

# HUMAN RESOURCES

## ENHANCING TRANSPORTATION: CONNECTING TSMO AND HUMAN RESOURCES

The transportation industry is rapidly evolving due to the widespread adoption of advanced technology and a new emphasis on management and operations. It needs a skilled workforce that can support quickly emerging demands. The industry depends on human resource (HR) practitioners to integrate the new job classifications, recruitment approaches, skill sets, and career paths that are needed to lead transportation agencies into the future.

TSMO focuses on managing and operating the transportation system by applying innovative and cutting-edge techniques and technologies. As a result, the TSMO practitioner workforce of the future should have a broad skillset that allows individuals to work in areas such as systems engineering, data management, cybersecurity, software development, and emergency response. By integrating the skills and abilities required to staff a successful TSMO program into their hiring and staff development activities, HR departments contribute to the mission of advancing the capability of the agency.

Today, many agencies struggle to recruit and retain staff with the needed skillsets for TSMO. Traditional job classifications often do not fit many of the TSMO needs, and limited career paths make it difficult to attract and retain talented staff. Nationally, work is underway to support TSMO hiring and workforce development, helping HR departments integrate TSMO needs into their activities. Efforts to develop a TSMO workforce involve working with colleges and universities to include TSMO curricula for both undergraduate and graduate coursework across a range of departments; defining TSMO-related knowledge, skills, and abilities (KSAs) and position descriptions for different job types; recruiting and retaining key TSMO staff; and contributing to employee career development.

A research project from the National Cooperative Highway Research Program will provide key workforce development information and produce resources and guidance for departments of transportation (DOTs) and other agencies on the development of TSMO capabilities in four specific areas:<sup>1</sup>

- Position descriptions for staff.
- KSA statements for TSMO positions.
- TSMO personnel recruitment strategies.
- TSMO professional development and retention strategies.

These products are expected to be available by 2019.

<sup>1</sup> NCHRP 20-07/Task 408, Transportation System Management and Operations (TSMO) Workforce: Skills, Positions, Recruitment, Retention, and Career Development. Description at <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4326>.



U.S. Department of Transportation  
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Photo Source: Getty Images

### ■ WHAT IS TSMO?

*Transportation systems management and operations (TSMO) is the use of strategies, technologies, mobility services, and programs to optimize the safety, mobility, and reliability of the existing and planned transportation system. A significant cause of congestion and unreliable travel is non-recurring events, such as crashes, and transportation network disruptions, such as bad weather, and special events. TSMO enables agencies to target the underlying operational causes of congestion and unreliable travel through innovative solutions that typically cost less and are quicker to implement than adding capacity. TSMO expands the range of mobility choices available to system users, including shared mobility and non-motorized options.*

*This Fact Sheet is part of a series that explains how TSMO relates to other State and local transportation agency functions and offices. Other Fact Sheets focus on how TSMO relates to: asset management, performance management, design, safety, environment, planning, maintenance, and construction.*

The Federal Highway Administration (FHWA) has also advanced workforce development efforts by establishing a sample university curriculum and holding forums that expand opportunities for transportation practitioners to gain expertise and exchange ideas on strategies and technologies for enhancing transportation systems operations.<sup>2</sup> FHWA has also developed and promoted the use of capability maturity frameworks, which help agencies identify their current TSMO capabilities and guide them in taking steps to increase their TSMO capabilities.<sup>3</sup> Table 1 describes the workforce development actions from the frameworks and the issues these actions address.

Table 1. Workforce development actions and the issues they address.

Workforce Development Action		Issue Addressed	
	Creating a clearly defined process for career advancement.		There are limited career options for TSMO staff since it is not a well-known program, like design or construction.
	Funding and encouraging staff to attend technical training programs and professional conferences as part of staff development.		The standard civil engineering curriculum may not fully prepare the employee to work in TSMO.
	Creating mentoring programs and succession planning to ensure that TSMO institutional knowledge is maintained during personnel transitions.		Public agencies experience frequent turnover due to retirements and staff moving to the private sector.

Organizations such as FHWA’s National Highway Institute, the U.S. Department of Transportation’s Intelligent Transportation System (ITS) Joint Program Office, and the Consortium for ITS Training and Education have also developed training resources for TSMO practitioners.

## HOW HAS THIS WORKED IN PRACTICE?

- The **Oregon DOT** recognized the value (to both the department and the employee) and efficiency of cross-training employees in different areas. For example, maintenance workers are cross-trained as incident response personnel since they may be the first to arrive on the scene of an incident.<sup>4</sup>
- Operations managers at the **Ohio DOT** have worked with the HR department to revise job descriptions and restructure positions for the transportation management center staff and ITS technology jobs. They identified a TSMO coordinator in each district in the State and give them newly assigned responsibilities. As part of Ohio DOT’s Early Action Implementation Plan for TSMO, they have planned out steps for establishing TSMO-oriented career paths and retention and succession plans.<sup>5</sup>

## WHERE CAN I LEARN MORE?

- National Operations Center of Excellence, TSMO Workforce Development website. Available at: <https://transportationops.org/workforce>.
- USDOT ITS Joint Program Office, ITS Professional Capacity Building Program website. Available at: <https://www.pcb.its.dot.gov/>.
- Consortium for Innovative Transportation Education (CITE) website. Available at: <http://www.citeconsortium.org/>.

2 National Operations Center of Excellence, Regional Operations Forums website. Available at: <https://transportationops.org/resources/regional-operations-forums>.

3 Federal Highway Administration, Business Process Frameworks for Transportation Operations website, 2018. Available at <https://ops.fhwa.dot.gov/tsmoframeworktool/index.htm>.

4 US Domestic Scan Program, Leading Management Practices for Developing a Cross-Trained Workforce, 2016. Available at <http://www.domesticscan.org/13-01-leading-management-practices-for-developing-a-cross-trained-workforce>.

5 Ohio DOT, ODOT Transportation Systems Management and Operations Plan Early Action Implementation Plan, Updated December 2017. Available at: [http://www.dot.state.oh.us/Divisions/Operations/Traffic-Management/Documents/Early Action Implementation Plan 2018\\_0117.pdf](http://www.dot.state.oh.us/Divisions/Operations/Traffic-Management/Documents/Early Action Implementation Plan 2018_0117.pdf).



### FOR MORE INFORMATION

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