for State DOTs”: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w39-1.pdf

Staff Development Action Plan (L1 to L2)

Strategy Summary

Identify staffing needs

Key Actions

- A Identify needed operations-related core capabilities needed to support the development TSM&O activities—both technical and management
- B Develop position description for each position including required knowledge, skills and abilities (KSAs)
- C Evaluate existing staff in terms of KSAs for their positions and identify gaps
- D Identify training opportunities for key staff including lead manager, funding and training program, covering systems engineering, process, project management and other key skills
- E Participate in technical interchanges with peer agencies and professionals

ACTIONS

Action A: Identify needed operations-related core capabilities needed to support the development TSM&O activities—both technical and management

Rationale: Effective development, execution and improvement of TSM&O activities require a combination of specific core TSM&O-technical and management capabilities related to the scope of the developing program. Agencies must identify and acquire the needed core competencies through staff development or outsourcing.

A.1 Identify the range of needed capabilities in specific areas of systems and technology development, acquisition, and implementation, as well as strategy-specific procedures and protocols, including collaboration, planning and programming, administration, and general management.

A.2 Identify “core capacities” that are essential to building and managing TSM&O activities and that require special knowledge, skills, abilities and experience compared with those that can be filled by existing staff.

Responsibility and Relationships: Central office staff. May require consultant assistance where new strategies are to be developed.

Action B: Develop position description for each position including required knowledge, skills and abilities (KSAs)

Rationale: Position descriptions including specific KSAs and prerequisites are necessary to accommodate agency requirements.

B.1 Develop position description for each position (core and non-core) including required KSAs and include position title, civil service classification, function and purpose of position, reporting relationships, general tasks, and decisions related to duties.

B.2 Compare position descriptions with comparables in other program areas to ensure recognition of special backgrounds, education, skills for position, and related compensation.

B.3 Include review of positions with partial responsibilities for TSM&O (such as district engineer) to determine potential training needs.

Responsibility and Relationships: Senior TSM&O staff. May obtain material from peer states to use as model.

Action C: Evaluate existing staff in terms of KSAs for their positions and identify gaps

Rationale: KSAs for key TSM&O positions should be matched with those of existing staff. Where possible, consideration should be given to the training and development of existing agency staff with interest and appropriate backgrounds, especially given staff increase limitations.

C.1 Solicit interest on the part of existing staff through briefings and formal position vacancy procedures and review qualifications of interested staff for unfilled positions.

C.2 Identify both core and support competencies that can be filled from existing staff, accounting for training impacts.

Responsibility and Relationships: Senior TSM&O staff in both central office and districts/regions working with agency human resources and training staff.

Action D: Identify training opportunities for key staff including lead manager, funding and training program, covering systems engineering, process, project management and other key skills

Rationale: Certain staff responsibilities can be filled via appropriate training.

D.1 Identify immediate opportunities for training for key staff including lead training coordinator/manager, funding and training program, covering both core and non-core skills.

D.2 Working with FHWA and the RITA ITS Joint Program Office, Review the complete range of training opportunities offered by FHWA, SHRP2, and National Highway Institute.

D.3 Review training opportunities available from The Operations Academy Senior Managers Program, the Institute of Transportation Engineers and from educational entities related to the DOT as well as other universities and organizations.

D.4 Establish training schedule for key staff.

Responsibility and Relationships: Senior TSM&O staff working with agency human resources.

Action E: Participate in technical interchanges with peer agencies and professionals

Rationale: Peer states at similar levels of capability and program development can offer useful examples of strategy applications, logical staging of improvements, business and technical processes, etc. that can serve as valuable sources of learning as part of staff development.

E.1 Identify peer states based on: (1) state size and organizational configuration of urban vs. rural areas, and (2) experience with issues related to TSM&O challenges faced and strategies being deployed. Develop ongoing relationships of management and technical staff visits, workshops and document review.

E.2 Seek out opportunities and support staff participation in national conferences and workshops (TRB, AASHTO, AMPO, ITE, ITS-A, etc.) to maintain agency involvement in state of the practice and contributions to it.

E.3 Utilize key web-based resources such as the AASHTO TSM&O Guidance website, the SHRP 2 Knowledge Transfer System website, and other key online resources.

Responsibility and Relationships: Work with relevant peer state TSM&O management and staff.

Examples/References

- “Help Wanted: Meeting the Needs for Tomorrow’s Transportation Workforce”:
<http://www.fhwa.dot.gov/publications/publicroads/01julaug/helpwanted.cfm>
- “Managing Change in State DOTs: Innovations in Work Force Strategies”:
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w39-5.pdf

Staff Recruitment and Retention Action Plan (L1 to L2)

Strategy Summary

Develop position descriptions for key staff recruitment and promotion

Key Actions

- A Survey existing staff for qualification and interest in staff, using position descriptions knowledge, skills and abilities (KSAs), and identify gaps
 - B Develop staffing and succession strategy
 - C Identify recruitment priorities
 - D Review recruitment experience of peer agencies
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ACTIONS

Action A: Survey existing staff for qualification and interest in staff, using position descriptions knowledge, skills and abilities (KSAs), and identify gaps

Rationale: Many key positions may be filled by existing staff with traffic engineering, ITS and other related backgrounds—strengthened by their knowledge of the agency. However some positions may have to be filled from outside the agency.

A.1 Using the position descriptions and staff match and interest, identify core positions that remain to be filled.

Responsibility and Relationships: Senior TSM&O staff working with agency human resources with appointed staff responsibility.

Action B: Develop staffing and succession strategy

Rationale: Required staff capabilities will depend on current staffing vs. staffing needs for program improvements. There is a range of strategies to be considered to augment staff, including internal development, outside hires and outsourcing.

B.1 Evaluate the availability of in-house staff relevant to core and support capabilities and the potential of training to fill gaps within an appropriate timeframe.

B.2 Review the options for outside staff augmentation including external hires from educational institutions (recent graduates), other transportation agencies, or relevant non-transportation entities in terms of cost and timeframe for hiring. Compare this with the costs and benefits of outsourcing related functions.

Responsibility and Relationships: Senior TSM&O working with agency human resources with appointed staff responsibility.

Action C: Identify recruitment priorities

Rationale: The staff development plan (described in the Staff Development Action Plan) should indicate “core capacities” that are a priority for recruitment, are needed in house, and cannot be outsourced without endangering the agency’s ability to manage improvement.

C.1 Review the identified core positions.

C.2 Compare core positions with available in-house staff, including presumed KSA enhancements from short-term training, and identify the gaps that represent recruitment priorities.

Responsibility and Relationships: Senior TSM&O staff working with agency human resources with appointed staff responsibility.

Action D: Review recruitment experience of peer agencies

Rationale: Peer states have faced many of the same recruiting problems and have developed some experience relating specific expertise sought and potential sources, as well as recruitment methods.

D.1 Contact peer states to obtain background on relevant recruiting efforts focused on various target groups, including effective recruitment methods.

Responsibility and Relationships: Senior TSM&O staff working with agency human resources with appointed staff responsibility.

Examples/References:

- Baldrige criteria: http://www.nist.gov/baldrige/publications/business_nonprofit_criteria.cfm
- “Recruiting and Retaining Individuals in State Transportation Agencies”:
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_323.pdf
- “The Transportation Workforce Challenge: Recruiting, Training, and Retaining Qualified Workers for Transportation and Transit Agencies” contains a discussion of core competencies:
<http://www.trb.org/Publications/Blurbs/152777.aspx>
- “Attracting, Recruiting, and Retaining Skilled Staff for Transportation System Operations and Management” (NCHRP Report 693): <http://www.trb.org/Main/Blurbs/166342.aspx>