

Transportation Systems Management & Operations Implementation Plan

Florida Department of Transportation
District 5

PREPARED FOR



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Appendix

Appendix A – Capability Maturity Assessment Workshop Memorandum – March 2014

Appendix B – Capability Maturity Reassessment Workshop Memorandum – June 2017

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TSM&O Implementation Plan

Executive Summary

In March 2014, the Florida Department of Transportation (FDOT) District Five conducted a Capability Maturity Model (CMM) Self-Assessment, in cooperation with partner local agencies, for its Transportation Systems Management and Operations (TSM&O) program. The CMM Self-Assessment was conducted with financial and technical support provided by the Federal Highway Administration (FHWA) through the Strategic Highway Research Program 2 (SHRP2) Organizing for Reliability Tools (L01/L06) Grant. This self-assessment identified strengths and weaknesses for each dimension within the District's TSM&O program; it also identified actions for program maturity that could improve upon each dimension's self-assessed grade.

The purpose of the FDOT District Five TSM&O Implementation Plan (hereafter, "Implementation Plan") is to build on previous progress and identify an implementation plan which promotes program maturity and sets the foundation for an effective TSM&O practice. The Implementation Plan is organized around the six dimensions of a successful TSM&O program: Business Process, Organization & Workforce, Culture, Collaboration, Systems & Technology, and Performance Measures. Each chapter focuses on a single dimension, and highlights the strengths, weaknesses, and next steps discussed in the District's 2014 CMM Self-Assessment. Further, goals and objectives were developed for each dimension based on the feedback provided by stakeholders. The objectives were developed to be specific, measurable, achievable, realistic, and timely (SMART). In addition, the existing process/approach for each dimension is considered, and the proposed implementation actions are also discussed. Finally, each dimension includes a Task Action Matrix which notes specific action items to be completed based on each goal/objective identified in the Implementation Plan.

The final chapter includes a review of existing and expected tools and resources available to District Five and its partner agencies.

The Implementation Plan is a living document that will need to be updated periodically. As the District progresses through the action items described in the Implementation Plan, the District should improve in each of the six TSM&O dimensions. As the District's TSM&O program evolves, it will be necessary to update this document with new and/or modified strengths & weaknesses, goals & objectives, and action items to help the District's TSM&O program advance further within the Capability Maturity Model.

1

Introduction

The Florida Department of Transportation's (FDOT) primary statutory responsibility is to coordinate the planning and development of a safe, viable, and balanced multimodal state transportation system, and to assure the compatibility of the transportation network, including multimodal facilities. This primary responsibility coincides with the objectives of an effective Transportation Systems Management and Operations (TSM&O) practice. The Federal Highway Administration (FHWA) defines TSM&O as "an integrated program to optimize the performance of existing multimodal infrastructure through implementation of systems, services, and projects to preserve capacity and improve the security, safety, and reliability of our transportation system."

In simpler terms, TSM&O is a program based on measuring performance, actively managing the multimodal transportation network, streamlining/improving the existing system, and delivering positive safety and mobility outcomes to the travelling public.

With fewer funds available to build our way out of congestion, improving our current roadways has become critical. In addition to creative financing alternatives, the national transportation bill, Moving Ahead for Progress in the 21st Century Act (MAP-21), requires that Metropolitan Planning Organizations (MPO) consider projects and strategies as part of a planning process that promotes efficient system management and operations. An effective TSM&O Program improves mobility for all roadway users through an emphasis on real-time active management and operation of the existing

transportation system. TSM&O strategies also address non-recurring congestion with cost-effective investments to our existing infrastructure.

The FDOT Board has endorsed the working definition of TSM&O, the TSM&O Business Plan, and the outline of a Strategic Plan.



The purpose of this document is to build on previous progress and identify an implementation plan which promotes program maturity and sets the foundation for an effective TSM&O practice.

1.1 TSM&O Program Goals

The Vision and Mission statements for the TSM&O Program are provided within the TSM&O strategic plan:

Vision: To operate our transportation system at the highest level of cost-effective performance.

Mission: To deploy a customer-driven TSM&O program focused on mobility outcomes through real-time and effective management of the existing transportation system toward its maximum efficiency.

In addition, within District Five, the Department has set the following goals for the TSM&O practice:

- Utilize a management and operations approach combined with a set of cost-effective strategies;
- Develop and continuously upgrade a well-maintained district-wide intermodal system; and
- Support mode choice, minimization of connection gaps and full system reliability.

Each individual dimension, and associated goals and objectives, will strive to meet this overarching strategy.

1.2 Capability Maturity Model Overview

In 2014, the FDOT District Five was awarded a Strategic Highway Research Program 2 (SHRP2) grant to aid in the implementation of the TSM&O Practice through the Capability Maturity Model (CMM). The CMM allows agencies to develop consensus

around needed agency improvements, identify their immediate priorities for improvements, and identify concrete actions to continuously improve capabilities to plan, design, and implement TSM&O. The SHRP2 program requires support of all District units, MPOs, Transit Agencies, and local governments within the District.

The SHRP2 implementation efforts were designed to assist the Department to:

- Enhance SIS benefit/cost tools
- Test enhanced tools in project prioritization process
- Apply SHRP2 L08 Tool
- Revise FDOT Planning and Programming Process

Within this Implementation Plan, FDOT District Five’s progress in each of these areas will be documented in greater detail.

Based on the CMM process, in order to develop an effective districtwide TSM&O practice, it is necessary to first assess the current status of TSM&O within the District. In March 2014, the CMM Self-Assessment Workshop, sponsored by FHWA and AASHTO, was conducted to gain consensus on the state of TSM&O within District Five and to identify next steps in advancing the districtwide TSM&O efforts. The workshop participants, which included representatives from the FDOT, MPOs, agencies, and local governments within the District identified the current levels of capability for each of the six CMM dimensions of TSM&O described in the following section.

1.2.1 Key Dimensions of Capability

Six critical dimensions are identified by FHWA and are closely associated with the more effective TSM&O activities, including:

- 1) *Business processes* – including formal scoping, planning, programming, and budgeting;
- 2) *Systems and technology* – including systems architecture, standards, interoperability, and standardization and documentation;
- 3) *Performance measurement* – including definition of measures, data acquisition, analysis, and utilization;
- 4) *Culture* – including technical understanding, leadership, policy commitment, outreach, and program authority;
- 5) *Organization and workforce* – including organizational structure, staff capacity, development, and retention; and
- 6) *Collaboration* – including relationships with public safety agencies, local governments, MPOs, and the private sector.

1.2.2 Levels of Agency Capability

For each of the six dimensions there are discrete levels of agency capability – observed in actual agency practice. These levels range from “ad hoc” activities to more “optimized” program levels. Four incremental levels of capability are used to assess current state and improvement targets for each dimension: 1) *Performed (Ad hoc)*, 2) *Managed*, 3) *Integrated*, and 4) *Optimized*. They are defined as “doable” steps, each building on the one before, and are expanded upon in the remaining chapters of this Implementation Plan.

1.2.3 District Five Self-Assessment

The resulting District Five self-assessment is provided below in Figure 1. Based on this self-assessment, the FHWA-recommended priority action items are also provided below.

Priority Action Items

Business Processes (Planning and Programming): *Develop a regional TSM&O program with consideration for a District wide approach that would include all key inter-modal planning and programming steps.*

Organization and Workforce: *Establish an organized and integrated TSM&O program that provides consolidated benefit to FDOT and the participating MPOs / local municipalities. The collaborative organizational structure shall include the utilization of the Team of Champions for facilitating all facets into the TSM&O program (roadway, freight, multi-modal and transit).*

Culture: *Develop a regional cultural awareness program for informing and educating the MPOs and local agencies on the benefits of the TSM&O program, the direction of the Department with regard to the TSM&O program, and the success stories associated with the TSM&O program throughout the state and country.*

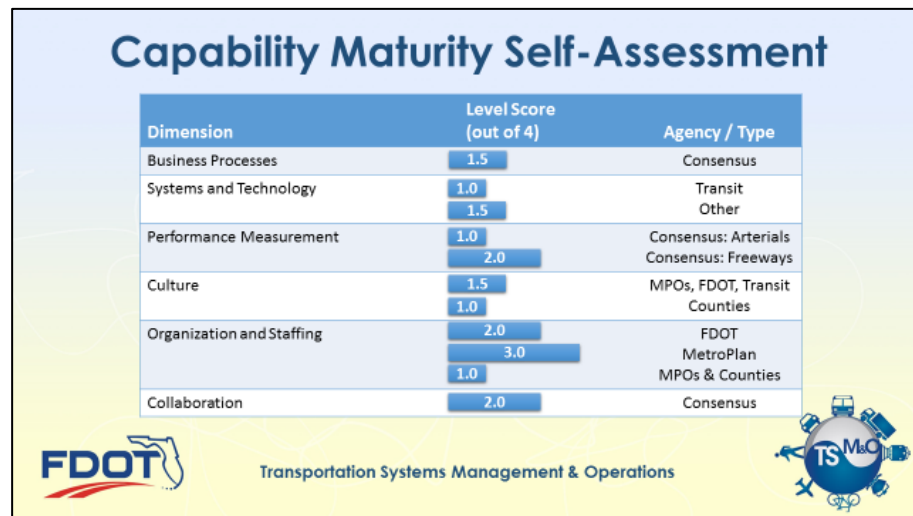


Figure 1: District Five Self-Assessment

The 2014 District Five Capability Maturity Self-Assessment Workshop Memorandum, which summarizes the workshop actions and suggested steps for advancing to the next maturity levels can be found in *Appendix A*.

1.3 Planning Consistency Overview with Local Agencies

Each MPO and/or local municipality is uniquely different; however, to implement an optimized TSM&O Program, some planning consistencies must be present. MAP 21 establishes national performance goals for federal highway programs:

- **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure condition** - To maintain the highway infrastructure asset system in a state of good repair.
- **Congestion reduction** - To achieve a significant reduction in congestion on the National Highway System (NHS).
- **System reliability** - To improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced project delivery delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

Both state departments of transportation and metropolitan planning organizations (MPO) must consider projects and strategies as part of a planning process that promotes efficient system management and operations. Within the District, there are five (5) MPOs/TPOs, representing nine (9) counties. Through review of current planning procedures, it was determined that most agencies have established management and operations (M&O) techniques and programs; however, the guidelines and performance measures for the overall intermodal transportation system (TS) was not thoroughly established. **This Implementation Plan will address these gaps within the districtwide TSM&O Program.** Figure 2 on the following page illustrates how the Transportation System will be combined with the Management and Operation strategies to reach the TSM&O practice goal.



Figure 2: Reaching TSM&O Program Goals

2

Business Process

The Business Processes dimension focuses on the formal scoping, planning, programming, and resource allocation for TSM&O. To successfully implement TSM&O within the District, programs must be planned and executed based on mobility needs. Capital, operation and maintenance costs should be properly allocated to ensure that systems operations and management has its appropriate place in the District's overall improvement programs.

2.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Business Process Dimension of the TSM&O Program, and the desired CMM level, a series of goals and objectives for this dimension (see Table 1) have been developed in order to define necessary task action items for the District.

Table 1: Business Process Dimension Goals and Objectives

Goals	Objectives
Consensus on a regional approach regarding TSM&O project identification process/system-wide evaluation procedure	Consensus on a plan to uniformly identify network goals, deficiencies, B/C, networks, strategies and common priorities by 2018
Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program	Coordination plan for future updates to regional and local transportation plans by 2018
Consensus on a standardized and documented TSM&O project development life cycle to include template, project schedules, scoping language and requirements (NEPA, SYS engineering, FTA)	Detail a cradle-to-grave project development process for all FDOT projects by 2018
	Identify requirements associated with different improvement strategies (i.e. transit improvements, ITS deployment, environmental impacts) by 2018
	Clearly define roles and responsibilities of different functional units within the project development life cycle as illustrated in the Organization & Workforce Dimension
	Gain consensus on scoping language and standardized project schedules for different project types (i.e. transit improvements, ITS deployment, environmental impacts)
Develop programming and budgeting processes for TSM&O	Identify potential TSM&O program funding source(s) by 2020
	Gain consensus on system-wide evaluation procedure from regional partners by 2018
	Provide guidance and assistance to regional partners for needs assessment and system-wide evaluation by 2019

2.2 CMM Level

2.2.1 Strengths and Weaknesses

During the 2014 CMM workshop, the strengths and weaknesses for the Business Process dimension were documented as follows:

Strengths

- MPO long-range plans include TSM&O in form of intersection improvements in collaboration with other local organizations.
- Projects are being identified and prioritized according to a process driven by data (volumes and bottleneck analyses), for some MPOs/TPOs, not politics.
- Projects take into consideration the impacts on other adjacent intersections and facilities.
- Some MPOs are earmarking funds specifically for signal coordination programs and other TSM&O projects
- Some MPOs have Management Operations subcommittees that rank projects according to agency priorities.
- MPOs, TPOs, and FDOT coordinate on regional transportation needs when travel patterns transcend several jurisdictional lines (e.g., the Villages). There is also an integrated effort on the funding side, where financial resources of different agencies are pooled to accomplish projects that serve all of the involved agencies.
- TPOs are starting to develop TSM&O master plans.
- Central FDOT office has a 10-year old M&O strategic plan that it uses to allocate TSM&O funds across the districts.
 - This funding can be applied to equipment replacement and maintenance needs.
 - Funds are also available for freight movement, including TSM&O improvements that facilitate last-mile transport.
 - A higher-level planning document for 2030 evaluates and compares several project plan alternatives, but does not break down the costs of each alternative.

Weaknesses

- Currently, there is uncertainty regarding where TSM&O fits in the planning process.
- The project development process does not include a formally defined step for considering TSM&O—specifically, how the project can incorporate current TSM&O strategies already deployed, and what new TSM&O programs could be added to the project as well. This results in poor coordination of upcoming projects with current TSM&O operations, and limited checking of compatibility issues between the proposed project and existing TSM&O.
- Technology maintenance and upgrades largely absent from planning and budgeting
- Planning tools have not been widely developed to properly capture TSM&O project impacts.
- Analyses frequently focus on individual pieces of the network instead of corridor-wide or network-wide traffic flow.
- TSM&O projects may be dropped from MPO plans due to lack of feasible funding sources.
- FDOT plans are well developed for the coming two years, but no detailed long-term plans are clearly defined.
- FDOT funds are insufficient to fully cover district equipment maintenance costs that are necessary to maintain target levels of service.
- The 10-year M&O Strategic Plan used by Central FDOT office is outdated. District 5 deployed earlier, so funds are now being used in other parts of the state
- Previous activities that may be categorized as TM&O focus on highways with less emphasis on operational improvements for transit and other modes. Transit improvements are not always considered as alternatives, and are treated in an unstructured, non-systematic way when included. No sustainable budget exists for transit operations
- TSM&O arterial plans are not holistic and may fail to consider pedestrian safety among other factors – which may vary according to local context (e.g., pedestrian needs in areas with high transit use).

Figure 3: 2014 CMM Self-Assessment Business Process Dimension Strengths and Weaknesses

2.2.2 Identification of Desired Outcomes

The desired outcome of the Business Processes dimension is to develop a regional TSM&O program with consideration for a District-wide approach that would include all key inter-modal planning and programming steps.

Based on the strengths and weaknesses of the District and progress through March 2014, the consensus capability level for the Business Process Dimension was 1.5. The

efforts of the implementation plan will focus on reaching a target capability level of 3.0 - Integrated. The levels and corresponding criteria for the Business Process dimension are summarized below in Table 2. The key action items to achieve this level will be discussed further in the chapter.

Table 2: CMM Assessment - Business Process Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	Each jurisdiction operating independently according to individual priorities and capabilities	Consensus on a regional approach developed regarding TSM&O goals, deficiencies, B/C, networks, strategies and common priorities	Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program <ul style="list-style-type: none"> • Processes documented • Performance measured • Organization / partners aligned • Funding program identified 	TSM&O integrated into jurisdictions' multi-sectoral plans and programs, based on a formal, continuing planning processes
Consensus	2014 Capability Level: 1.5		Target Capability Level: 3.0	
	2017* Capability Level: 2.0			

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The CMM Reassessment Workshop Memorandum, attached to this Implementation Plan as *Appendix B* provides additional next steps and action items for the TSM&O program.

2.3 Existing Process

The existing processes include long range planning and system-wide evaluations to identify and prioritize transportation projects. These are primarily handled by the MPO/TPOs, and the prioritization process is followed by project development (i.e., concept development, PD&E, design, right-of-way, and construction), which is primarily handled by FDOT and/or local agencies.

2.3.1 MPO/TPO Prioritization Process

The MPO/TPO system-wide planning process begins with the Long Range Transportation Plan (LRTP) and filters through multiple steps to produce a prioritized project list and the 5-year Transportation Improvement Plan (TIP). The TIP may include funding for project development phases, construction, or maintenance and operations of particular projects or programs.

2.3.1.1 Long Range Transportation Plan

Every five years, a system-wide network evaluation is conducted for the LRTP to identify congestion problem areas in the base year condition and in the planning horizon year (typically 25 to 30 years out for long range studies). The congestion problem areas are typically identified using a travel demand model and a volume-to-capacity (v/c) ratio; so naturally many of the projects identified in the Needs Plan are road widening, road extensions, or other capacity-based projects. The LRTP also incorporates other modes via projects identified in various master plans (e.g., bike/ped master plans, transit master plans). The Cost Feasible Plan is developed from the identified Needs projects by committee selection.

2.3.1.2 Prioritized Project Lists

Projects from the Cost Feasible Plan are ranked and prioritized by the MPO/TPOs to create a list of prioritized projects. These projects are candidates for funding and can move into the 5-year Transportation Improvement Program (TIP) list once funding is committed. The 5-year TIP can also include projects submitted by local agencies, which are scored based on varying criteria within each MPO/TPO. Criteria used to score candidate projects may include project type (e.g., highway, TSM&O, bike/ped), project benefit, project cost, ROW needs, local support, construction-readiness, funding availability, etc. Prioritized project lists are updated annually and can be amended throughout the year, providing the MPO/TPOs flexibility to react to changing conditions or funding scenarios.

2.3.1.3 Congestion Management Program

Each MPO/TPO maintains a Congestion Management Program (CMP) according to federal requirements. The CMP typically includes an annual study to report the “state of the system” within each MPO/TPO’s planning area. The content of the CMP report varies widely for each MPO/TPO within District Five, but it provides an annual opportunity to check the issues identified throughout in the system against the 5-year TIP, the prioritized project list, and the LRTP Cost Feasible Plan.

2.3.2 FDOT Project Development Process

The FDOT project development process typically begins with a planning study and goes through multiple phases including concept development, design, and construction. Complex projects and other projects needing ROW will typically go

through PD&E and ROW phases as well. The existing process is described in more detail in the FDOT District Five Multimodal Corridor Planning Guidebook.

The Work Program is a 5-year plan developed and maintained to maximize the department's production and service capabilities. The Work Program incorporates the MPO/TPO 5-year TIP as well as FDOT internal projects. Internal projects may include safety projects, operational projects, RRR projects, bridge maintenance, and others. Projects requested through the MPO/TPO go through the 4P process, and new projects on the prioritized list are submitted with a Project Information Application Form, which includes basic project information as well as scope, schedule, cost estimate, and location map for each project.

2.4 Implementation

As determined through the Capability Maturity Reassessment in 2017, it is recognized that the District is currently operating at a Level 2 for this dimension. Therefore, efforts within this implementation plan will focus on the improvement from a Level 2 to a Level 3 on the agency capability scale.

2.4.1 Proposed MPO/TPO Prioritization Process

MPO/TPO processes can be enhanced with more data-driven decision-making. The data-driven shift can be supported by better use of metadata and the development of tools designed to provide the appropriate level of analysis at each step in the process.

Performance measures are fundamental to the project identification and prioritization process, providing an underlying foundation to what we do and why we do it. FHWA finalized its rulemaking regarding MAP-21/FAST Act performance measures in January 2017. MPOs will be required to set targets and report on these performance measures related to congestion, reliability, and safety. As the MPOs revisit their performance measures to ensure consistency with new federal requirements, there is an opportunity to also adjust their goals and objectives to be more outcome-oriented and tie-in directly to their stated performance measures and performance targets.

2.4.1.1 Long Range Transportation Plan

LRTPs in the region could benefit by shifting their emphasis from predetermined solutions – such as a list of corridors to be widened – to a focus on goals and challenges. The Space Coast TPO's 2040 LRTP is an example of such a shift in emphasis. It was built on a basis of public input, made extensive use of scenario planning and visioning, and identified the financial and technological opportunities and challenges of the transportation system through the horizon year. In a desire to prepare projects for implementation, the Space Coast TPO categorized and prioritized projects based on their potential timelines.

Proposed short-term and long-term changes are suggested for the LRTP. **In the short-term**, a reduced planning horizon of 15 years is suggested with an emphasis

on risk-based planning. A list of candidate corridors can be identified from the adopted travel demand model meeting the following criteria:

- Constrained corridors with capacity issues (v/c greater than 1.0), or
- Severely congested corridors (v/c greater than 1.1)

A corridor plan can be developed for each candidate corridor to identify opportunities to implement TSM&O strategies and maximize efficiency in the short-term. The following levels for TSM&O strategy consideration and implementation are suggested as a guide:

Level 1	Consider Transit Services
	Ensure pedestrian and bicycle connectivity
	Staff for maintenance of signal system
	Start reporting metrics for signal system
	Consider investments in Alternative Intersection Design
Level 2	Establish communication to roadside
	Provide enhanced controllers and detection
	Count Pedestrians and Bikes
	Calibrate Demand Model for features during updates
Level 3	Staff for operations
	Outfit buses with AVL and APCs
Level 4	Add cameras
	Improve Transit Coverage
	Improve Ped/Bike LOS
	Consider DMS
	Consider TMC
Level 5	Add pre-emption via Connected Vehicle
	Add AVI for vehicles likely CV
	Implement Integrated Corridor Management

	Consider Adaptive Signal Control
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In the long-term, the travel demand model should be enhanced to incorporate nonrecurring congestion and multimodal measures of effectiveness. Quality of service and multimodal measures of effectiveness will need to be developed. Incorporating the SHRP2 C11 module into the CFRPM is one opportunity to incorporate nonrecurring congestion (i.e., reliability) into the next round of LRTP updates. This has been done successfully in Hillsborough County as described in the [FDOT SHRP 2 Travel Time Reliability Analytical Product Implementation](#) report. An enhanced, multimodal travel demand model would provide the opportunity to identify areas of concern regarding mobility, and analytics can be run to overlay areas of opportunity for economic development, social improvement, and environmental stewardship.

2.4.1.2 Prioritized Project Lists

As mentioned above, project scoring criteria varies for each MPO/TPO. Each MPO/TPO should revisit their project prioritization process to ensure the process is data-driven and aligns well with their stated objectives and performance measures. As part of the implementation plan, FDOT is working with Universities to develop tools to score community development, economic development, safety, and mobility. These tools could be used by MPO to provide consistency in the prioritization process and to capture benefits of TSM&O strategies in an unbiased comparison with other projects.

2.4.1.3 Congestion Management Program

The CMP provides a valuable opportunity to verify (or to challenge) the need for the projects on the prioritized list. As mentioned above, FDOT is currently developing tools with the potential to consider multiple performance dimensions, including:

- *Mobility* – use probe data (HERE and/or INRIX) to quantify non-recurring congestion.
- *Safety* – Crash Analysis Reporting System (CARS) and Signal 4 Analytics provide crash records in geospatial and table formats for use in determining crash hotspots in an area/region
- *Land Use* – supplement comprehensive plan data with real-time permit information and construction status.
- *Economic Impact* – data analytics to measure changes in new business, residential values, income, etc.
- *Social Impact* – data analytics to measure walkability, downtown creation, population diversity, crime, progress of education, etc.

2.5 Task Action Matrix

Table 3 illustrates the task action matrix intended to support the development of the three key action items listed previously.

Table 3: Business Process – Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Consensus on a regional approach regarding TSM&O project identification process/system-wide evaluation procedure	Consensus on a plan to uniformly identify network goals, deficiencies, B/C, networks, strategies and common priorities by 2018	Create a "Planning for TSM&O" Guidebook to document and promote these uniform processes Deliverable: Planning for TSM&O Guidebook	Awaiting Final Approval	Transportation Planning Manager	Q4 FY 2016/17
		Organize a task force to assemble a coherent, unified TSM&O program and strategies for the region Deliverable: Bi-monthly District Five TSM&O Consortium	On-going	Transportation Planning Manager	Ongoing as the bimonthly TSM&O Consortium
		Develop a regional ITS master plan to provide a roadmap for ITS integration Deliverable: District Five ITS Master Plan	Complete	District TSM&O Engineer	Complete as the <i>FDOT District 5 ITS Master Plan</i>
Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program	Coordination plan for future updates to regional and local transportation plans by 2018	Find common ground between the District Five ITS master plan and those developed or being developed at MPOs and TPOs Deliverable: Summary of commonalities between ITS Plans	On-going	District TSM&O Engineer/MPO leads	Q2 FY 2017/18
		Create a TSM&O "Implementation Plan" to outline strategic tasks that can increase our District's TSM&O capabilities Deliverable: TSM&O Implementation Plan	In progress	District TSM&O Engineer	Q1 FY 2017/18
		Create a TSM&O "Coordination Plan" that defines specific roles and activities for incorporating TSM&O into transportation plans Deliverable: TSM&O Coordination Plan	Not started	Transportation Planning Manager	Q2 FY 2018/19

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Consensus on a standardized and documented TSM&O project development life cycle to include template, project schedules, scoping language and requirements (NEPA, SYS engineering, FTA)	Detail a cradle-to-grave project development process for all FDOT projects by 2018	Establish an on-going working meeting between ITS, Operations, and Planning that meets every week to discuss the TSM&O program Deliverable: Weekly meeting between District Five ITS, Operations, and Planning regarding TSM&O program	Complete	Transportation Planning Manager	Ongoing as the weekly Monday morning coordination meeting.
		Introduce TSM&O work items into the standard corridor study and PD&E scope(s) Deliverable: Updated Corridor Study and PD&E Scopes, inclusive of TSM&O	In progress	Transportation Planning Manager	Q2 FY 2018/19
		Execute and monitor the progress on the tasks in the Implementation Plan Deliverable: Establish a framework for monitoring the progress of FDOT and regional partners in applying the Implementation Plan (see Performance Measures Dimension)	Ongoing	District TSM&O Engineer	Q2 FY 2018/19
	Clearly define roles and responsibilities of different functional units within the project development life cycle as illustrated in the Organization & Workforce Dimension	Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	Complete	Transportation Planning Manager	Q4 FY 2016/17
	Identify requirements associated with different improvement strategies (i.e. transit improvements, ITS deployment, environmental impacts) by 2018	Develop list of five to seven "proven TSM&O strategies" and accompanying material Deliverable: Develop education and outreach materials for several "proven TSM&O strategies"	In progress	District TSM&O Engineer	Q2 FY 2017/18
	Gain consensus on scoping language and standardized project schedules for different project types (i.e. transit improvements, ITS deployment, environmental impacts)				
Develop a programming and budgeting processes for TSM&O	Identify potential TSM&O program funding source(s) by 2020	Engage individual M/TPOs on the topic Deliverable: Conduct ongoing coordination to identify and implement TSM&O funding sources	Initiating	Transportation Planning Manager	Q2 FY 2020/21

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
	Gain consensus on system-wide evaluation procedure from regional partners by 2018	In collaboration with MPOs and TPOs, develop a "bare minimum" of evaluation metrics that are to accompany system-wide plans Deliverable: Standardized evaluation metrics (TSM&O Operational Checklist)	Not started	Transportation Planning Manager	Q2 FY 2017/18
	Provide guidance and assistance to regional partners for needs assessment and system-wide evaluation by 2018	Identify specific needs that could be met through FDOT guidance or tool(s) Deliverable: Develop mechanisms for sharing resources between FDOT and regional partners, including materials and/or personnel (see Organization and Workforce Dimension)	Not started	District TSM&O Engineer	Q1 FY 2017/18

3

Organization and Workforce

The Organization and Workforce dimension was identified as a priority action item for FDOT District 5 by the FHWA through the CMM process. Strengthening the District's Organization and Workforce will provide for an efficient execution of processes supporting effective programs and it requires appropriate combination of coordinated organizational functions and technical qualified staff with clear management authority and accountability.

3.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Organization & Workforce Dimension of the TSM&O Program, and the desired capability and maturity framework, a series of goals and objectives of this dimension have been developed (see Table 4) in order to define necessary task action items for the District.

Table 4: Organization & Workforce Goals and Objectives

Goals	Objectives
TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	Establish TSM&O program organizational chart as a resource for local agencies by 2018
	Identify opportunities for resource-sharing within the region (personnel and infrastructure) by 2018
Program includes TSM&O program organizational chart for the District with direct access to top management	Establish FDOT District Five TSM&O program Organization and Workforce structure by 2018
	Establish job specifications, certifications and qualifications for each TSM&O program position by 2018
	Establish clearly defined roles and responsibilities within the project development life cycle by 2018

3.2 CMM Level

3.2.1 Strengths and Weaknesses

During the 2014 CMM workshop, the strengths and weaknesses for the Organization & Workforce dimension were documented as follows:

Strengths

- Some districts and MPOs/TPOs recognize the value of dedicating staff to TSM&O.
- District 5 has the largest FDOT ITS-related staff
- Funding is available to provide new FDOT staff members with training on department systems.
- Several department functions have been outsourced, with public-private partnerships being used to bridge staffing gaps within FDOT.
 - Procedures are in place to ensure that FDOT core competencies are retained even as critical functions are outsourced.
 - Increased outsourcing of functions has placed additional management responsibilities on FDOT staff members, who now have broader knowledge about effective management methods.
 - FDOT personnel are also becoming familiar with several different business/operational lines within the department, as a consequence of their contract maintenance responsibilities.
- Agencies are becoming increasingly efficient by consolidating more functions to fewer positions, and increasing compensation to those staffers accordingly.

Weakness

- A lack of redundancy in staff functions leads to service disruptions when personnel depart the agency.
- There is a steep learning curve associated with outsourcing department functions to contractors, as they must become familiar with agency plans, agency policies, and the local context/environment before they can begin.
 - This process must be repeated every time a staffing change occurs for an outsourced position, creating even greater inefficiency.
- FDOT District representatives, at the state-wide level, have strong engineering backgrounds, but have limited planning knowledge and experience.
- There is uncertainty regarding where TSM&O fits into the organizational structure of the department.
- Reduced staffing levels make it difficult to establish dedicated staff positions for TSM&O within the department. In many circumstances, these functions end up among those outsourced.

Figure 4: 2014 CMM Self-Assessment Organization & Workforce Dimension Strengths and Weaknesses

3.2.2 Identification of Desired Outcomes

The desired outcome of the Organization and Workforce is to establish an organized and integrated TSM&O program that provides consolidated benefit to FDOT, and the participating MPOs / local municipalities. The collaborative organizational structure shall include the utilization of the Team of Champions for facilitating all facets into the TSM&O program (roadway, freight, multi-modal and transit).

Based on the strengths and weaknesses of the District and progress through March 2014, the consensus capability level for the FDOT was a 2.0. The efforts of the implementation plan will focus on reaching a target capability level of 3.0 - Optimized.

The levels and corresponding criteria for the Organization and Workforce dimension are summarized in Table 5 below.

Table 5: CMM Assessment – Organization & Workforce Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	TSM&O added to units within existing structure and staffing -- dependent on technical champions	TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	Program includes TSM&O Managers which have direct access to top management; Job specs, certification and training for core positions <ul style="list-style-type: none"> • Key staff positions identified 	TSM&O senior managers at equivalent level with other jurisdiction services and staff professionalized <ul style="list-style-type: none"> • Key staff positions filled
Consensus	2014 Capability Level: 1.0 for MPOs and Counties, 2.0 for FDOT		3.0 for MetroPlan Orlando	
	2017* Capability Level: 2.0		FDOT Target Capability Level: 3.0	

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The CMM Reassessment Workshop Memorandum, attached to this Implementation Plan as *Appendix B* provides additional next steps and action items for the TSM&O program.

3.3 Existing Status

The District’s ITS group is larger than its peers in other Districts, which demonstrates the District’s commitment to ITS. The ITS group was recently rebranded as the TSM&O group, signaling a broadening application of TSM&O within the District. The District Five TSM&O group is still centralized within the Traffic Operations unit, but regular coordination and collaboration is occurring between the TSM&O group and planning unit.

3.4 Implementation

The efforts within this implementation plan will focus on the improvement from a Level 2 to a Level 3 on the agency capability scale.

3.4.1 Proposed Roles & Responsibilities

Multidisciplinary collaboration is key to the success of a TSM&O program. As with most transportation programs, different parties are primarily responsible for different deliverables at various stages of a project. The expected level of involvement for each role throughout the process is illustrated in Figure 5.

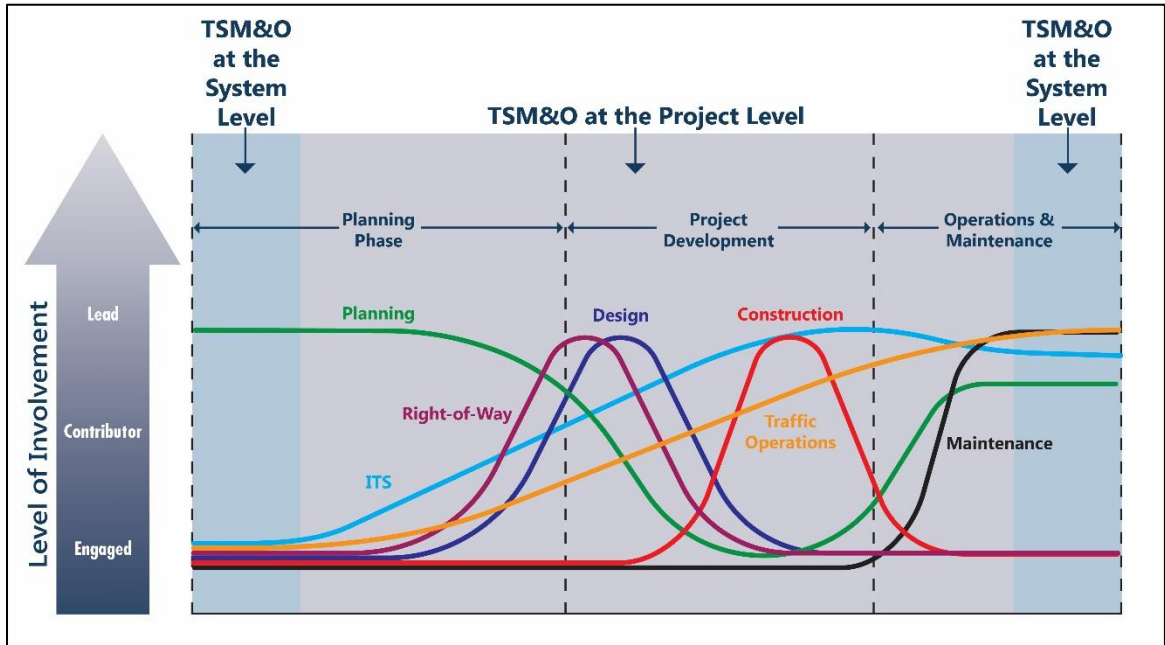


Figure 5: Functional Unit Levels of Involvement in Project Life Cycle

Additional details on the proposed roles and responsibilities are summarized in Table 6 and in the subsequent sections.

Table 6: Functional Unit Levels of Involvement in Project Life Cycle

Role	PLANNING		PROJECT DEVELOPMENT				O&M		
	System-Wide Planning	Planning Study	Concept Development	Design	Construction	Testing	Operations	Monitoring	Maintenance
Planning	Lead	Lead	Lead	Engaged	Engaged	Engaged	Contributor	Lead	Engaged
Traffic Operations	Contributor	Contributor	Contributor	Contributor	Engaged	Contributor	Lead	Contributor	Engaged
ITS	Contributor	Contributor	Contributor	Contributor	Engaged	Contributor	Lead	Contributor	Engaged
Right-of-Way	Engaged	Contributor	Contributor	Contributor	Engaged	Engaged	Engaged	Engaged	Engaged
Design	Engaged	Contributor	Contributor	Lead	Contributor	Contributor	Engaged	Engaged	Engaged
Construction	Engaged	Engaged	Engaged	Engaged	Lead	Lead	Engaged	Engaged	Engaged
Maintenance	Engaged	Engaged	Engaged	Engaged	Engaged	Engaged	Contributor	Contributor	Lead

In Figure 5 and Table 6, each of the functional units are given one of three levels of involvement for the various phases of the Project Life Cycle. These levels of involvement, *Lead*, *Contributor*, and *Engaged*, are defined as follows:

- **Lead** – Disciplines under this level of involvement will be responsible for moving the project forward under these phases. These Lead discipline(s) are the experts and authority for their respective phase(s). The Lead is also responsible for the inclusion of other disciplines during this phase, when appropriate.
 - For Example, the Maintenance unit is responsible for leading a project that has entered the maintenance phase, but should look to engage other units when necessary and appropriate.
- **Contributor** – Under this level of involvement, discipline(s) will play an active role in shaping the project during specific phases. While they are not leading the effort, they should play a key supporting role, either because of their prior experience or knowledge in another phase of the project, or because they will soon be the Lead in an upcoming phase.
 - For example, Traffic Operations should be consulted during the planning phases of a project to both provide data and performance measures to the Planning Unit and to express any concerns with alternatives or strategies under development by the Planning unit.
- **Engaged** – Disciplines under this level of involvement should be consulted periodically during specific phases to ensure the project will not impede or adversely affect their own effort. While the involvement of Engaged disciplines is not required to see the completion of a given phase, consulting with these disciplines will likely lead to improved results over the project lifecycle, potentially even identifying fatal flaws early in the project lifecycle

before it reaches them in a later phase. Engaged does not mean no involvement; rather, Engaged implies that the discipline does not need to actively contribute to the details of a project, but should still play a role in determining the approach and direction of a project.

- For example, the Design unit should still be engaged during the planning phase of a project because they can identify fatal flaws in the alternatives or strategies developed by the planning unit.

3.4.1.1 Planning

The transportation planner is involved at both the systems and project levels. Planning at the systems level is usually led by an MPO or TPO, with input from local municipal planning departments, and support from the state planning agency. Systems level planning involves the development of system-wide evaluations, long range plans, and congestion management plans.

Planners also fulfill key roles at the project level by supporting planning-level traffic studies, concept development, Concepts of Operations, Systems Engineering Management Plans, ITS Master Plans, or the development of the performance metrics for monitoring purposes.

Data collection has historically been done by Planners to support system-wide evaluations and project-specific planning studies. However, with the dawn of big data, ITS and traffic engineers are increasingly collecting and using real-time data for operations and maintenance. A concentrated effort is needed to provide Planners with training and access to the real-time data to enhance their performance monitoring and system-wide evaluation functions.

Since the Planner takes the lead role at the front end (system-wide evaluation and project identification) and the back end (performance monitoring) of the project lifecycle, the Planner is uniquely positioned to assemble the stakeholder team and play the role of Project Champion. A Project Champion is needed to ensure smooth transitions between phases and maintain the project's purpose and need throughout the project lifecycle. The stakeholder team should consist of various FDOT experts as well as representative from the local maintaining agency at an early stage to ensure consistency with other planned projects and to head off potential pitfalls in design or implementation.

DO's

- Base prioritization decisions on agreed-upon goals and objectives, expected outcomes, and known constraints
- Provide continuity throughout the TSM&O lifecycle by

DON'Ts

- Prioritize projects based solely on stakeholder pressure or anecdotal evidence
- Forget about the project after the planning-led efforts are complete

making data and communication available to all experts

- Monitor performance beyond the end of the TSM&O lifecycle to estimate project- and system-level payoffs

- Skip performance monitoring at the end of a project

3.4.1.2 ITS Engineering

The TSM&O program considers projects of different types and varying levels of complexity. For projects that incorporate ITS elements, the involvement of ITS engineers early in the process will help to identify implementable alternatives that are consistent with the Regional ITS Architecture (RITSA). During the early system planning stage, ITS engineers can also provide valuable access to data, lend their expertise on technology, and assist in the establishment of performance measures to be carried forward in the TSM&O lifecycle.

In the project development process, ITS engineers work with planners to develop feasibility assessments and Concepts of Operations (ConOps) reports, and ITS engineers work with transportation planners on the system verification and validation process that follows the completion of a project. ITS engineers also play a lead role in facility operations where ITS is involved.

DO's

- Be engaged in the systems- and project- level planning efforts
- Provide timely and clear input on the advantages and disadvantages of different ITS technologies
- Encourage the use of the systems engineering approach to develop a management plan for the project
- Incorporate data quality control and assurance as part of ITS deployments
- Share data with other units

DON'Ts

- Wait for projects to be handed down from planning—by which time input would be less likely to be considered
- Let sporadic errors in the data prevent data sharing—simply document and caveat the inconsistencies
- Confuse data ownership with data integration—data can be stored in a central location yet the owner can maintain control over it

3.4.1.3 Traffic Operations

The TSM&O program requires involvement and coordination from traffic operations in the planning phase. At the systems level, traffic operations staff can provide valuable access to data, provide technical assistance on system wide improvements, and assist in the establishment of performance measures to be carried forward in the TSM&O lifecycle.

In the planning phase, traffic operations professionals can provide input as a stakeholder and technical advisor. In the project development process, traffic operations professionals can coordinate with transportation planners on the assumptions of the project prior to the design and implementation process. Similar to the planning phase, traffic operations professionals can work with transportation planners to monitor performance after a project is implemented, and they take the lead role in operations of the facility.

DO's

- Be engaged in the systems- and project- level planning efforts
- Use data analysis skills to compute and communicate performance measures that can inform the selection of alternatives
- Participate in performance monitoring activities after projects are implemented.

DON'Ts

- Wait for projects to be handed down from planning—by which time input would be less likely to be considered
- Neglect to consider a wide range of future scenarios when calculating performance measures
- Discard operational data—it can be valuable in future studies

3.4.1.4 Right of Way

ROW staff do not typically provide input at the systems level. However, ROW staff will typically be involved at the project level during the conceptual plan development as well as the project development phase. During conceptual plan development, ROW staff are consulted to determine the potential risk of various alternatives. In addition, ROW staff is significantly engaged during design for more detailed assessment of the ROW cost and acquisition implications.

DO's

- Provide early input to planners and engineers to help estimate the ROW costs of different alternatives
- Perform ROW analyses at different levels of detail and accuracy to match the needs of different stages of the TSM&O lifecycle

DON'Ts

- Wait until the alternative selection process is complete to evaluate ROW impacts
- Forget about the project once the ROW-led parts are complete

3.4.1.5 Design

Design professionals play a key role in the project development process and lead the design stage. However, they should be consulted early in the process to inform the identification of alternatives and feasibility of projects under consideration.

Similarly, design professionals can continue to contribute to a TSM&O program beyond the completion of final design plans. Providing support to the construction and maintenance roles can make their jobs easier—and can result in valuable feedback on the actual performance of a design.

DO's

- Be engaged in the systems- and project- level planning efforts
- Provide technical support during the construction and performance monitoring stages

DON'Ts

- Design in a silo—right-of-way and construction experts can offer valuable input
- Forget about the project after final design is complete

3.4.1.6 Construction

The construction professional should be involved in a minor role as a stakeholder during early planning and concept development. It is important on critical projects for construction engineers to review project concepts for constructability concerns. Construction takes center stage during the build and implementation phase of the TSM&O lifecycle. The construction role is primarily responsible for implementing the design plans and/or the Systems Engineering Management Plan.

Note that the construction role is not limited to the construction of roadway infrastructure but may include the installation of ITS equipment, the development of ITS software applications, or signal re-timing. This role includes testing or inspecting the newly-built project to ensure that it performs as expected.

DO's

- Share hands-on expertise with planners and traffic operations/design engineers early on
- Review the work done in the feasibility and concept exploration stages
- Adhere to principles of Systems Engineering: performing decomposition and definition first, and integration and verification afterwards

DON'Ts

- Wait until the final design plans arrive to provide constructability advice
- Wait until the work is fully finished to start testing: unit testing can catch errors when they are still easy to address

3.4.1.7 Maintenance

The maintenance role is critical in both the system and project levels of the TSM&O program. As a stakeholder at the system level, maintenance staff can provide valuable information on the state of the physical system.

At the project level, it is critical to engage maintenance staff in the planning phase to understand maintenance and regional architecture from a condition and asset management perspective. The maintenance role then takes the lead in keeping the newly built facilities in optimal conditions, working in tandem with traffic operations and ITS professionals. Lessons learned by maintenance staff can also be valuable to future decision-makers as they seek to select the most cost-effective alternatives over a project's lifecycle.

DO's

- Provide input on maintenance costs during the alternative analysis and feasibility stages
- Use asset management knowledge to improve understanding of existing conditions

DON'Ts

- Discard maintenance data—it can be valuable in future studies
- Let sporadic errors in the data prevent data sharing—simply document and caveat the inconsistencies
- Confuse data ownership with data integration—data can be stored in a central location yet the owner can maintain control over it

3.5 Task Action Matrix

As previously mentioned, the district is aiming to improve from a 2.0 to 3.0 capability level. Therefore, the key tasks must be broken down from a level 2.0 to 3.0. For any given dimension, each new level of capability is designed to establish the basis for the subsequent step and therefore must be fully implemented before taking actions related to the next level. After initial implementation of the action, time is needed for the required arrangements to "settle in," so that processes and roles become routine. Agency experience determined through research suggests that after a significant change is made, 12-15 months are needed for the change to be mainstreamed. Therefore, this implementation plan will identify the District efforts to achieve a 3.0 capability level and the necessary next steps to reach the target 3.0 capability level.

District 5 has the largest FDOT ITS-related staff. Funding is available to provide new FDOT staff members with training on department systems. There is uncertainty regarding where TSM&O fits into the organizational structure of the department.

The corresponding key action items developed through the CMM are provided in Table 7.

Table 7: Organization and Workforce Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	Establish TSM&O program organizational chart as a resource for local agencies by 2018	Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	In progress	Transportation Planning Manager	Q4 FY 2016/17
	Identify opportunities for resource-sharing within the region on personnel and infrastructure by 2018	Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions Deliverable: Labor-Sharing Agreement	In progress	District TSM&O Engineer	Q1 FY 2017/18
Program includes TSM&O program organizational chart for the District with direct access to top management	Establish FDOT District Five TSM&O program Organization and Workforce structure by 2018	Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	In progress	Transportation Planning Manager	Q4 FY 2016/17
	Establish job specifications, certifications and qualifications for each TSM&O program position by 2018	Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions Deliverable: District Five TSM&O Staffing Plan	Not started	District TSM&O Engineer	Q1 FY 2017/18
	Establish clearly defined roles and responsibilities within the project development life cycle by 2018	Update corridor planning study and PD&E scopes to be inclusive of TSM&O. Document procedures for project planning to concept to completion, including specific personnel to be engaged at certain timeframes throughout the project development cycle. Deliverable: Corridor Study Planning Only Scope and Corridor Study Concept Development Scope	In progress	Transportation Planning Manager/District TSM&O Engineer	Q2 FY 2017/18

4

Culture

Culture is defined as “the combination of values, assumptions, knowledge and expectations of the agency in the context of its institutional and operating context, and expressed in its accepted mission and related activities.” District Five has embarked on several tasks to solidify the Culture of TSM&O, both internally and at local and regional agencies within District Five. Within this chapter, the existing CMM Level, as self-assessed by the District, and corresponding Culture implementation tasks are presented.

4.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Culture Dimension of the TSM&O Program, and the desired capability and maturity framework, a series of goals and objectives of this dimension (see Table 8) have been developed to define necessary task action items for the District.

Table 8: Culture Goals and Objectives

Goals	Objectives
Establish a formal TSM&O program within the District	Obtain FDOT leadership buy-in on the TSM&O Implementation Plan by 2018
Establish a regional mission to identify TSM&O and its benefits within a formal program.	-Obtain regional stakeholder buy-in on a TSM&O program by 2018 -Obtain MOU's from regional stakeholders by 2018 (measure)
	Support regional partners to develop their own TSM&O program/process by 2018
Achieve wide public visibility/understanding of TSM&O program benefits within the District.	Produce materials for both leadership and public to illustrate benefit-cost of the TSM&O program and network-operational improvements by 2018
Funding focus shifts from constructing new facilities to more efficiently operating existing ones	Obtain a dedicated funding source for operational improvements by 2020
	Implement the TSM&O checklist in all planning projects

4.2 CMM Level

As indicated in a level 1 capability, TSM&O efforts within the district are championed by individuals, however, there is no formal, institutional treatment of TSM&O with respect to funding within FDOT. As of the CMM self-assessment in 2014, capacity improvement projects were generally considered first, with TSM&O being considered as an afterthought. Participating agencies also noted that maintenance and operations are not as interesting to the public as capital projects, making sustained TSM&O difficult to fund unless service is becoming visibly degraded.

4.2.1 Strengths and Weaknesses

A full list of the documented strengths and weaknesses for the Culture dimension is provided in Figure 6, on the subsequent page:

Strengths:

- TSM&O projects are considered in some jurisdictions as appealing for their quicker turnaround compared to conventional capacity projects, meaning that benefits are realized sooner.
- Politicians, district secretaries, and state leaders are beginning to recognize that TSM&O is something that FDOT has already been doing, and will need to continue in the future. The State Planning Office is supportive of TSM&O.
- The central office has a strategic business plans outlining the intended direction of TSM&O efforts.

Weaknesses:

- Among local agencies, there is a lack of familiarity with “TSM&O” and other related terminology.
- Major projects distract regional agencies from developing long-term TSM&O plans. Elected officials favor capacity improvement projects due to the higher visibility associated with them.
- In smaller jurisdictions, transportation agency staffs do not have the resources to keep political leaders continually informed about TSM&O and its importance/relevance.
- Leaders often do not realize that TSM&O projects, unlike capacity projects, require significant ongoing funding for operations and maintenance. The need for skilled staff to manage these facilities reduces the level of resources available for other projects.
- Focus on TSM&O systems sometimes occurs when something fails, rather than a proactive management approach that avoids these failures to begin with.
- No TSM&O publicity materials, business case or “success stories” are readily available to demonstrate the potential benefits of TSM&O to decision makers.
- Transit agencies must rely on internal TSM&O champions to continue calling attention to these types of projects among political leaders.
- TSM&O -related managers do not have the resources to provide consistent, systematic outreach.
- Securing funds for continued operations and maintenance of TSM&O projects is more challenging than obtaining funds for new projects, because the effects of deferring operational/maintenance funds are typically not as visible as the effects of delaying capital improvement project funds.

Figure 6: 2014 CMM Self-Assessment Culture Dimension Strengths and Weaknesses

4.2.2 Identification of Desired Outcomes

During the CMM workshop, the existing 2014 capability level for the Culture Dimension was identified as level **1.5 for MPOs, FDOT, and Transit Agencies, and 1.0 for Counties**. Through the efforts of this implementation plan, the target capability level of the Culture dimension is level 3.0. A description of each level for the Culture dimension can be found in Table 9.

Table 9: CMM Assessment – Culture Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	Individual Staff champions promote TSM&O	Jurisdictions' senior management understands TSM&O business case and educates decision makers/public	Jurisdictions' mission identifies TSM&O and benefits with formal program and achieves wide public visibility/understanding Funding focus shifts from constructing new facilities to more efficiently operating existing ones	Customer mobility service commitment accountability accepted as formal, top level core program of all jurisdictions
Consensus	2014 Capability Level: 1.0 for Counties 1.5 for MPOs, FDOT, transit		Target Capability Level: 3.0	
	2017* Capability Level: 2.0 for all Agencies			

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The Workshop Memorandum, which summarizes the Consensus re-assessed level as well as the additional action items for moving forward can be found in Appendix "B".

4.3 Existing Status

The status of the Culture Dimension has improved since the 2014 assessment. The final draft of the 2017 TSM&O Strategic Plan has been released by Central Office and the District is focused on improving and understanding the roles of various units. Several educational presentations have been provided at local, regional, and statewide committees, advisory boards, and conferences to advance the mission and related activities of the District Five efforts.

4.4 Implementation

As determined through the Capability Maturity Reassessment in 2017, it is recognized that the District is currently operating at a Level 2 for this dimension. Therefore, efforts within this implementation plan will focus on the improvement from a Level 2 to a Level 3 on the agency capability scale.

4.4.1 Proposed Education and Outreach

The desired outcome of the Culture dimension is to implement a TSM&O program which is supported by Senior Management, familiar to all stakeholders within the

District, and provides continuous education and outreach for maximum exposure of its benefits. The District's proposed plan includes a methodology which coordinates with the MPOs/TPOs to familiarize board members about TSM&O, gradually exposing them to the relevant concepts and payoffs, thus enabling them to make informed decisions about future projects. In addition, building upon the efforts, within the District, the proposed Culture outreach includes the preparation of statewide materials to provide a persuasive "business case" for TSM&O. These materials would include local and statewide examples, but would need to be designed to keep expectations realistic. The following should be considered in the development of the materials:

- Develop materials to address different audiences, such as engineering staffs, the public and political leaders.
- Develop guidance regarding the use of the materials, so that they are focused on the local context when they are distributed
- Include examples of the impacts it would have on the lives of the people in the area of the proposed project.
- Discuss the impacts and implications of not doing the project as well.

Throughout the implementation process, the District will build the Culture of the District's TSM&O practice by examining agencies that are deploying TSM&O effectively, and identifying ways to emulate their successes within FDOT.

4.5 Task Action Matrix

The corresponding key action items developed through the CMM are provided in Table 10.

Table 10: Culture Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Establish a formal TSM&O program within the District	Obtain FDOT leadership buy-in on the TSM&O Implementation Plan by 2018	Present the final <i>Planning for TSM&O Guidebook</i> and <i>TSM&O Implementation Plan</i> to senior leadership at FDOT. Deliverable: TSM&O Implementation Plan	In Progress	Transportation Planning Manager	Q4 FY 2017/18
Establish a regional mission to identify TSM&O and its benefits within a formal program.	Obtain regional stakeholder buy-in on a TSM&O program by 2018	Obtain MOU's from regional stakeholders. Deliverable: MOUs from regional stakeholders.	Not started	Transportation Planning Manager	Q2 FY 2018/19
	Support regional partners to develop their own TSM&O program/process by 2018	Create shared labor pools to introduce local agencies to FDOT and promote TSM&O. Deliverable: Labor-sharing agreement.	In progress as follow-up to the <i>FDOT District 5 ITS Master Plan</i>	District TSM&O Engineer	Q4 FY 2016/17
Achieve wide public visibility/understanding of TSM&O program benefits within the District.	Producing materials for both leadership and public to illustrate benefit-cost of the TSM&O program and network-operational improvements by 2018	Create graphical one-page summaries of proven TSM&O strategies for easy presentation. Deliverable: "One-pager" for each proven TSM&O strategy.	In progress	District TSM&O Engineer	Q2 FY 2017/18
		Develop short animated videos of TSM&O program and strategies to present to senior executives or the public. Deliverable: Five or more short videos.	In progress	District TSM&O Engineer	Q2 FY 2017/18
Funding focus shifts from constructing new facilities to more efficiently operating existing ones	Obtain a dedicated funding source for operational improvements by 2020	Engage individual MPOs/TPOs on the topic Deliverable: Conduct ongoing coordination to identify and implement TSM&O funding sources	Initiating	Transportation Planning Manager	Q2 FY 2020/21
	Implement the TSM&O checklist in all planning projects	Introduce TSM&O work items into the standard corridor study and PD&E scope(s) Deliverable: Updated Corridor Study and PD&E Scopes, inclusive of TSM&O	In progress	Transportation Planning Manager	Q2 FY 2018/19

5

Collaboration

The FDOT District 5 TSM&O Implementation effort is supported by the SHRP2 grant. As identified in the SHRP2 requirements, a successful implementation requires the support of all District units, MPOs and TPOs, transit agencies, and local governments, hence, the necessity for a collaborative approach. The effectiveness of most strategies is dependent on improving the coordinated performance of each partner.

5.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Collaboration Dimension of the TSM&O Program, and the desired capability and maturity framework, a series of goals and objectives for this dimension have been developed (see Table 11) in order to define necessary task action items for the District.

Table 11: Collaboration Goals and Objectives

Goals	Objectives
TSM&O Managers have direct access to District leadership	Formalize a communication plan between District leadership and TSM&O Management Team by 2018
Ensure coordination between different functional units within the Department	Establish a communication process consistent with the TSM&O project development life cycle by 2018 Establish clearly defined roles and responsibilities of functional units by 2018
Identify job specifications, certification and training for core positions.	TSM&O program job specifications, certifications, and training identified within the Organization & Workforce Dimension
Establish regular communication and collaboration between the District and regional/local agencies (i.e. MPOs/TPOs, counties, cities, transit agencies, emergency responders, safety officers)	Establish a plan for regional collaborative meetings on a bi-monthly or quarterly basis by 2017 Establish a resource-sharing forum for education and guidance materials on the Department's website by 2018
Identify opportunities to share communication infrastructure between the District and local agencies	Identify District and local agency needs for data and communication infrastructure by 2018
	Identify opportunities for resource-sharing within the region on personnel and infrastructure by 2018

5.2 CMM Existing Level

Based on the strengths and weaknesses of the District and progress through March 2014, the consensus capability level for the FDOT was a 2.0.

5.2.1 Strengths and Weaknesses

A full list of the documented strengths and weaknesses for the Collaboration dimension is provided in Figure 7 on the subsequent page:

Strengths:

- Consistent, formalized meetings between MPOs and local partners are fostering continual collaboration.
- Incident management co-training is taking place.
- FDOT has maintenance agreements with local agencies covering some - but not all - signal facilities management.
- In some counties, signal maintenance is consolidated into a single authority to leverage economics of scale and provide greater consistency.
- Different agencies share communications infrastructure when their service areas overlap. This sharing of infrastructure and operational responsibilities are formalized in a MOU from 2001.
- Some agencies are coordinating pedestrian safety efforts within the region and are collaborating on pedestrian systems management/operations.
- CFX and the Florida Turnpike Enterprise have a common set of customer-oriented performance metrics and procedures, which results in a consistent user experience and facilitates collaboration. The systems used by these two agencies are compatible with each other. Additional coordination occurs between these agencies and local municipalities.
- CFX, the Florida Turnpike Enterprise, and other agencies share funds for freeway service patrols on the facilities they operate.
- The Open Roads policy established between Florida State Patrol and FDOT allows for more efficient incident management.
- The FTE funds the state patrol on its facilities.

Weaknesses:

- When the sharing of communications infrastructure occurs, it is based on individual, informal agreements between agencies. There are few formalized arrangements; the MOU from 2001 is vague.
- Transit agencies operate as isolated entities. There are no established collaborative partnerships that transcend agency boundaries.
- On demand side of transit operations, there is limited discussion of alternatives analysis for projects.
- The Open Roads policy is applied to varying extents depending on jurisdiction. The policy covers state facilities and the state patrol, but not arterials and local responders.
- Pedestrian safety funds are applied inefficiently to programs with overlapping scope, resulting in a duplication of effort. Coordination between cities, responders, and other relevant agencies during an incident is not consistent. There is no current towing and recovery incentive/disincentive program in the District.

Figure 7: 2014 CMM Self-Assessment Collaboration Dimension Strengths and Weaknesses

5.2.2 Identification of Desired Outcomes and Products

The desired outcome of the Collaboration dimension is to establish a working plan which makes the best use of unique and shared resources to overcome technical, staffing, and financial constraints of TSM&O implementation.

The efforts of the implementation plan will focus on reaching a target capability level of 3.0 - Integrated. The levels and corresponding criteria for the Collaboration dimension are summarized in Table 12. The key action items to achieve this level will be discussed within.

Table 12: CMM Assessment – Collaboration Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	TSM&O added on to units within existing structure and staffing -- dependent on technical champions	TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, internal and external collaboration takes place	TSM&O Managers have direct access to top management; Job specs, certification and training for core positions. Operations and Planning work cohesively in the TSM&O Program <ul style="list-style-type: none"> Organization /partners aligned 	TSM&O senior managers at equivalent level with other jurisdiction services and staff professionalized
Consensus		2014 Capability Level: 2.0 2017* Capability Level: 2.5	Target Capability Level: 3.0	

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The CMM Reassessment Workshop Memorandum, attached to this Implementation Plan as *Appendix B* provides additional next steps and action items for the TSM&O program.

5.3 Existing Status

Progress has been made in the Collaboration dimension since the CMM self-assessment in 2014. The TSM&O Consortium, a bi-monthly meeting between District Five and regional/local agencies, has improved collaboration amongst partner agencies. Similarly, the District is developing an organizational chart for TSM&O to better facilitate collaboration between the various FDOT units.

The District Five Corridor Development group is also in the process of refining the District’s Corridor Planning Study and Concept Development scopes to streamline the planning process within the District while being more inclusive of all FDOT units. In addition, the District is developing several agreements to formalize collaborative efforts with regional and local partner agencies.

5.4 Implementation

As determined through the Capability Maturity Reassessment in 2017, it is recognized that the District is currently operating at a Level 2.5 for this dimension. Therefore, efforts within this implementation plan will focus on the improvement from a Level 2.5 to a Level 3 on the agency capability scale.

5.4.1 Proposed Districtwide Collaboration

The District Five region includes nine counties, five MPOs and TPOs, numerous municipalities, and several other key partners relating to mobility, transit, education, research, and commerce. The desired outcome of the Collaboration dimension is to establish a TSM&O program that incorporates all FDOT functional units as well as the District's regional and local partners in its stated goal of optimizing the safety, performance, and reliability of the existing transportation system. An emphasis on effective coordination between agencies and partners is a key component of the TSM&O program. Formal agreements between the District and its regional and local partners will further support the collaborative efforts of the TSM&O program in the region.

The corresponding key action items developed through the CMM are as follows:

- Hold workshops with FDOT to discuss roadway operational factors that may impact transit service.
- Organize a consortium to identify components of ICM that can be pursued without waiting on outside funding.
- Formalize agreements for the sharing of communications infrastructure between the state and local agencies.
- Conduct a comprehensive inventory of equipment (including communications infrastructure) and develop a strategy for making the business case to upper management regarding funding for asset management efforts.
- Provide ongoing training for emergency responders regarding congestion mitigation and traffic management, to address the loss of this knowledge and experience through staff turnover. Possible channels for this training include CTST, quarterly leadership meetings, and bi-weekly incident management outreach meetings.
- Develop a "forum" with appropriate participants (building on CMM workshop attendance) to consider broad regional TSM&O issues.

5.5 Task Action Matrix

The corresponding key action items developed through the CMM are provided in Table 13.

Table 13: Collaboration Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
TSM&O Manager have direct access to District leadership	Formalize a communication plan between District leadership and TSM&O Management Team by 2018	Present the final Planning for TSM&O Guidebook and TSM&O Implementation Plan to senior leadership at FDOT and develop strategy for future communication efforts. Deliverable: Executive approval for Guidebook and Implementation Plan	In progress	District TSM&O Engineer	Q4 2017/18
Ensure coordination between different functional units within the Department	Establish a communication process consistent with the TSM&O project development life cycle by 2018	Develop an internal TSM&O board with future communication process for prioritization of projects and identification of funding opportunities. Deliverable: TSM&O Steering Committee	Not started	District TSM&O Engineer	Q4 2017/18
	Establish clearly defined roles and responsibilities of functional units by 2018	Present the final Planning for TSM&O Guidebook and TSM&O Implementation Plan to senior leadership at FDOT and develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	In Progress	District TSM&O Engineer	Q4 2017/18
Identify job specifications, certification, and training for core positions.	TSM&O program job specifications, certifications, and training identified within the Organization & Workforce Dimension	Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions Deliverable: District Five TSM&O Staffing Plan	Not started	District TSM&O Engineer	Q4 2017/18
Establish regular communication and collaboration between the District and regional/local agencies (i.e. MPOs/TPOs, counties, cities, transit agencies, emergency responders, safety officers)	Establish a plan for regional collaborative meetings on a bi-monthly or quarterly basis by 2017	Develop a "forum" with appropriate participants, as accomplished via the TSM&O Consortium. Deliverable: Bi-monthly District Five TSM&O Consortium	On-going	District TSM&O Engineer	Ongoing as the bimonthly TSM&O Consortium
	Establish a resource-sharing forum for education and guidance materials on the Department's website by 2018	Formalize agreements for the sharing of communications infrastructure between the state and local agencies. Deliverable: MOU/Agreement	Not started	District TSM&O Engineer	Q2 2017/18

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Identify opportunities to share communication infrastructure between the District and local agencies	Identify District and local agency needs for data and communication infrastructure by 2018	Conduct a comprehensive inventory of equipment (including communications infrastructure); develop a strategy for making the business case to upper management regarding funding for asset management efforts. Deliverable: Existing Inventory, Needs, and Strategy Memorandum	Not started	District TSM&O Engineer	Q2 2017/18
	Identify opportunities for resource-sharing within the region on personnel and infrastructure by 2018	Extend summary of comprehensive inventory to external agencies and summarize capabilities of external agencies (Staff sharing agreement) Deliverable: Section within District Five ITS Master Plan	Completed	District TSM&O Engineer	Completed within FDOT District 5 ITS Master Plan

6

Systems and Technology

The Systems and Technology dimension focuses on the use of the appropriate processes for design and implementation of TSM&O systems to ensure that the needs of the region are appropriately addressed, systems are implemented in an efficient manner, and interoperability with other systems is achieved.

6.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Systems and Technology Dimension of the TSM&O Program, and the desired capability and maturity framework, a series of goals and objectives of this dimension (see Table 14) have been developed in order to define necessary task action items for the District.

Table 14: Systems & Technology Goals and Objectives

Goals	Objectives
Regional con-ops and architectures developed and documented with costs included; appropriate procurement process employed	Produce a districtwide vision for ITS infrastructure goals and objectives.
	Follow evolving and emerging technology and their applications to the transportation network
Manage ITS assets and infrastructure proactively	Establish asset management strategies for asset inventory and maintenance records.
	Asset management strategies will provide considerations for asset life cycle to include maintenance and replacement cost.
Systems and technology standardized, documented and trained statewide, and new technology incorporated (L3)	Provide consistency across the district on ITS infrastructure connections across jurisdictions and ensure interoperability
	To provide training as need to local agencies on emerging transportation related technology, processes, or requirements.
	Streamline the systems engineering process and provide districtwide consistency with ConOps and SEMP documentation

6.2 CMM Level

Based on the strengths and weaknesses of the District and progress through March 2014, the consensus capability level for the FDOT was a 1.0 for transit and 1.5 for arterials and highways.

6.2.1 Strengths and Weaknesses

A full list of the documented strengths and weaknesses for the Systems and Technology dimension is provided on the following page in Figure 8:

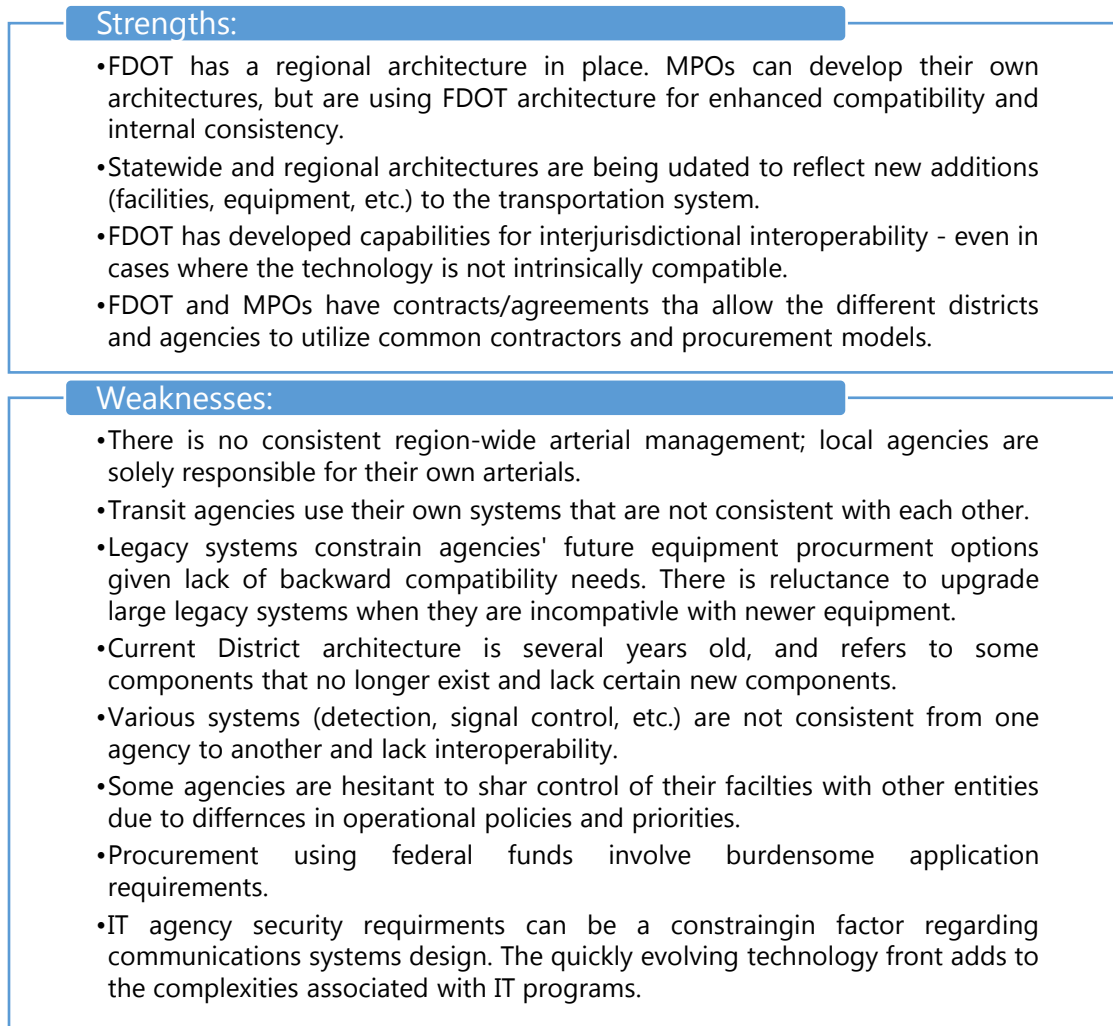


Figure 8: 2014 CMM Self-Assessment Systems & Technology Dimension Strengths and Weaknesses

6.2.2 Identification of Desired Outcomes

The desired outcome of the Systems and Technology dimension is an update to the regional / district architecture through the ITS Florida and MIMS initiatives, in accordance with the CMM. The updated plans should support a standardized district wide resource with consistent district-wide arterial management.

The efforts of the implementation plan will focus on reaching a target capability level of 3.0 - Integrated. The levels and corresponding criteria for the Systems and Technology dimension are summarized in Table 15 on the subsequent page. The key action items to achieve this level will be discussed within.

Table 15: CMM Assessment - Systems & Technology Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	Ad hoc approaches to system implementation without consideration of systems engineering and appropriate procurement processes	Regional con-ops and architectures developed and documented with costs included; appropriate procurement process employed	Systems & technology standardized and integrated on a districtwide basis (including arterial focus) with other related processes and training as appropriate	Architectures and technology routinely upgraded to improve performance; systems integration/interoperability maintained on continuing basis
Consensus	2014 Capability Level: 1.0 for transit; 1.5 for highways		Target Capability Level: 3.0	
	2017* Capability Level: 2.0 for all systems			

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The CMM Reassessment Workshop Memorandum, attached to this Implementation Plan as *Appendix B* provides additional next steps and action items for the TSM&O program.

6.3 Existing Status

The District Five ITS Master Plan was completed early 2017. Similarly, several counties and MPO partners have initiated or completed their own ITS Master Plan. A primary component of the Systems and Technology dimension is aligning the separate systems of the District and partner agencies. To this end, the stakeholders continue to collaborate with one another to ensure proper connectivity between the various systems.

In addition to the focus on compatibility of various systems and network infrastructure, this dimension is also concerned with being prepared for emerging technologies. Related to this component, the District and its regional and local partners have established the Central Florida Automated Vehicle Proving Grounds Partnership. The Partnership, a conglomerate of multiple agencies and organizations representing the Central Florida region, has been designated by the USDOT as one of ten proving ground pilot sites to encourage testing and information sharing around automated vehicle technologies.

6.4 Implementation

As determined through the Capability Maturity Reassessment in 2017, it is recognized that the District is currently operating at a Level 2 for this dimension. Therefore, efforts within this implementation plan will focus on the improvement from a Level 2 to a Level 3 on the agency capability scale.

6.4.1 Proposed Districtwide Vision (ITS Master Plan, RITSA, etc.)

The corresponding key action items developed through the CMM and AASHTO guidance are as follows:

- Update regional/district architecture as required by emerging plan implications.
- Update standards regularly to stay on the forefront of quickly evolving technologies, with interoperability as the motivating goal.
- Establish a TSM&O asset management strategy that includes life-cycle considerations for maintenance and replacement.
- Provide outreach for new streamlined System Engineering Management Plan (SEMP); perform SEM process sufficiently in advance of project submittal deadlines for funding. Agree upon an appropriate time to start SEM in the project planning framework, and educate staff on the process.

6.4.2 Proposed Roles and Responsibilities in the Systems Engineering Process

The TSM&O program requires involvement and coordination from traffic operations and ITS in the planning phase. The planning phase is generally broken into two steps: 1) System-wide planning and 2) project planning. Typical tasks in each steps of the planning process are summarized below:

System wide Planning:

- Participate in the planning process – The involvement of Traffic Ops and ITS engineers early in the process will help to identify implementable alternatives that are consistent with the Regional ITS Architecture
- Provide expert input – ITS engineers can use their unique expertise to help identify and evaluate ITS alternatives at the system and project levels

Planning Study

- Collect and analyze data – Traffic operations and ITS engineers should use data analysis skills to compute and communicate performance measures which inform the selection of alternatives
- Communicate expected outcomes for each alternative - Participation in performance monitoring activities after projects are implemented

6.5 Task Action Matrix

The corresponding key action items developed through the CMM are provided in Table 17.

Table 16: Systems & Technology Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Regional ConOps and architectures developed and documented with costs included; appropriate procurement process employed	Produce a districtwide vision for ITS infrastructure following evolving and emerging technology and the applications to the transportation network	Update regional/district architecture as required by emerging plan implications Deliverable: ITSFL and MIMS initiative	In Progress	District TSM&O Engineer	Q4 FY 2016/17
		Develop consistent region-wide arterial management guidance Deliverable: ITSFL and MIMS initiative	In progress	District TSM&O Engineer	Q4 FY 2016/17
		Establish database of contracts/agreements for District agencies to utilize common contractors and procurement models Deliverable: Database for Successful Procurement Processes	Contracts/Agreements – Available Database - Not Started	District TSM&O Engineer	Q2 FY 2017/18
Manage ITS assets and infrastructure proactively	Establish asset management strategies for asset inventory and maintenance records	Establish a TSM&O asset management strategy that includes life cycle considerations for maintenance and replacement Deliverable: TSM&O Asset Management Strategies	Not Started	District TSM&O Engineer	Q2 FY 2017/18
Systems and technology standardized, documented, and trained statewide, and new technology incorporated (L3)	Provide consistency throughout the district on ITS infrastructure connections across jurisdictions and ensure interoperability	Develop consistent district-wide arterial management guidance Deliverable: ITSFL and MIMS initiative	In Progress	District TSM&O Engineer	Q4 FY 2016/17
		Develop consistent district-wide guidance for ITS (detection, signal control, etc.) to encourage interoperability. Deliverable: ITSFL and MIMS initiative	In Progress	District TSM&O Engineer	Q4 FY 2016/17
	Provide training as needed to local agencies on emerging transportation related technology, processes, or requirements	Update standards regularly to stay on the forefront of quickly evolving technologies, with interoperability as the motivating goal. Deliverable: Training Program, led by FDOT	Not Started	District TSM&O Engineer	Q4 FY 2017/18
	Streamline systems engineering process and provide districtwide consistency with ConOps and System Engineering Management Plan (SEMP) documentation	Provide outreach for new streamlined SEMP, perform SEMP process sufficiently in advance of project submittal deadlines for funding. Agree upon an appropriate time to start SEMP in the project planning framework, and educate staff on the process. Deliverable: Project development checklist resulting from Planning for TSM&O Guidebook -Operational Improvement Checklist	Not Started	Planning & Corridor Development Manager / District TSM&O Engineer	Q2 FY 2017/18

7

Performance Measures

It is a common saying that “what gets measured, gets improved.” Performance measurement is essential as the means of determining program effectiveness, determining how changes are affecting performance, and guiding decision-making. In addition, operations performance measures demonstrate the extent of transportation problems and can be used to “make the case” for operations within an agency and to decision-makers and the traveling public, as well as to demonstrate to them what is being accomplished with public funds on the transportation system.

7.1 Goals and Objectives

Based on the identified strengths and weaknesses of the 2014 Performance Measures Dimension of the TSM&O Program, and the desired capability maturity framework, a series of goals and objectives of this dimension (see Table 18) have been developed in order to define necessary task action items for the District.

Table 17: Performance Measures Goals and Objectives

Goals	Objectives
Identify program performance measures	Establish performance measures for each FDOT Unit which accomplish the overall TSM&O program goals and objectives by year 2018
	Obtain consensus on District 5 performance measures for system, corridor, and intersection level analyses by year 2018.
	Utilize Map 21 Performance measures, in which data is readily available, or can be efficiently obtained, to provide consistency with statewide performance measurement initiatives.
Utilize TSM&O Performance measure for objective-based program improvements	Develop a system wide evaluation tool, which is suitable and customizable for all District stakeholders by YR 2018.
Utilize Performance measures to enhance the District Five roadway operating conditions (Targets to be determined when baseline performance is measured)	Improve the safety on the District Five roadway network by decreasing the overall crash rate by X percent by year X.
	Manage the congestion on the District Five roadway network by decreasing the congested lane-miles by X percent by year X.
	Improve the District Five network reliability by reducing the network travel time delay by X percent by year X.
	Maximize the District Five return on investment by achieving a total cost/benefit of X by year X.

7.2 CMM Level

During the CMM workshop, the existing 2014 capability level for the Performance Measurement Dimension was identified as **level 1 for arterials and level 2 for freeways**.

7.2.1 Strengths and Weaknesses

Key factors identified by stakeholders which led to the self-assessment within the District was performance metrics are being collected and archived, but those related to reliability are not analyzed, reported, and utilized. There was also limited staff availability for processing these metrics. A full list of the documented strengths and

weaknesses for the Performance Measurement dimension is provided in Figure 9 on the subsequent page:

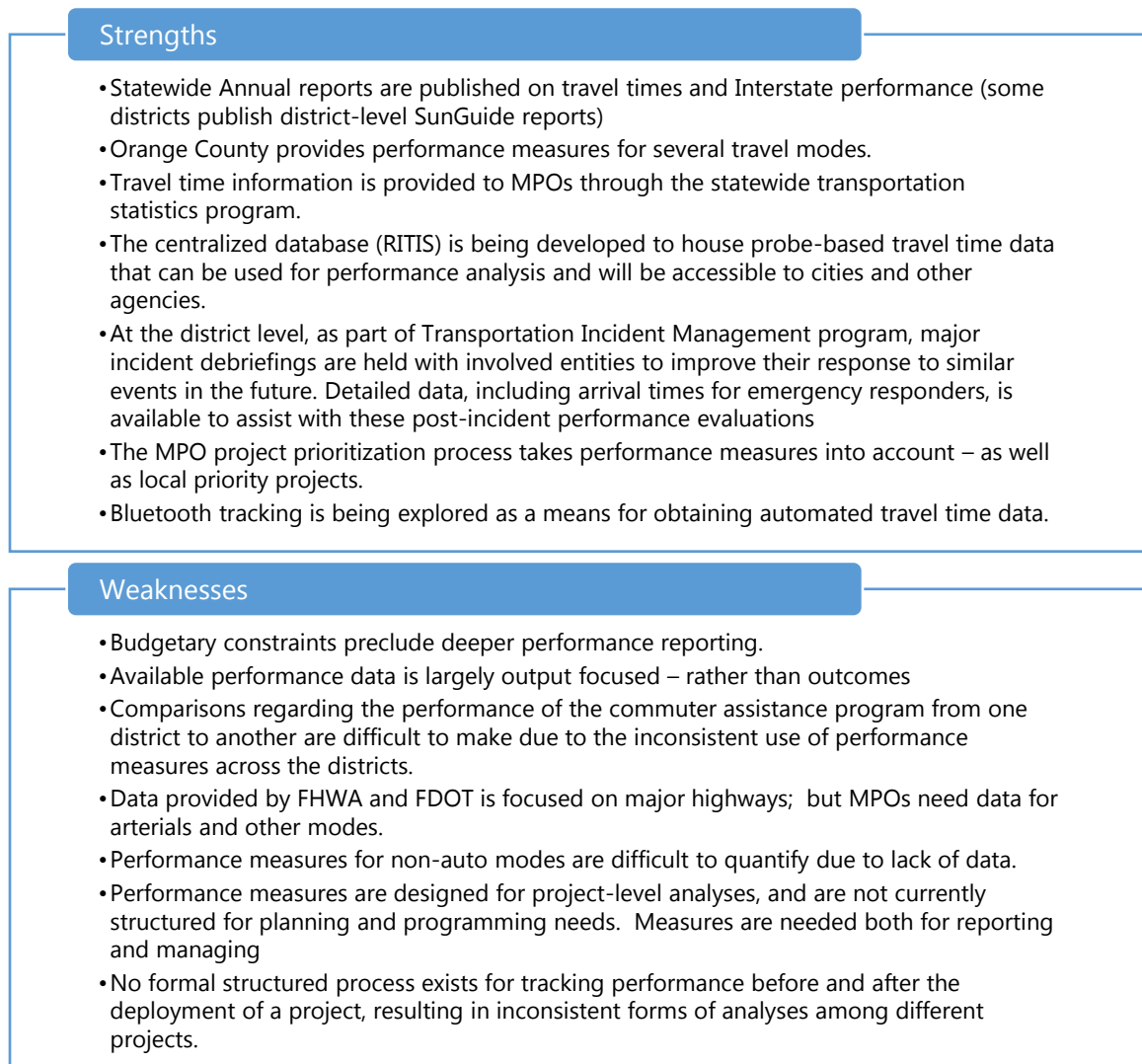


Figure 9: 2014 CMM Self-Assessment Performance Measures Dimension Strengths and Weaknesses

7.2.2 Identification of Desired Outcomes

Through the efforts of this implementation plan, the target capability level of the Performance Measurement dimension is level 3.0. A description of each level for the Performance Measurement dimension can be found in the following Table.

Table 18: CMM Assessment - Performance Measures Dimension

Level	1 — Performed	2 — Managed	3 — Integrated	4 — Optimized
Criteria	Some outputs measured and reported	Output used directly for after-action debriefings and improvements; data easily available and dashboarded	Outcome measures identified (networks, modes, impacts) and routinely utilized for objective-based program improvements	Performance measures reported internally for utilization and externally for accountability and program justification
Consensus	2014 Capability Level: 1.0 for arterials, 2.0 for freeways		Target Capability Level: 3.0	
	2017* Capability Level: 1.0 for FDOT, 1.25 for MPOs/TPOs			

*It should be noted that through the development of this Implementation Plan, a Capability Maturity Reassessment Workshop was conducted in June 2017. The CMM Reassessment Workshop Memorandum, attached to this Implementation Plan as *Appendix B* provides additional next steps and action items for the TSM&O program.

7.3 Existing Status

To date, 4 of the 5 MPO/TPO’s within the District have established a system-wide planning process through an established CMP. The status, utilization, and associated performance measures for each agency is provided in Table 19:

Table 19: MPO/TPO Congestion Management Process Status

Planning Organization	CMP Established?	Utilization	Performance Measures
Lake-Sumter MPO	Yes	L RTP, L OPP prioritization	<u>Analysis Provided:</u> Volume to Capacity, Person-Throughput Utilization, Average Delay, Average Crash Rate, Cost of Congestion <u>PM Identified:</u> Travel-Time Reliability
MetroPlan Orlando	Yes	Prioritize funding for TIP	Annual Average Serious Injuries and Fatalities (by Safety Emphasis Area), Vehicle Miles Traveled, Percent of Travel in Generally Acceptable Operating Conditions (Peak Hour), Delay, Travel Time Reliability, Percent Miles Severely Congested (Based on V/C Ratio), Combination Truck Miles, Combination Truck Travel Time Reliability, Combination Truck Delay, Combination Truck Percent Miles Severely Congested, Fixed Route Major Transit Incidents, Percent of Congested Roadway Centerline Miles

				<p>with Transit Service, Passenger Trips per Revenue Hour, Average Peak Service Frequency, On-Time Performance, Annual Ridership, Percent of Congested Roadway Centerline Miles</p> <p>with Pedestrian Facilities, Percent of Congested Roadway Centerline Miles</p> <p>with Bicycle Facilities, Number of Registered Carpools or Vanpools, Number of Crashes Involving Heavy Vehicles, Signal retiming cost/benefit, Peak-hour travel speed – indicated as a percent of the posted speed limit, Incident duration</p>
Ocala-Marion TPO	Yes		ITS/corridor management projects and safety improvements	<p><u>Analysis Provided:</u> Review and analysis of nine targeted intersections</p> <p><u>PM Identified:</u> Analysis conducted through road safety audits</p>
River to Sea TPO	Yes		Planning process to develop LRTP and TIP	<p><u>Analysis Provided:</u> Volume to Capacity</p> <p><u>PM Identified:</u> Average rip Length, Average Delay, Transit Ridership, Cost Benefit, Average number of workers that can reach major employment center by auto in 45 minutes in the AM or PM peak period, Identified population and employment scenario for future, % new sidewalk, % new bike facilities, connectivity index</p>
Space Coast TPO		Congestion Management Element	Technical rankings and project prioritization for TIP	<p><u>Analysis Provided:</u> % of total population living within 20 minutes' commute of regional economic generators and SIS hubs, number of highway, transit and bicycle/pedestrian miles, % of total population with more than two convenient travel modal options, vehicle hours of travel, vehicle hours of delay, % of corridors actively monitored or managed,</p> <p><u>PM Identified:</u> Variability of travel time on priority corridors, percent of travelers with access to real time traffic / transit information</p>

7.4 Implementation

As determined through the Capability Maturity Reassessment in 2017, it is recognized that the District is currently operating at a Level 1 for this dimension. Therefore, efforts within this implementation plan will focus on the improvement from a Level 1 to a Level 3 on the agency capability scale.

7.4.1 Proposed System-wide Evaluation

Consistent with FHWA planning initiatives, specifically, the Congestion Management Process (CMP), the District Five TSM&O process proposes a system-wide planning process, which utilizes multimodal performance measures and considers TSM&O strategies at critical decision points in the planning process.

System-wide planning is the first step of a comprehensive development process. The purpose of system-wide planning is to identify locations experiencing congestion, safety, or reliability issues. By benchmarking system conditions against agreed upon performance measures, a system can be classified by its ability to meet desired performance targets.

The system-wide planning step is identified below in Figure 10.

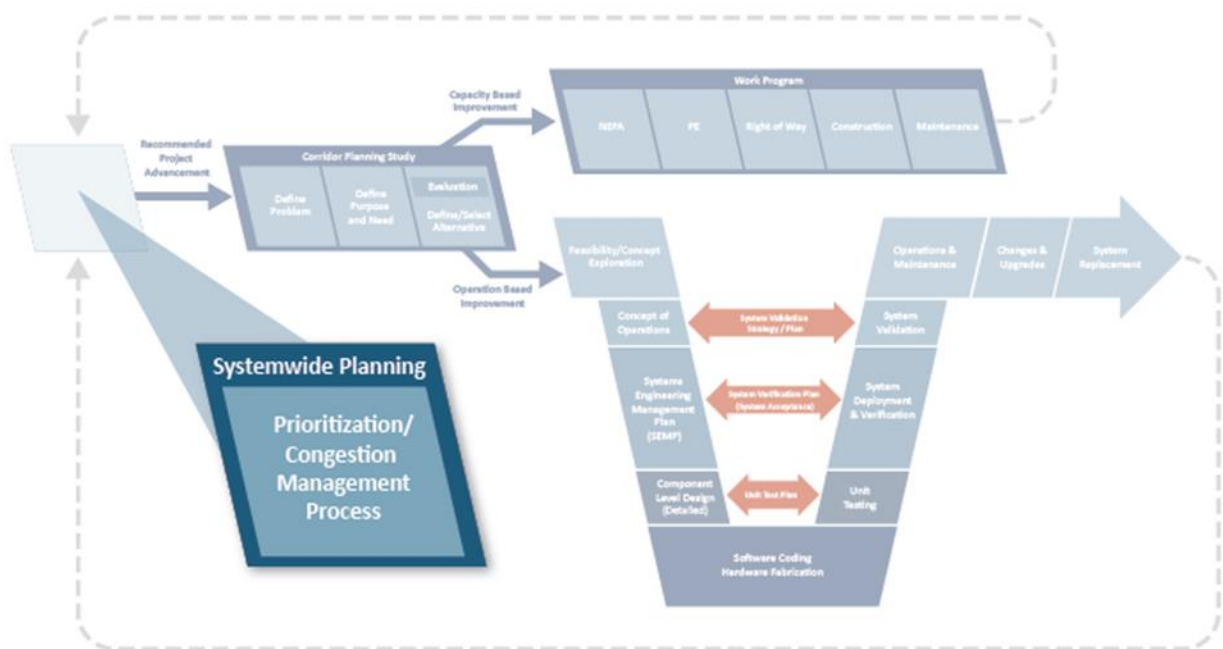


Figure 10: System-wide Planning in the V-Diagram

The performance measures dimension of the District Five TSM&O program must support the existing local system-wide evaluation processes and provide for regional consistency by identifying performance measures for each FDOT unit and travel mode which may also be in-line with local agency priorities.

While it is envisioned that the system-wide planning process will include an evaluation tool, which allows each local agency to adjust performance measures to reflect local priorities, utilizing the statewide MAP 21 performance measures, provides a comprehensive long list, in which the District may implement with a sufficient data collection plan. The MAP 21 performance concept measures are discussed below.

FAST Act Performance Measures

The MAP-21 (Pub. L. 112-141) transforms the Federal-aid highway program by establishing new requirements for performance management to ensure the most efficient investment of Federal transportation funds. Performance management increases the accountability and transparency of the Federal-aid highway program and provides for a framework to support improved investment decision making through a focus on performance outcomes for key national transportation goals. As part of performance management, recipients of Federal-aid highway funds would make transportation investments to achieve performance targets that make progress toward the following national goals:

- Safety - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- Infrastructure condition – To maintain the highway infrastructure asset system in a state of good repair
- Congestion reduction - To achieve a significant reduction in congestion on the NHS.
- System reliability - To improve the efficiency of the surface transportation system.
- Freight movement and economic vitality - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- Environmental sustainability - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- Reduced project delivery delays – To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and deliver process, including reducing regulatory burdens and improving agencies' work practices.

To support these goals, the Department has developed a Mobility Performance Measures Program with a purpose to:

- Develop statewide MPMs for use by transportation and other partners across the State
- Help ensure consistency in understanding and approach by the State and MPOs through a consensus-building process
- Help comply with MAP-21 requirements related to mobility measures
- Help in evaluating alternatives and prioritizing projects in planning and programming processes

Through this program, and as of April 2017, the District proposes to measure the performance measures outlined in Table 20.

Table 20: Proposed District Performance Measures

Mode	QUANTITY	Reporting Period				QUALITY	Reporting Period				ACCESSIBILITY	Reporting Period				UTILIZATION	Reporting Period						
		PH	PP	D	Y		PH	PP	D	Y		PH	PP	D	Y		PH	PP	D	Y			
PEOPLE	Auto/ Truck	Vehicle Miles Traveled					% Travel Meeting LOS Criteria	X	X	X		Time Spent Commuting					% Travel Heavily Congested	X	X	X			
							% Miles Meeting LOS Criteria	X	X														
							Travel Time Reliability	X	X	X					X								
							Travel Time Variability	X	X	X													
							Vehicle Hours of Delay	X	X	X	X												
							Person Hours of Delay	X		X	X												
						Average Travel Speed	X	X															
		Person Miles Traveled	X		X		Vehicle Fatalities and Serious Injuries (new)				X	Number of Jobs Accessible by Auto (new)				X	Hours Heavily Congested			X	X		
							Vehicle Crash Rates (new)				X												
		Revenue Miles (new)				X	Revenue Miles between Failures (new)					Weekday Span of Service				X	Passenger Trips Per Revenue Mile				X		
		Passenger Trips				X					X	Population within ½ mile of Fixed-Route Service (new)				X							
												Number of Jobs Accessible by Transit (new)				X							
		Pedestrian					Level of Service (LOS)	X				% Sidewalk Coverage					X						
						Pedestrian Fatalities and Serious Injuries (new)				X													
	Bicycle					Level of Service (LOS)	X				% Bike Lane/Shoulder Coverage					X							
							Bicyclist Fatalities and Serious Injuries (new)					X											
	Aviation	Passengers			X	Departure Reliability				X						Demand to Capacity Ratios				X			
	Rail	Passengers			X	Departure Reliability				X													
	Seaports	Passengers			X																		
PEOPLE & FREIGHT	Auto/ Truck															% Miles Heavily Congested	X	X					
																Vehicles Per Lane Mile	X						
	Aviation										Highway Adequacy (LOS)	X											
	Rail										Highway Adequacy (LOS)	X											
Seaports										Highway Adequacy (LOS)	X												
FREIGHT	Truck	Combination Truck Miles Traveled			X	Travel Time Reliability	X	X	X							Combination Truck Backhaul Tonnage				X			
		Truck Miles Traveled			X	Travel Time Variability	X	X	X														
		Combination Truck Tonnage			X	Combination Truck Hours of Delay			X														
		Combination Truck Ton Miles Traveled			X	Combination Truck Average Travel Speed	X	X															
		Value of Freight			X	Combination Truck Cost of Delay			X														
	Aviation	Tonnage			X																		
		Value of Freight			X																		
	Rail	Tonnage			X						Active Rail Access				X								
		Value of Freight			X																		
	Seaports	Tonnage			X										X								
	Twenty-foot Equivalent Units			X						Active Rail Access				X									
	Value of Freight			X																			

Utilizing these performance measures throughout the District, the proposed FDOT System-wide Planning Process is illustrated in Figure 11.

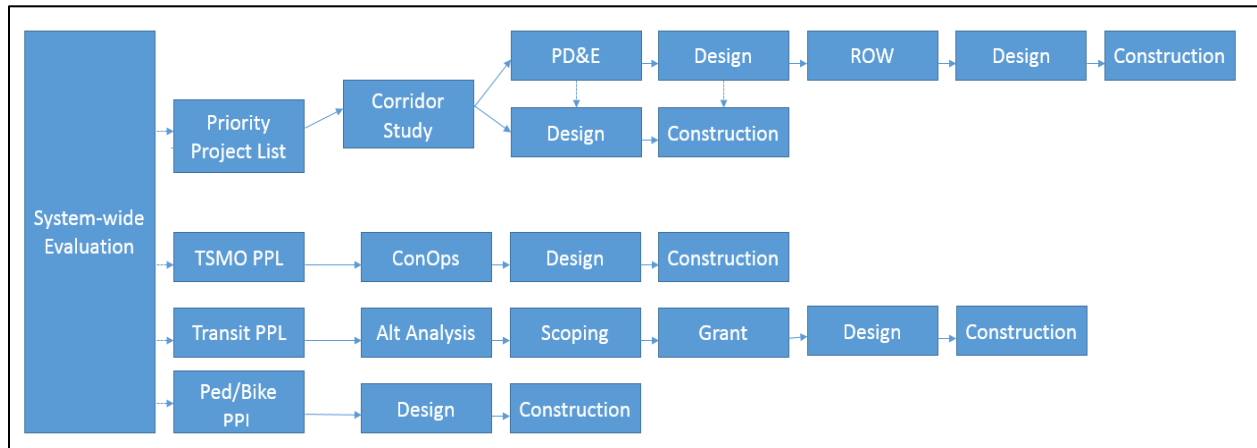


Figure 11: FDOT System-wide Planning Process

7.4.2 Big Data

FDOT recognized the challenges of utilizing relational databases to perform analysis on large transportation related data sets. As a result, a test case for centralized planning data and documents contained in a big data platform was created. This big data platform provides a centralized and shared location for the distribution of a variety of transportation oriented data and information across a range of historic, static, and near real-time data. The big data platform was designed utilizing several existing big data technologies capable of reducing data silos by allowing individual departments to leverage data for their own needs from within the centralized big data environment without requiring individual departments to maintain independent data.

The inclusive and highly scalable architecture of the big data platform allows for a variety of data to be collected, ingested, and made available through the big data platform. The use of application program interfaces (APIs) provide users with a common structure for accessing and retrieving the various datasets within the big data platform. The storage of the data in the most detailed structure enables users the opportunity to use the same data for a variety of applications, calculations, or visualizations. These calculations include the development of performance measures of the real time and historic data.

The big data platform is architected to allow continual expansion and growth as big data technology continues to evolve. In the current state, the big data platform will provide access to multiple users both in the consumption of the raw formatted data and the calculated performance measurement calculations. The availability of these datasets and APIs will continue to be expanded as more data is identified for inclusion and ingested in the environment.

7.4.3 Planning Dashboard

As part of the big data platform test case, a planning dashboard is being created to showcase the power of the big data platform in a user friendly interactive application providing the identifications of relationships, patterns and trends occurring in the transportation network. Users of the planning dashboard will have the ability to interact with the network from a perspective not commonly available to support project planning and programming.

The dashboard will enable access to the data served in the big data platform allowing users to be proactive in planning efforts and remain reactive to events that occur in near real-time. Access to the data available in the big data platform provides data driven, performance measurements that can assist in effectively identifying and prioritizing projects throughout the transportation network. The ability of the planning dashboard to provide access to historical data and information through performance measures can enable a more comprehensive understanding of the impacts of decisions, the quantification of return of investments, and overall performance gains for the network.

7.5 Task Action Matrix

The corresponding key action items developed through the CMM are provided in Table 21.

Table 21: Performance Measures Task Action Matrix

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Identify program performance measures	Establish performance measures for each FDOT Unit which accomplish the overall TSM&O program goals and objectives	Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.	In Progress	Planning & Corridor Development Manager	Q4 FY 2016/17
	Obtain consensus on District Five performance measures for system-, corridor-, and intersection-level analyses	Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.	In Progress	Planning & Corridor Development Manager	Q4 FY 2016/17
	Utilize MAP 21 Performance measures, in which data is readily available, or can be efficiently obtained, to provide consistency with statewide performance measurement initiatives.	Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.	In Progress	Planning & Corridor Development Manager	Q4 FY 2016/17
Utilize TSM&O performance measure for objective-based program improvements	Develop a system-wide evaluation tool, which is suitable and customizable for all District stakeholders	Integrate transit data systems into the overall performance measurement system. Deliverable: Establish transit performance measures to be used in the system-wide evaluation tool.	In Progress	Modal Development Manager	Q2 FY 2017/18
		Develop a pilot approach to performance measurement using an integrated corridor including freeways and arterials, integrate these facilities into the existing performance measurement data base and analytics to evaluate outcomes Deliverable: Planning Dashboard	In Progress	District TSM&O Engineer	Q4 FY 2017/18
		Use performance data to facilitate ranking and prioritization for future funding. Deliverable: System-wide evaluation tool that allows for sensitivity adjustments to meet the goals, objectives, and priorities of each individual M/TPO.	In Progress	District TSM&O Engineer	Q1 FY 2018/19

Goals	Objectives	Task Action Items	Current Progress	Task Leader	Deliverable Due
Utilize performance measures to enhance the District Five roadway operating conditions	Improve the safety on the District Five roadway network by decreasing the overall crash rate by X percent, by YR 2020	Measure, improve, and monitor the safety performance of the District Five roadway network. Deliverable: System-wide evaluation tool and annual reporting procedures	Not Started	Planning & Corridor Development Manager	Q2 FY 2020/2021

8

Resources and Tools

There is a wide array of valuable resources and tools available to transportation practitioners within the Central Florida region. This final chapter identifies each item, and provides a brief description explaining its purpose and function as it relates to Transportation Systems Management & Operations.

8.1 Table of Resources and Tools

Table 22 describes the resources and tools available to FDOT District Five and its partner agencies. The table is alphabetized according to the item's identified purpose.

- **Resource** – an asset that provides a means to acquire data/information, or an asset that promotes collaboration. Examples include reference documents, data warehouses, and reoccurring meetings with stakeholders.
- **Tool** – an application or program that can be used for specific analytical or traffic management purposes. Examples include dashboards, benefit/cost analyses, and SunGuide.

Table 22: Performance Measures Task Action Matrix

Resource	Type	Discipline	Purpose	Description	Author / Maintaining Agency	Location Available
TSM&O Consortium	Resource	All	Collaboration	The TSM&O Consortium evolved out of the Capability Maturity Model (CMM) Self-assessment workshop conducted in 2014, and is now open to transportation practitioners in the Department and its regional partners, including MPOs/TPOs, counties, major municipalities, and other agencies under the purview of District Five. The TSM&O Consortium meets every eight (8) weeks. The Consortium provides a forum for stakeholders to discuss strategies, trends, and lessons learned regarding the implementation of TSM&O processes within the respective organizations. The goal of the Consortium is to improve the region's CMM self-assessment for the Collaboration Dimension from Level 2 to Level 3. Discussions held during the TSM&O Consortium will be influential during the development of various TSM&O documents by District Five.	FDOT District Five	http://www.cflsmartroads.com/tsmo.html
Working Group Meeting	Resource	All	Collaboration	The Central Florida Regional Working Group was established between FDOT and regional partners in ITS and Traffic Signal Operations and Maintenance. The group includes FDOT and all MPOs/TPOs, counties, major municipalities, and other entities under the purview of District 5. The Regional Working Group holds bi-monthly meetings to discuss current and upcoming projects in construction, the status of regional transportation networking items, any concerns or questions with operation and maintenance of ITS devices, and any lessons learned. The group has evolved based on discussions and feedback from the partners to include a Training Series each month on transportation network operations and maintenance topics requested by the group.	FDOT District Five	
DRI Plus	Resource	All	Data Storehouse / Document Warehouse	DRI Plus is a website resource available to transportation practitioners that provides official documentation as well as spatial information pertaining to Developments of Regional Impact (DRIs) in the District Five region. The website allows users to filter DRIs by county, land use type, status, and acreage. Documentation includes Development Orders, Amendments, Annual/Biennial Reports, and official DRI maps. The second component of the DRI Plus website is an interactive map that illustrates where each DRI is located, with some additional information provided. The resource can be used to identify large developments (past, present, or planned) in a region, and to determine the anticipated features of that development.	FDOT District Five	http://cfgis.org/dri/
CFLRoads.com	Resource	All	Data Storehouse / Document Warehouse	CFLRoads.com is the website for state roadway projects within District Five. From this website, users can search for District Five projects via the Financial Management number or the project name. Information relating to the project, including project documentation, anticipated lane closures, and a Google Maps representation of the project, are provided.	FDOT District Five	http://www.cflroads.com/
CFLSmartRoads.com	Resource	All	Data Storehouse / Document Warehouse	CFLSmartRoads.com is the website that provides users information regarding TSM&O/ITS initiatives, projects, and trainings within District Five. Items discussed include RTMC, AAM, Road Rangers, RISC, TSM&O Consortium, I-4 Ultimate and I-4 Beyond the Ultimate, and other related initiatives. In addition, the website provides a document warehouse for necessary forms and paperwork to be filled out by various agencies relating to security access, proprietary products, procedures and checklists, as well as contact information for the District's TSM&O Staff. The website also provides an interactive map that provides basic information for ACTIVE construction projects. Additional functionality will be integrated into the website in the future.	FDOT District Five	http://www.cflsmartroads.com/
CFGIS.org	Resource	All	Data Storehouse / Document Warehouse	CFGIS.org is a website that stores a variety of documentation and GIS datasets relative to the ECFRPC region. Datasets are provided in the Clearinghouse webpage. The website provides documentation for several Central Florida projects, including the <i>How Shall We Grow?</i> initiative. The website also provides links to a variety of FDOT and project partner resources.	East Central Florida Regional Planning Council	http://www.cfgis.org/
FGDL.org	Resource	All	Data Storehouse / Document Warehouse	The Florida Geographic Data Library (FGDL) is a mechanism for distributing spatial (GIS) data through the state of Florida. The search feature allows users to search through the large compendium of datasets. Basic information such as date of publication, publisher, extent of data, as well as metadata for the datasets are provided.	University of Florida GeoPlan Center	http://www.fgd.org/metadataexplorer/explorer.jsp
SunStore	Resource	All	Data Storehouse / Document Warehouse	SunStore will house historical data while processing current and projected traffic data for use in the proposed PedSafe and GreenWay programs. In addition, this data source will help with decision-making on future transportation needs. It will serve as the engine that drives a unified transportation management system by connecting and fusing data to be extracted, loaded, and transformed into information for the regional Decision Support System (DSS).	FDOT District Five	In Development
BEBR Population Estimates	Resource	Planning	Demographic Analysis	The Bureau of Economic and Business Research (BEBR) Population Estimates for Florida have been provided by the BEBR institute since the 1970s. BEBR provides three series of projections in their State and County Population Estimates: High, Medium, Low. The medium projection is believed to be the most likely outcome by BEBR; however, the high and low projections represent the uncertainty surrounding the medium series. The projections refer solely to permanent residents of Florida, not seasonal residents or tourists.	University of Florida - Bureau of Economic and Business Research	https://www.bebr.ufl.edu/population

Resource	Type	Discipline	Purpose	Description	Author / Maintaining Agency	Location Available
TransValU	Tool	Planning	Economic Analysis	TransValU is a tool designed for corridor-level economic and financial analyses to allow for the comparison of multiple project alternatives. The tool can be used to assess projects focused on passenger movements (including all modes or a combination thereof) or to assess the movement of goods (including all modes as well as intermodal logistics centers). Types of analyses available include Benefit-Cost Analysis (BCA), Economic Impact Analysis (EIA), and Financial Analysis. Separate BCA and EIA modules are used for evaluating freight projects. Key outputs available in the tool include the Net Present Value (NPV), benefit-cost ratio, break-even year, and overall rate of return for each alternative analyzed.	FDOT District Five	http://cfgis.org/FDOT-Resources/TransValU.aspx
TransFuture	Tool	Planning	Economic Analysis	TransFuture is a tool designed to aid practitioners in planning for multiple futures, with an emphasis on scenario planning. The program identifies impacts of each scenario and the probability of the transportation network's needs in the future. Scenario considerations include millennial travel behaviors, automated vehicle market penetration at various ratios, telecommuting and flexible work schedules, ridesharing, smart cities, fuel efficiency, platooning, etc. The goal of the tool is to quantify uncertainty, allowing practitioners to make decisions based on risk.	FDOT District Five	In Development
TOPS-BC Tool	Tool	All	Economic Analysis	The Tool for Operations Benefit-Cost Analysis (TOPS-BC) is intended to provide support and guidance to transportation practitioners in the application of benefit/cost analysis for a variety of TSM&O strategies. The tool is customizable to the users' needs and datasets. TOPS-BC allows users to compare not only the BCA of traditional infrastructure projects, but also incorporates performance measures, project timelines, benefits, and life-cycle costs associated with operational improvements. The tool is meant as a <u>planning-level</u> analysis to compare various alternatives for a given corridor or network.	FHWA	https://ops.fhwa.dot.gov/plan4ops/topsbctool/index.htm
FDOT District Five Intelligent Transportation Systems Master Plan	Resource	All	ITS Document	The District Five ITS Master Plan was developed by the District in cooperation with its regional partners. The purpose of the document is to create a consensus on what items are to be integrated, what ITS strategies are to be implemented, and what standards need to be met (security, maintenance, staffing, etc.) to facilitate the future ITS goals of the region. With the FDOT's establishment of the Connected Vehicles (CV) initiative as a part of the TSM&O program, the District Five ITS Master Plan will be an important step in identifying the needed framework to support this effort.	FDOT District Five	http://www.cflsmartroads.com/docs/District%20ITS%20Master%20Plan_FINAL.pdf
FDOT District Five Regional ITS Architecture Update Reference Guide	Resource	All	ITS Document	The FDOT District Five Regional ITS Architecture Update Reference Guide is designed to help users in the process of developing a regional ITS architecture. A regional ITS architecture (RITSA) can effectively bridge the gap between strategic planning for an integrated surface transportation system and the ITS projects that support that strategic vision. The principal value of a regional ITS architecture is that it provides a context for projects that include ITS so that each project can build a piece of a larger system. The Reference Guide includes descriptions of architecture flow, stakeholder responsibilities, inventory by stakeholder, service/market packages, RITSA goals and objectives, and equipment packages.	FDOT District Five	http://www.cflsmartroads.com/docs/D5%20RITSA%20Update%20Reference%20Guide%20reduced.pdf
FDOT District Five Regional ITS Architecture Update Workbook	Resource	All	ITS Document	The Florida Department of Transportation District 5 (FDOT D5) is in the process of updating the Regional ITS Architecture (RITSA) . This update includes the involvement of the Metro and Transportation Planning Organizations (MPO/TPO). The FDOT D5 recognizes the need to update and maintain the existing architecture which will provide context for ITS projects so that each project supports the envisioned transportation system goals and conforms to the National ITS Architecture. By using the architecture as a planning tool, each ITS project will be incorporate transportation system management and operations strategies to assist in fulfilling the larger objectives set forth in the long range transportation plan. This Regional ITS Architecture Update Workbook and Reference Guide has been developed to assist FDOT and the MPO/TPO's through this process.	FDOT District Five	http://www.cflsmartroads.com/docs/RITSA%20Update%20Workbook%20-%20Space%20Coast%20TPO.pdf
SunGuide	Tool	Traffic Operations	ITS Program	SunGuide is an advanced traffic management system (ATMS) software that is used at all regional traffic management centers (RTMCs) within Florida. The SunGuide software offers a suite of tools including managing ITS devices, automated incident detection, and assisting with event management. The software is customizable, up to and including security permissions for each user. It allows TMC operators to monitor roadside sensors and closed-circuit television cameras to quickly detect, verify, respond to, and clear incidents; provides real-time traffic information to the FL511 phone system and website (https://fl511.com); automates interface with the FHP's computer-aided dispatch system; supports dynamic pricing (95 Express Lane); and disseminates AMBER, SILVER, and LEO alerts via dynamic message signs. Currently in Release 6.2, the SunGuide software uses an open architecture, making the addition of new features relatively easy.	FDOT Central Office	http://www.sunguidesoftware.com/
Inter-agency Video Distribution System (iVDS)	Tool	Traffic Operations	ITS Program	The Inter-Agency Video Distribution System (iVDS) allows for agencies to share their CCTV video feeds to other agencies and to first responders.	FDOT District Five	
Activu	Tool	Traffic Operations	ITS Program	Activu feeds into the video wall system for RTMCs. This tool allows RTMCs to display all existing CCTV camera video feeds as well as other applications.	FDOT District Five	

Resource	Type	Discipline	Purpose	Description	Author / Maintaining Agency	Location Available
Traffic Incident Management (TIM)	Resource	Traffic Operations	ITS Program	Traffic Incident Management (TIM) is a planned and coordinated process to detect, respond to, and remove traffic incidents, and restore traffic capacity as safely and quickly as possible. District Five has a dynamic TIM program that utilizes a state-of-the-art detection and communication system via the RTMC and a coordinated response from state and local personnel. Emergency response efforts are coordinated through quarterly TIM meetings along each of the relevant corridors.	FDOT District Five	http://www.cflsmartroads.com/tim.html
Integrated Corridor Management (ICM)	Resource	Traffic Operations	ITS Program	The vision of Integrated Corridor Management (ICM) is that transportation networks will realize significant improvements in the efficient movement of people and goods through institutional collaboration and aggressive, proactive integration of existing infrastructure along major corridors. Through an ICM approach, transportation professionals manage the corridor as a multimodal system and make operational decisions for the benefit of the corridor as a whole. The Central Florida ICM System Scope of Services is provided in the accompanying link.	FDOT District Five	http://www.myflorida.com/apps/vbs/doc/F17974_ExhibitAPart1.pdf
Active Arterial Management (AAM)	Resource	Traffic Operations	ITS Program	Active Arterial Management (AAM) is a project that addresses recurring or daily congestion and/or non-recurring congestion from incidents, taking into consideration the spill-over effect congestion can have on arterial roadways. The project also manages congestion relating to special events and work zones. AAM includes active signal retiming, coordination with local responders, facilitation of emergency maintenance needs, and the dissemination of travel-related information through dynamic message signs. The program capitalizes on investments already made on the roadways, ports, signal systems, etc., by providing real-time traffic management. The goal is to reduce delays for all travelers, while improving congestion-related environmental factors such as air pollutants.	FDOT District Five	http://www.cflsmartroads.com/aam.html
Advanced Transportation & Congestion Management Technologies Deployment (ATCMTD)	Resource	Traffic Operations	ITS Program	The FAST Act established the Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) Program to make competitive grants for the development of model deployment sites for large scale installation and operation of advanced transportation technologies to improve safety, efficiency, system performance, and infrastructure return on investment.	FDOT District Five	https://www.transportation.gov/sites/dot.gov/files/docs/ATCMTD_One_Page_r.pdf
PedSafe	Resource	Traffic Operations	ITS Program	PedSafe is an innovative pedestrian and bicycle collision avoidance system that utilizes Connective Vehicle (CV) technologies to reduce the occurrence of pedestrian and bicycle crashes at high crash rate locations. Connections to existing traffic signal systems will provide information on phasing changes along with pedestrian detection at each intersection to manage potential conflicts and congestion within the PedSafe area.	FDOT District Five	In Development
GreenWay	Resource	Traffic Operations	ITS Program	The GreenWay Program is designed to increase throughput capacity and reduce congestion by optimizing traffic signal operations with the implementation of new technologies. Data managed in the proposed program SunStore will be leveraged by GreenWay to support real-time operation through a regional Decision Support System (DSS) with strategic planning for special events that will provide a unified approach to system management.	FDOT District Five	In Development
"How Shall We Grow?" Regional Vision	Resource	Planning	Planning & Programming	The How Shall We Grow? document established the "Shared Growth Vision for Central Florida," with nearly 20,000 Central Florida residents involved in the effort. It identified four key themes for the region, the 4 C's: Conservation, Countryside, Centers, and Corridors.	MyRegion.org	http://www.myregion.org/
Strategic Intermodal System (SIS) Funding Strategy (1st Five; 2nd Five; Cost Feasible Plan; Multimodal Unfunded Needs Plan)	Resource	Planning	Planning & Programming	The Strategic Intermodal System (SIS) is Florida's high priority network of transportation facilities deemed vital to the state's economy and mobility. Established in 2003, the SIS is a funding mechanism for important roadways in the State. The SIS Funding Strategy includes 3 inter-related sequential documents that identify potential SIS capacity improvement projects in various stages of development. The 1st Five-Year Plan identifies projects that are funded (Year 1) or programmed for proposed funding (Years 2 through 5). The 2nd Five-Year Plan identifies projects that are planned to be funded (Years 6 through 10). The Cost Feasible Plan (CFP) identifies those projects that are considered financially feasible based on projected State revenues (Years 11 through 25). In addition, the FDOT Systems Planning Office also produces a 4th document, the Multimodal Unfunded Needs Plan, to identify transportation projects on the SIS that help meet mobility needs, but where funding is not expected to be available during the 25-year time period of the SIS Funding Strategy.	FDOT Central Office	http://www.fdot.gov/planning/systems/programs/mspi/plans/
Active Arterial Management (AAM) Contract	Resource	Traffic Operations	Potential Funding Mechanism	FDOT District Five has identified its Active Arterial Management (AAM) contracts as potential funding mechanisms to support local agency staffing for their advanced signal timing efforts.	FDOT District Five	In Development
ITS Maintenance Contract	Resource	Traffic Operations	Potential Funding Mechanism	FDOT District Five has identified its ITS Maintenance contracts as potential funding mechanisms to support local agency staffing for their ITS maintenance efforts.	FDOT District Five	In Development

Resource	Type	Discipline	Purpose	Description	Author / Maintaining Agency	Location Available
Labor-Sharing Agreement (Network Support)	Resource	Traffic Operations	Potential Funding Mechanism	FDOT District Five is developing a Memorandum of Agreement that would allow local agency partners to opt into a program that could support their network staffing needs. Local agencies would determine their approximate labor needs (in man-hours) and would pay into a pool of funds an amount equal to the anticipated man-hours times (x) the agreed-upon staffing rate for that position. The manager of the pool of funds, District Five, would expend those funds to provide the appropriate amount of staffing support on an hourly basis for local agencies to use at their discretion. By opting into this program, it is anticipated that local agencies can fulfill their network needs on an as-needed basis, rather than employing a full-time network technician without having an equivalent workload.	FDOT District Five	In Development
Concept of Operations (ConOps) Template	Tool	All	Project Planning	This is the standardized FDOT template for a Concept of Operations (ConOps) for TSM&O / ITS initiatives. The purpose of the ConOps is to describe the characteristics of a proposed system, identifying the current system (including strengths and deficiencies), how the proposed system would differ from the current system, as well as providing operational scenarios that could explain the details of the proposed system in a real-world context. Other items discussed in the ConOps include how different users interact with the current and proposed systems, the impacts of the proposed system, an analysis of the proposed system, and requirements to support the system. The ConOps is a means to gain consensus on how the proposed system should function, and what is required to support that functionality.	FDOT Central Office	http://www.fdot.gov/traffic/its/projects_deploy/semptemplate.htm
Systems Engineering Management Plan (SEMP) Template	Tool	All	Project Planning	The Systems Engineering Management Plan (SEMP) describes the overall plans for the engineering and manufacturing development of each program. The SEMPT should also describe how the technical baselines (e.g., requirement specifications, etc.) for the program will be documented, traced to other engineering work products, and maintained. The Statewide SEMPT provides an extensive description of systems engineering processes and management control that can be used in software/hardware development projects to design/build or procure/install projects.	FDOT Central Office	http://www.fdot.gov/traffic/its/projects_deploy/semptemplate.htm
Big Data Research (UCF and UF)	Resource	Planning	Research	Using its Big Data resources, District Five has tasked the University of Central Florida (UCF) and the University of Florida (UF) with performing Big Data Research by analyzing the Big Data available to answer questions put forward by the District and its regional partners. For example, one question that could be considered may be, "Is there a correlation between improvement in mobility and improvement in land value?" In addition to the research component, the District will develop a team of experts that should be able to discern if the results of the research are in line with current understanding. The team of experts will help to identify potential false correlations that arise during the research. Big Data Research is a component that will support TSM&O efforts as well as help support the business case for TSM&O moving forward. District Five has indicated that it will relay any questions received from its regional partners to the universities for them to analyze.	FDOT District Five	On-going
TransPort	Tool	Planning	Spatial Analysis	TransPort is an interactive transportation planning tool that was developed to empower transportation planners to host and disseminate transit-related information and allow mapping and spatial analysis of transit systems to inform decision-making. The program encourages greater collaboration between agencies and more effective planning. It also provides spatial data for ongoing transit projects/studies, as well as planned projects. Spatial data pertaining to the existing transportation network, land use, population characteristics, and employment are also provided.	FDOT District Five	http://cfigis.org/FDOT-Resources/TransPort-1.aspx
TransPed	Tool	Planning	Spatial Analysis	TransPed is an interactive transportation planning tool designed to assist in the planning and analysis of pedestrian and bicycle transportation. The objective of the interactive mapping program is to provide a comprehensive bank of data and appropriate capabilities to allow for effective analysis of the transportation network with respect to bicycle and pedestrian use. Data includes existing bike/ped facilities, bike/ped counts, crashes, existing and future demand of facilities, programmed improvements, and basic spatial data pertaining to the surrounding environment.	FDOT District Five	http://cfigis.org/FDOT-Resources/TransPed.aspx
Planning Dashboard	Tool	Planning	Spatial Analysis	The Planning Dashboard provides a user interface that allows transportation practitioners to analyze available data for a corridor, at specific points along that corridor. Currently, the Planning Dashboard provides data relating to performance, such as average speed along a corridor during A.M. or P.M. peak hour as well as variation from posted speed along a corridor. Data will be provided in a visual format to make the results more understandable. Using the Planning Dashboard, practitioners can identify problem areas along a given corridor segment. Data includes various FDOT RCI database files, as well as HERE live traffic data.	FDOT District Five	In Development
Florida Traffic Online (FTI)	Tool	All	Traffic Data	Florida Traffic Online (FTI) provides traffic counts using portable traffic monitoring sites and telemetered traffic monitoring sites. This data is made available via an interactive map. FTI allows users to determine the previous year's Annual Average Daily Traffic (AADT) at a glance for a given roadway segment.	FDOT Central Office	http://fti.dot.state.fl.us/website/FloridaTrafficOnline/viewer.html

Resource	Type	Discipline	Purpose	Description	Author / Maintaining Agency	Location Available
Roadway Characteristics Inventory (RCI) Database	Tool	All	Traffic Data	The FDOT Roadway Characteristics (RCI) Database includes a variety of shapefiles and geodatabases for use in ArcGIS relating to the transportation network within Florida. Data includes roadway location, roadway characteristics, traffic data, bicycle/pedestrian data, and additional features within the roadway network.	FDOT Transportation Data and Analytics Office	http://www.fdot.gov/planning/statistics/gis/
Signal Four Analytics	Tool	All	Traffic Data	Signal Four Analytics is an interactive, web-based system designed to support crash mapping and analysis for Florida's transportation network. Users can download crash statistics at the city, county, district, or state level to be used in ArcGIS software. Data provided includes georeferenced points, date and time, type of crash, direction of crash, etc.	University of Florida GeoPlan Center	https://s4.geoplan.ufl.edu/
TSM&O 2017 Strategic Plan	Resource	All	TSM&O Strategies Document	The TSM&O 2017 Strategic Plan presents the FDOT vision, mission, goals, objectives, and Priority Focus Areas for TSM&O. It also poses Specific, Measurable, Accountable/Achievable, Relevant, and Time-bound (SMART) action plans to be accomplished over the next three to five years. It includes discussions relating to where the FDOT's TSM&O practice is currently, challenges and opportunities, a framework for achieving TSM&O Program Goals, program mainstreaming, and program resources. Additionally, the appendix includes definitions for over 50 TSM&O strategies/tools that are facility-centric, modal-centric, and mobility-centric.	FDOT Central Office	Awaiting Final Approval
Blueprint to Incorporate TSM&O in Corridor Planning	Resource	All	TSM&O Strategies Document	The Blueprint to Incorporate TSM&O in Corridor Planning is a document that provides guidance to transportation practitioners when considering TSM&O strategies for potential implementation in any given transportation corridor. The document consists of three primary sections: 1) Corridor Identification and Needs, 2) TSM&O Corridor Analysis, and 3) TSM&O Strategy Implementation. Applying the principles and process of the Blueprint on a corridor will result in a "Planning-Level Concept of Operations" that can be carried forward into the next programming step: 1) Direct incorporation of the ConOps into an existing or ongoing corridor study; 2) Inclusion of the concepts into the ITS 10-Year Cost Feasible Plan; or 3) Further study in the form of a full Systems Engineering Concept of Operations. The Blueprint process includes a review of available TSM&O strategies identified in the document's TSM&O Matrix (Table 3-3). In addition to single strategies, the Blueprint proposed developing packages of symbiotic strategies to be used in conjunction. In addition, the document proposed using FHWA's TOPS-BC analysis tool (discussed further in this table).	FDOT Central Office	Awaiting Final Approval
The Planning for TSM&O Guidebook	Resource	All	TSM&O Strategies Document	The purpose of the Planning for TSM&O Guidebook is to fill in the recognized gaps of information, policies, and procedures for integrating all units into a programmatic TSM&O process and program. This document provides clarity on technical gaps that have been longstanding in the transportation industry between planners, engineers, and other transportation practitioners. The Guidebook clarifies the roles and responsibilities for various practitioners, introduces and expands upon existing frameworks, while emphasizing and providing practical suggestions for coordination between disciplines throughout the project development process. The Guidebook is meant for a national audience, and is not specific to elements in District Five.	FDOT District Five	Awaiting Final Approval
FDOT District Five TSM&O Implementation Plan	Resource	All	TSM&O Strategies Document	The purpose of the District Five TSM&O Implementation Plan is to build on previous progress and identify a framework which promotes program maturity and sets the foundation for an effective TSM&O practice in District Five. The TSM&O Implementation Plan identifies the District's Goals and Objectives for each of the TSM&O Program's six dimensions (Business Process, Organization & Workforce, Culture, Collaboration, Systems & Technology, and Performance Measures). The Implementation Plan also provides task action matrices for each dimension, identifying action items to be completed in support of those Goals and Objectives. A table of resources available to District Five and partner agencies is also provided for TSM&O practitioners to reference as needed.	FDOT District Five	In Development

Appendix A

Capability Maturity Self-Assessment
Workshop Memorandum – March 2014

A Capability Maturity Implementation Plan

with the Florida Department of Transportation (FDOT)

Based on a CMM Workshop held March 5-6, 2014

This memo provides a set of prioritized capability maturity workshop actions with suggested steps for advancing to the next maturity levels, organized as an implementation plan.

Background for Host State Agency

- This document contains two sections:
 1. Your Capability Maturity Workshop output of strengths, weaknesses, and actions along with (for the lowest capability level) reformulated/consolidated actions with suggested steps
 2. Implementation Plan Templates for conversion of these reformulated/consolidated actions into your Implementation Plan (IP) actions and tasks
- The Workshop dimensions with the lowest level of capability have been targeted as priorities for inclusion in the IP. For these priority dimensions, the most important workshop actions have been identified. These may have been restated slightly or combined (reformulated/consolidated)
- “Good Practice” steps have been suggested for each action to help the Host State identify tasks and subtasks to implement the action – these may be further modified, combined, and detailed as appropriate to better fit the local context
- The Implementation Plan Templates are standardized with regard to the specification of responsibilities, roles, resources, schedule, products, etc. for each task or set of tasks

Host State Agency Responsibilities in Preparing the Implementation Plan Templates

1. The Host state will review the priority actions (and suggested steps) to estimate the level of effort that might be involved compared to staff capacity. Implementing all the priority actions may not be feasible in the initial effort – and can be addressed subsequently. The selection of actions to be pursued will be discussed among the Host State and FHWA/AASHTO
2. The Host State may wish to modify the reformulated/consolidated Workshop actions or select other actions from the Workshop that relate to the lowest level dimension
3. Prior to the IP Webinar/Workshop, the Host State will fill in the IP Templates for each selected action, in effect creating a “skeletal work program” of tasks (and perhaps subtasks) for implementation
4. The generic “good practice” steps (suggested steps) can be used as a point of departure to form tasks for the IP Templates for each action. The suggested steps may be combined into a smaller number of tasks
5. For each set of tasks to implement an action, the IP Templates include the needed work plan specifications related to task execution (responsibilities, schedules, products etc.) that the Host State will identify for discussion with the Consultant Team and FHWA/AASHTO before and during the IP Webinar/Workshop
6. The IP Templates presume that each action with its set of tasks can be considered a coordinated effort of one staff team so that the single specification of responsibilities, roles, resources, schedules, products, etc. apply to all the tasks on that action template. However, the Host State may want to specify these details for each task or subset of tasks. The Template’s task details can simply be reproduced and completed for each
7. The completed IP Templates (with the specifications for tasks) will be the focus of a joint discussion at the IP Webinar/Workshop. The Consultant Team’s role will be limited to help ensure that the IP Templates are logically related to the action items identified in the Workshop and focused on capability improvement.



Section 1:
**Prioritized Capability Maturity Workshop Actions
with Suggested Steps**

Business Processes: Planning and Programming
 Workshop Outputs

Strengths Cited	Weaknesses Cited
<ul style="list-style-type: none"> • MPO long-range plans include TSM&O in form of intersection improvements in collaboration with other local organizations. <ul style="list-style-type: none"> ○ Projects are being identified and prioritized according to a process driven by data (volumes and bottleneck analyses), for some MPOs/TPOs, not politics. ○ Projects take into consideration the impacts on other adjacent intersections and facilities. ○ Some MPOs are earmarking funds specifically for signal coordination programs and other TSM&O projects ○ Some MPOs have Management Operations subcommittees that rank projects according to agency priorities. • MPOs, TPOs, and FDOT coordinate on regional transportation needs when travel patterns transcend several jurisdictional lines (e.g., the Villages). There is also an integrated effort on the funding side, where financial resources of different agencies are pooled to accomplish projects that serve all of the involved agencies. • TPOs are starting to develop TSM&O master plans. • Central FDOT office has a 10-year old M&O strategic plan that it uses to allocate TSM&O funds across the districts. <ul style="list-style-type: none"> ○ This funding can be applied to equipment replacement and maintenance needs. ○ Funds are also available for freight movement, including TSM&O improvements that facilitate last-mile transport. • A higher-level planning document for 2030 evaluates and compares several project plan alternatives, but does not break down the costs of each alternative. 	<ul style="list-style-type: none"> • Currently, there is uncertainty regarding where TSM&O fits in the planning process. • The project development process does not include a formally defined step for considering TSM&O—specifically, how the project can incorporate current TSM&O strategies already deployed, and what new TSM&O programs could be added to the project as well. This results in poor coordination of upcoming projects with current TSM&O operations, and limited checking of compatibility issues between the proposed project and existing TSM&O. • Technology maintenance and upgrades largely absent from planning and budgeting • Planning tools have not been widely developed to properly capture TSM&O project impacts. • Analyses frequently focus on individual pieces of the network instead of corridor-wide or network-wide traffic flow. • TSM&O projects may be dropped from MPO plans due to lack of feasible funding sources. • FDOT plans are well developed for the coming two years, but no detailed long-term plans are clearly defined. • FDOT funds are insufficient to fully cover district equipment maintenance costs that are necessary to maintain target levels of service. • The 10-year M&O Strategic Plan used by Central FDOT office is outdated. District 5 deployed earlier, so funds are now being used in other parts of the state • Previous activities that may be categorized as TM&O focus on highways with less emphasis on operational improvements for transit and other modes. Transit improvements are not always considered as alternatives, and are treated in an unstructured, non-systematic way when included. No sustainable budget exists for transit operations • TSM&O arterial plans are not holistic and may fail to consider pedestrian safety among other factors – which may vary according to local context (e.g., pedestrian needs in areas with high transit use).

Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized
Criteria	Each jurisdiction doing its own thing according to individual priorities and capabilities	Consensus regional approach developed regarding TSM&O goals, deficiencies, B/C, networks, strategies and common priorities	Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program	TSM&O integrated into jurisdictions' multi-sectoral plans and programs, based on a formal, continuing planning processes
Consensus	1.5			
Workshop Actions to Advance to the Next Level				
<ul style="list-style-type: none"> • Develop a strategic TSM&O program plan and funding program to guide the direction of future TSM&O investments, staffing and operational and maintenance requirements across agencies (e.g., FDOT, MPOs, local municipalities), and an implementation plan with details for accomplishing higher level goals and objectives – and consistent with FDOT statewide M&O strategic plan. • FDOT District Office to organize a task force to assemble a coherent, unified TSM&O program and strategies for the region as a whole, taking advantage of the existing MPO consortium to start the discussions. The department would identify additional members that need to be included but historically have not been, and facilitate this conversation. • Review current roadway, freight, multi-modal and transit project development processes for inclusion of TSM&O strategies at the appropriate planning stages. 				

**Consultant Reformulated/Consolidated Actions
for Implementation Plan (post-workshop)**

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
Develop a regional TSM&O program plan with consideration of geographic focus (district-wide or selected corridors)	District/Regional TSM&O Program Plans (possible corridor pilot)	<ol style="list-style-type: none"> 1. Convene multijurisdictional planning group to guide TSM&O planning activities—including FDOT District, MPOs, local governments and transit authorities. Secure support of key policy groups to consider integration of plan results into FDOT, MPO and other relevant plans and programs. 2. Identify scale of planning focus in terms of network focus (district-wide or selected corridors within district as a pilot program)—including both freeways and arterials. Consider the use of one or more freeway/arterial corridors as a pilot for the development of a comprehensive program planning process. 3. Review peer examples of regional/district planning from within FL and other jurisdictions—including ICM plans for good examples—including examples provided by FHWA/AASHTO.

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
		<ol style="list-style-type: none"> 4. Identify missions, goals and objectives with related available performance measures information (including those in the FDOT TSM&O Strategic Plan) identify small robust set of user-related performance measures for use in evaluating proposed strategies. 5. Using the goals and objectives identify specific needs and deficiencies experienced related to capacity constraints and key sources of non-recurring congestion in the region and identify logical generic TSM&O strategy applications addressing those issues. 6. Update regional architecture as appropriate by building on existing architectures/concepts of operations/systems and current state of practice including accommodation of potential TSM&O strategy applications—and coordinate with FDOT statewide architecture where relevant. 7. Building on the existing deployments and current plans for the identified network to identify specific sets of incremental cost-effective improvements for key strategies—existing and new—including systems, technology and related actions (center and field procedures), timeframes and participants. Identify opportunities for program components to be embodied in other projects and identify key roles in implementation. 8. Review long and short-term investment options (including capital, maintenance and staffing) in context of alternative levels of expenditure and resource availability from FDOT, MPO and local sources) to develop program(s) and schedule(s) for improvement actions, linking them to updated architectures. 9. Evaluate and rank proposed strategies in terms of likely performance effectiveness (using available measures identified above) and feasibility of implementation and prepare a phased program of improvements. 10. Prepare a phased implementation plan, budget, schedule and performance-tracking strategy and present to relevant policy groups.
<p>Develop a TSM&O “business case” for TSM&O in the context of the District/region</p>	<p>Persuasive TSM&O business case(s) for TSM&O investments in the District/region that explain the values of an effective TSM&O Program</p>	<ol style="list-style-type: none"> 1. Establish an inter-jurisdictional working group to develop/oversee development of business case. 2. Define purpose, scope and audiences to which versions of business case would be targeted—both staffs, decision-makers and public. 3. Review peer experience with business case development and FHWA/SHRP2/AASHTO materials regarding costs, benefits, payoffs, expected outcomes / relative B/C compared to capacity alternatives. 4. Identify relationship between TSM&O Plan vision (see Planning), goals and objectives and the implied role of TSM&O (mobility, reliability, delay reduction, safety, effective use of existing infrastructure, etc.); review examples of vision/policy/goal and objective statements from peer states with FHWA/AASHTO support. 5. Identify unique problem/deficiency-related scope of TSM&O (e.g. non-recurring congestion, major incidents), typical industry material regarding expected costs and benefits and payoffs.

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
		<ol style="list-style-type: none">6. Recognize that key improvements may be focused on process and procedure improvements with very modest costs, while still requiring staff and potential external support.7. Incorporate relevant local examples including costs and benefits.8. Identify promising formats and communication strategies, including program branding, for business plan's targeted audiences—recognizing the constraints of audience prior knowledge and attention spans.9. Organize business plan material for communication and develop communications strategies for specific audiences.

Systems and Technology Workshop Outputs

Strengths Cited		Weaknesses Cited			
<ul style="list-style-type: none"> • FDOT has a regional architecture in place. MPOs can develop their own architectures, but are using FDOT architecture for enhanced compatibility and internal consistency. • Statewide and regional architectures are being updated to reflect new additions (facilities, equipment, etc.) to the transportation system. • FDOT has developed capabilities for inter-jurisdictional interoperability – even in cases where the technology is not intrinsically compatible. • FDOT and MPOs have contracts/agreements that allow the different districts and agencies to utilize common contractors and procurement models. 		<ul style="list-style-type: none"> • There is no consistent region-wide arterial management; local agencies are solely responsible for their own arterials. • Transit agencies use their own systems that are not consistent with each other. • Legacy systems constrain agencies’ future equipment procurement options given lack of backward compatibility needs. There is reluctance to upgrade large legacy systems when they are incompatible with newer equipment. • Current District architecture is several years old, and refers to some components that no longer exist and lack certain new components. • Various systems (detection, signal control, etc.) are not consistent from one agency to another and lack interoperability. • Some agencies are hesitant to share control of their facilities with other entities due to differences in operational policies and priorities • Procurement using federal funds involve burdensome application requirements. • IT agency security requirements can be a constraining factor regarding communications systems design. The quickly evolving technology front adds to the complexities associated with IT programs. 			
Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized	
Criteria	Ad hoc approaches to system implementation without consideration of systems engineering and appropriate procurement processes	Regional con-ops and architectures developed and documented with costs included; appropriate procurement process employed	Systems & technology standardized and integrated on a statewide basis (including arterial focus) with other related processes and training as appropriate	Architectures and technology routinely upgraded to improve performance; systems integration/interoperability maintained on continuing basis	
Consensus	1 for transit 1.5 for highways				

Workshop Actions to Advance to the Next Level

- Update regional/district architecture as required by emerging plan implications
- Update standards regularly to stay on the forefront of quickly evolving technologies, with interoperability as the motivating goal.
- Establish a TSM&O asset management strategy that includes life cycle considerations for maintenance and replacement.
- Provide outreach for new streamlined System Engineering Management Plan (SEMP), perform SEM process sufficiently in advance of project submittal deadlines for funding. Agree upon an appropriate time to start SEM in the project planning framework, and educate staff on the process.

Consultant Reformulated/Consolidated Actions
 for Implementation Plan (post-workshop)

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
No priority action.		

Performance Measurement Workshop Outputs

Strengths Cited		Weaknesses Cited		
<ul style="list-style-type: none"> Statewide Annual reports are published on travel times and Interstate performance (some districts publish district-level SunGuide reports) Orange County provides performance measures for several travel modes. Travel time information is provided to MPOs through the statewide transportation statistics program. The centralized database (RITIS) is being developed to house probe-based travel time data that can be used for performance analysis and will be accessible to cities and other agencies. At the district level, as part of Transportation Incident Management program, major incident debriefings are held with involved entities to improve their response to similar events in the future. Detailed data, including arrival times for emergency responders, is available to assist with these post-incident performance evaluations The MPO project prioritization process takes performance measures into account – as well as local priority projects. Bluetooth tracking is being explored as a means for obtaining automated travel time data. 		<ul style="list-style-type: none"> Budgetary constraints preclude deeper performance reporting. Available performance data is largely output focused – rather than outcomes Comparisons regarding the performance of the commuter assistance program from one district to another are difficult to make due to the inconsistent use of performance measures across the districts. Data provided by FHWA and FDOT is focused on major highways; but MPOs need data for arterials and other modes. Performance measures for non-auto modes are difficult to quantify due to lack of data. Performance measures are designed for project-level analyses, and are not currently structured for planning and programming needs. Measures are needed both for reporting and managing No formal structured process exists for tracking performance before and after the deployment of a project, resulting in inconsistent forms of analyses among different projects. 		
Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized
Criteria	Some outputs measured and reported	Output data used directly for after-action debriefings and improvements; data easily available and dashboarded	Outcome measures identified (networks, modes, impacts) and routinely utilized for objective-based program improvements	Performance measures reported internally for utilization and externally for accountability and program justification
Consensus	1 for arterials	2 for freeways (not all are instrumented)		

Workshop Actions to Advance to the Next Level

- Identify appropriate performance measures by facility and mode, taking into account the availability of existing data and the feasibility of collecting new data.
 - Utilize as a point of depart, measures reported statewide, and develop additional ones that are relevant in the local context.
 - Identify the outcomes and metrics that different audiences are interested in (end users, other agencies, internal planning groups, decision makers, etc.). Tailor reports to their intended audiences in terms of the frequency of publication and detail of the measures provided. Automated reports may be provided on demand with very fast turnaround (e.g., a number of seconds).
 - Determine how the performance measures and associated data will be collected and analyzed.
- Use performance data (in contrast to using qualitative or categorical descriptors), to facilitate ranking and prioritizing for future funding.
- Integrate transit data systems into the overall performance measurement system
- Develop a pilot approach to performance measurement using an integrated corridor including freeways and arterials, integrate these facilities into the existing performance measurement data base and analytics to evaluate outcomes
- Collect performance data prior to initiating improvement projects, so that the effects of these projects may be reliably captured by the data.

Consultant Reformulated/Consolidated Actions
 for Implementation Plan (post-workshop)

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
No priority action.		

Culture
 Workshop Outputs

Strengths Cited		Weaknesses Cited		
<ul style="list-style-type: none"> TSM&O projects are considered in some jurisdictions as appealing for their quicker turnaround compared to conventional capacity projects, meaning that benefits are realized sooner. Politicians, district secretaries, and state leaders are beginning to recognize that TSM&O is something that FDOT has already been doing, and will need to continue in the future. The State Planning Office is supportive of TSM&O. The central office has a strategic business plans outlining the intended direction of TSM&O efforts. 		<ul style="list-style-type: none"> Among local agencies, there is a lack of familiarity with “TSM&O” and other related terminology. Major projects distract regional agencies from developing long-term TSM&O plans. Elected officials favor capacity improvement projects due to the higher visibility associated with them. In smaller jurisdictions, transportation agency staffs do not have the resources to keep political leaders continually informed about TSM&O and its importance/relevance. Leaders often do not realize that TSM&O projects, unlike capacity projects, require significant ongoing funding for operations and maintenance. The need for skilled staff to manage these facilities reduces the level of resources available for other projects. Focus on TSM&O systems sometimes occurs when something fails, rather than a proactive management approach that avoids these failures to begin with. No TSM&O publicity materials, business case or “success stories” are readily available to demonstrate the potential benefits of TSM&O to decision makers. Transit agencies must rely on internal TSM&O champions to continue calling attention to these types of projects among political leaders. TSM&O -related managers do not have the resources to provide consistent, systematic outreach. Securing funds for continued operations and maintenance of TSM&O projects is more challenging than obtaining funds for new projects, because the effects of deferring operational/maintenance funds are typically not as visible as the effects of delaying capital improvement project funds. 		
Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized
Criteria	Individual Staff champions promote TSM&O	Jurisdictions’ senior management understands TSM&O business case and educates decision makers/public	Jurisdictions’ mission identifies TSM&O and benefits with formal program and achieves wide public visibility/understanding	Customer mobility service commitment accountability accepted as formal, top level core program of all jurisdictions
Consensus	1.5 for MPOs, FDOT, transit 1 for Counties			

Workshop Actions to Advance to the Next Level

- Conduct FDOT leadership “visits” to MPOs/TPOs to familiarize board members about TSM&O, gradually exposing them to the relevant concepts and payoffs, thus enabling them to make informed decisions about future projects. These outreach efforts could be conducted at MPO Board meetings, MPOAC, and MPO directors’ meetings.
- Prepare statewide outreach materials to provide a persuasive “business case” for TSM&O. These materials would include local and statewide examples -- but would need to be designed to keep expectations realistic.
 - Develop materials to address different audiences, such as engineering staffs, the public and political leaders.
 - Develop guidance regarding the use of the materials, so that they are focused on the local context when they are distributed
 - Include examples of the impacts it would have on the lives of the people in the area of the proposed project.
 - Discuss the impacts and implications of *not* doing the project as well.
- Examine agencies that are deploying TSM&O effectively, and identify ways to emulate their successes within FDOT.
- Identify strategies that would be used to encourage a shift in the current funding paradigm at the top levels of management and political decision making, with the goal of providing greater emphasis on TSM&O going forward. The funding focus would shift from constructing new facilities to more efficiently operating existing ones.

Consultant Reformulated/Consolidated Actions
 for Implementation Plan (post-workshop)

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
No priority action.		

Organization and Staffing Workshop Outputs

Strengths Cited		Weaknesses Cited		
<ul style="list-style-type: none"> • Some districts and MPOs/TPOs recognize the value of dedicating staff to TSM&O. • District 5 has the largest FDOT ITS-related staff • Funding is available to provide new FDOT staff members with training on department systems. • Several department functions have been outsourced, with public-private partnerships being used to bridge staffing gaps within FDOT. <ul style="list-style-type: none"> ○ Procedures are in place to ensure that FDOT core competencies are retained even as critical functions are outsourced. ○ Increased outsourcing of functions has placed additional management responsibilities on FDOT staff members, who now have broader knowledge about effective management methods. ○ FDOT personnel are also becoming familiar with several different business/operational lines within the department, as a consequence of their contract maintenance responsibilities. • Agencies are becoming increasingly efficient by consolidating more functions to fewer positions, and increasing compensation to those staffers accordingly. 		<ul style="list-style-type: none"> • A lack of redundancy in staff functions leads to service disruptions when personnel depart the agency. • There is a steep learning curve associated with outsourcing department functions to contractors, as they must become familiar with agency plans, agency policies, and the local context/environment before they can begin. <ul style="list-style-type: none"> ○ This process must be repeated every time a staffing change occurs for an outsourced position, creating even greater inefficiency. • FDOT District representatives, at the state-wide level, have strong engineering backgrounds, but have limited planning knowledge and experience. • There is uncertainty regarding where TSM&O fits into the organizational structure of the department. • Reduced staffing levels make it difficult to establish dedicated staff positions for TSM&O within the department. In many circumstances, these functions end up among those outsourced. 		
Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized
Criteria	TSM&O added on to units within existing structure and staffing – dependent on technical champions	TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	TSM&O Managers have direct report to top management; Job specs, certification and training for core positions	TSM&O senior managers at equivalent level with other jurisdiction services and staff professionalized
Consensus	1 for MPOs and Counties	2 for FDOT	3 for Orlando MPO	

Workshop Actions to Advance to the Next Level

- Cross-train personnel and compile a regional resource database for identifying staff that are well suited for various functions and agency needs.
- Establish a staff resource directory that includes a communications flow chart and outlines the appropriate channels/resources available for technical questions and equipment needs.
- Investigate an internal online forum as a means for sharing information and asking questions about TSM&O.
- Explore the feasibility of creating a kind of “mutual aid” system between counties for tasks that can be streamlined and efficiently consolidated across several agencies, such as the production of proposal/procurement documents. Resources and efforts would be combined to take advantage of economies of scale, and individual counties would share their success stories regarding management practices that have proven most effective.
- Enhance educational awareness at a state-wide and national level as to the benefits of increasing planning knowledge and experience into the TSM&O Program to include both planning and engineering staff.

**Consultant Reformulated/Consolidated Actions
 for Implementation Plan (post-workshop)**

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
No priority action.		

Collaboration Workshop Outputs

Strengths Cited		Weaknesses Cited		
<ul style="list-style-type: none"> • Consistent, formalized meetings between MPOs and local partners are fostering continual collaboration. • incident management co-training is taking place • FDOT has maintenance agreements with local agencies covering some—but not all—signal facilities management. • In some counties, signal maintenance is consolidated into a single authority to leverage economies of scale and provide greater consistency. • Different agencies share communications infrastructure when their service areas overlap. This sharing of infrastructure and operational responsibilities is formalized in a MOU from 2001. • Some agencies are coordinating pedestrian safety efforts within the region and are collaborating on pedestrian systems management/operations. • OOCEA and the Florida Turnpike Enterprise have a common set of customer-oriented performance metrics and procedures, which results in a consistent user experience and facilitates collaboration. <ul style="list-style-type: none"> ○ The systems used by these two agencies are compatible with each other. ○ Additional coordination occurs between these agencies and local municipalities. • OOCEA, the Florida Turnpike Enterprise, and other agencies share funds for freeway service patrols on the facilities they operate. • The Open Roads policy established between Florida State Patrol and FDOT allows for more efficient incident management. • The FTE funds the state patrol on its facilities 		<ul style="list-style-type: none"> • When the sharing of communications infrastructure occurs, it is based on individual, informal agreements between agencies. There are few formalized arrangements; the MOU from 2001 is vague. • Transit agencies operate as isolated entities. There are no established collaborative partnerships that transcend agency boundaries. • On the demand side of transit operations, there is limited discussion of alternatives analysis for projects. • The Open Roads policy is applied to varying extents depending on jurisdiction. The policy covers state facilities and the state patrol, but not arterials and local responders. • Pedestrian safety funds are applied inefficiently to programs with overlapping scope, resulting in a duplication of effort. • Coordinated between cities, responders, and other relevant agencies during an incident is not consistent. • There is no current towing and recovery incentive/disincentive program in the District 		
Level	1 – Performed	2 – Managed	3 – Integrated	4 – Optimized
Criteria	TSM&O added on to units within existing structure and staffing – dependent on technical champions	TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place	TSM&O Managers have direct report to top management; Job specs, certification and training for core positions	TSM&O senior managers at equivalent level with other jurisdiction services and staff professionalized
Consensus		2		

Workshop Actions to Advance to the Next Level

- Hold workshops with DOT to discuss roadway operational factors that may impact transit service.
- Organize a consortium to identify components of ICM that can be pursued without waiting on outside funding.
- Formalize agreements for the sharing of communications infrastructure between the state and local agencies.
- Conduct a comprehensive inventory of equipment (including communications infrastructure) develop a strategy for making the business case to upper management funding for asset management efforts
- Provide ongoing training for emergency responders regarding congestion mitigation and traffic management, to address the loss of this knowledge and experience through staff turnover. Possible channels for this training include CTST, quarterly leadership meetings, and biweekly incident management outreach meetings.
- Develop a “forum” with appropriate participants (building on CMM workshop attendance) to consider broad regional TSM&O issues

**Consultant Reformulated/Consolidated Actions
for Implementation Plan (post-workshop)**

Actions	Products and Desired Outcomes	Suggested Steps to Implement Actions <i>These are a resource for the host state to draw upon in developing task(s) for this action</i>
Develop a Mutual Aid System for sharing staff, technical and financial resources in the Region	A working plan to make the best use of unique and shared resources to overcome technical, staffing and financial constraints of TSM&O implementation.	<ol style="list-style-type: none"> 1. At the district/regional scale, identify and inventory the principal constraints to and resources available for planning, engineering, project development and procurement, operations and maintenance of key TSM&O systems (present and future) in terms of current agency resources—on an agency-specific basis. 2. Utilizing the inventory, prepare a regional resource data base for staff that are well-suited to various functions including a communications directory/flow chart, to access appropriate resources for technical questions and equipment issues. Consider an on-line function to support the inventory and related information-sharing needs. 3. Explore the feasibility of various levels of mutual aid among jurisdictions including: <ol style="list-style-type: none"> a. Technical staff loans b. Resource sharing—multi-agency projects c. Combined procurements and standardization d. Combined training

Section 2:
Capability Maturity Implementation Plan Templates

*See page 1 for instructions to host state
on completing these Implementation Plan Templates*

Business Processes (Planning and Programming)
 Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Systems and Technology
 Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Performance Measurement
 Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Culture
 Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Organization and Staffing Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Collaboration

Implementation Plan Template

Details for Action 1 of X	
<i>Host State may wish to use the reformulated/consolidated Workshop actions, modify them, or select other actions from the Workshop that relate to the lowest level dimension. This table should be reproduced for each action associated with this dimension.</i>	
Action Description	
Products and Desired Outcomes	
Task(s) / Subtask(s)	<i>Tasks and subtasks can draw on the Suggested Steps as appropriate – including combining, eliminating, and modifying – as suitable to the local context.</i>
Implementation Task Details	
<i>Details below apply to all tasks above or can be duplicated and specified for single tasks or subset of tasks.</i>	
Lead	
Support Staff	
Staff Level of Effort (person-days)	
Senior Leadership Support Actions	
Collaboration Actions and Requirements	
Technical Issues	
Key Risks	
Resource Requirements	
FHWA Support Resources and Contact	
Start Date	
End Date	
Success / Completion Indicator	

Appendix B

Capability Maturity Reassessment
Workshop Memorandum – June 2017

FDOT District 5 – Orlando TSMO Capability Maturity Reassessment Workshop

Workshop Memorandum

Workshop Date: June 13, 2017

This memo provides a summary of the day-long Transportation Systems Management and Operations (TSMO) Capability Maturity Model (CMM) Reassessment Workshop conducted on June 13, 2017 for District 5 (D5) of the Florida Department of Transportation (FDOT) and their regional and local partners in the Orlando, Florida area.

The purpose of the Workshop was to develop a consensus *re*-evaluation of the state-of-practice of TSMO in the district, and to identify promising next steps in advancing the effectiveness of regional TSMO efforts that build on District 5's recent and ongoing TSMO efforts—most notably its draft 2017 TSMO Implementation Plan that furthers the actions identified in District 5's original 2014 CMM workshop (more on this below). To this end, the Workshop participants identified the current levels of capability regarding key organizational, institutional, procedural, staffing-related, and collaboration issues that may assist the region in defining priorities among an array of possible actions. This material can help to further advance District 5's progress on its draft TSMO Implementation Plan.

The Workshop built on an initial regional CMM self-assessment workshop held in District 5 in 2014. The 2014 workshop resulted in a set of actions to improve upon the region's institutional, organizational, and procedural TSMO capabilities, and helped to lay the foundation for District 5's current TSMO activities and draft 2017 TSMO Implementation Plan. The 2017 Plan furthers these action items in a series of detailed steps tied to goals and objectives across all 6 CMM dimensions. Several staff present at the 2014 workshop also participated in the 2017 reassessment workshop. Additionally, this spring, the District 5 TSMO Consortium conducted an informal poll of its members to assess their views regarding current levels of TSMO capability in the region. These levels were also used to inform the baseline for discussion at the 2017 CMM Reassessment Workshop.

This technical memo includes tables that summarize the consensus views of Workshop participants regarding progress made in implementing the actions identified in 2014 (as embodied in the 2017 TSMO Implementation Plan); the implications of this progress for current regional capability levels; and priority actions and next steps to further advance TSMO capabilities in the region. In the tables below, the goal numbers refer to the numbers in the draft 2017 TSMO Implementation Plan. *The D5 draft TSMO Implementation Plan summary handout, as handed out at the Workshop, is attached to this memo.* Given the large number of actions in the Implementation Plan overall, workshop participants identified the top three priorities for each CMM dimension – and further identified key steps to move these priorities forward.

A workshop attendance list follows the summary tables at the end of this memorandum. The FDOT District 5 CMM Reassessment Workshop was facilitated by Steve Lockwood (Steve Lockwood, LLC) and Daniel Grate (FHWA), and supported by Katie Blizzard (Cambridge Systematics).



DIMENSION: Business Processes (Planning and Programming)

Level Criteria	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Each jurisdiction doing its own thing according to individual priorities and capabilities	Consensus regional approach developed regarding TSMO goals, deficiencies, B/C, networks, strategies and common priorities	Regional program integrated into jurisdictions' overall multimodal transportation plans with related staged program	TSMO integrated into jurisdictions' multi-sectoral plans and programs, based on a formal, continuing planning processes	
2014 CMM Consensus	1.5			
May 2017 Consortium Poll		2 (65%)		
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	<ul style="list-style-type: none"> • Goal 2 <ul style="list-style-type: none"> ○ Find common ground between D5 and local agency ITS master plans. ○ Capitalize on Central Florida MPO meeting to address TSMO to the group – since many are doing ITS master plans (individually MPOs and TPOs do recognize and promote TSMO). ○ Highlight TSMO in the context of connected/automated vehicles at these meetings (regional consistency in CAV would be additionally beneficial). ○ Promote consistency and synergy in terms of technology and funding across jurisdictions. • Goal 3 <ul style="list-style-type: none"> ○ Recognize that varying capabilities of maintaining agencies is a challenge for TPOs. 			
2017 CMM Consensus		2		

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 2
 - Refine and complete FDOT D5 TSMO Implementation Plan.
- Goal 3:
 - Develop education and outreach materials and develop a short video on TSMO/ITS (both related to stepping up efforts to “sell” the TSMO program/make the business case).
- Goal 4
 - Identify and implement TSMO funding sources.
 - Work with FHWA to develop a streamlined process for TSMO project approval (suitable to the relatively small size and modest infrastructure of most TSMO projects).
 - Systematically address this issue as a group.

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan attached)

- Goal 2
 - Track the status of the ITS implementation plans across agencies in the Region and conduct mutual reviews.
 - Reframe this action to say “create common ground” to reflect that agencies will make an effort to coordinate the development of these plans.
 - Enhance communication and dissemination of information on TSMO progress from FDOT D5 to MPOs (e.g., through FDOT D5 dashboards -- especially AEM dashboard).
 - Supplementing dashboards with data reports for the MPOs, with which they can develop one-page reports, works as well.
 - FDOT should submit a project priority list (PPL) to the MPOs / local agencies.
 - Ensure that TSMO improvements are part of corridor planning processes.
- Goal 3: Introduce TSMO into the TPO long-range transportation plan (ITS master plan project lists should be submitted to Tallahassee for long-range planning).
- Goal 4
 - In the engagement of MPOs and TPOs on TSMO funding – Step up efforts to “sell” the TSMO program to elected officials (through infographics, one-page handouts, benefit/cost data, tying investments to benefits and outcomes).
 - Institutionalize before-after benefit-cost studies of investment for use in future business cases.
- *New Goal:* Integrate TSMO into long-range planning processes (TIP/STIP) – at the state, MPO and local government level – and play a more active role in the development of these plans (rather than having separate ITS/TSMO plans)..
- *New Goal:* Explore how TSMO strategic applications fit into “complete streets” and “traffic calming” principles and efforts (potentially through TSMO’s focus on reliability and safety, and less on enhanced throughput).

DIMENSION: Systems and Technology

	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Level Criteria	Ad hoc approaches to system implementation without consideration of systems engineering and appropriate procurement processes	Regional ConOps and architectures developed and documented with costs included; appropriate procurement process employed	Systems & technology standardized and integrated on a regional basis (including arterial focus) with other related processes	Architectures and technology routinely upgraded to improve performance; systems integration/interoperability maintained on continuing basis
2014 CMM Consensus	1 for transit 1.5 for everything else			
May 2017 Consortium Poll		2 (63%)		
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	<ul style="list-style-type: none"> • Goal 1 <ul style="list-style-type: none"> ○ Explain implications of contract standardization and federalization. ○ Review and communicate ITS Architecture updates/audits. ○ Streamline SEMP process. • Goal 2 <ul style="list-style-type: none"> ○ Review state of play of asset management systems at MPOs and TPOs. Consider how FDOT approach may be of assistance or applicable. 			
2017 CMM Consensus		2		

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 1
 - Increase the priority of streamlining the SEMP process.
 - Establish a database of contracts/agreements for District agencies to utilize common contractors and procurement (federalize, standardize).
- Goal 3
 - Provide Access to ITSFM and MIMS.

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan attached)

- Goal 1
 - Explore the potential for pre-certification for SEMP documentation.
 - Change language to make the objectives of consistency clearer (federalization, standardization, and transparency).
- Goal 3
 - Provide Access to ITSFM and MIMS.
- *New Goal:* Continue conducting and document D5's national state-of-the-practice/best-practice scan process and maintenance activities as part of the TSMO Implementation Plan – and formalize process on a continuing basis.

DIMENSION: Performance Measurement

	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Level Criteria	Some outputs measured and reported by some jurisdictions	Output data used directly for after-action debriefings and improvements; data easily available and dashboarded	Outcome measures identified (networks, modes, impacts) and routinely utilized for objective-based program improvements	Performance measures reported internally for utilization and externally for accountability and program justification
2014 CMM Consensus	1 for arterials	2 for freeways		
May 2017 Consortium Poll	1 (56%)			
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	<ul style="list-style-type: none"> • Goal 1 <ul style="list-style-type: none"> ○ Consider approach to developing dashboards for arterial performance (as well as freeways). ○ Conduct activities to discuss proposed TSMO performance measures with Consortium. ○ Review relationship between performance measures, data availability, analytics, and reporting formats. ○ Consider more aggressive use of currently available output and input data to track and improve performance of specific applications (such as incident clearance time, time of first arrival, towing and recovery performance, etc.). ○ Discuss methods of turning performance data into information for use in business cases, communications, etc. ○ Review relationship between MAP-21 performance measures (Central Office) and performance measures for use at district level (data overlap, adaptability). ○ Review proposed performance measures to consider those related to specific stakeholder groups (other than mobility) such as economic development and community development complete streets, etc. • Goal 2 <ul style="list-style-type: none"> ○ Develop stepwise approach to using evolving performance measures to inform future investment decisions and/or system changes. <p><i>New Goal.</i> Develop (outward)-facing dashboard.</p>			
2017 CMM Consensus	FDOT: 1 MPOs/TPOs: 1.25			

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 1
 - Identify start-up measures (for short run and ease of measurement).
 - Identify method to promote successes / regional TSMO success stories.
 - Increase availability and ease of access to transit data.
- Goal 2
 - Develop stepwise approach to using evolving performance measures to inform future investment decisions and/or system changes.
- *New Goal:* Develop outward facing TSMO dashboard.

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan)

- Goal 1
 - Assess regional priorities for throughput vs. reliability vs. safety vs. sustainability and select TSMO performance measures that explicitly reflect and address these priorities (right now dashboards report on throughput and safety).
 - Explore how TSMO fits into Complete Streets initiatives.
 - Formalize process of conducting before and after studies for TSMO projects (not just signal retiming projects) in the district.
- Goal 2
 - Develop procedure for integrating use of performance measurement into planning and resource allocation process.
- *New Goal:* Develop TSMO dashboards (outcomes) – Convene a group to determine regional consensus on what needs to be measured.

DIMENSION: Culture

	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Level Criteria	Individual staff champions promote TSMO – varying among jurisdictions	Jurisdictions’ senior management understands TSMO business case and educates decision makers/public	Jurisdictions’ mission identifies TSMO and benefits with formal program and achieves wide public visibility/understanding	Customer mobility service commitment accountability accepted as formal, top-level core program of all jurisdictions
2014 CMM Consensus	1.5 for MPOs, FDOT, transit 1 for Counties			
May 2017 Consortium Poll		2 (71%)		
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	<ul style="list-style-type: none"> • Goal 1/ Goal 3 <ul style="list-style-type: none"> ○ Cultivate TSMO advocacy in MPO/TPO board. ○ Develop “business case” for TSMO related to stakeholder interests. • Goal 4 <ul style="list-style-type: none"> ○ Develop formal procedures for planning, programming, and project development to limit champion-dependence. ○ Develop a funding formula for operations funding (related to a 10 year cost feasible set of project), as a step in obtaining dedicated funding. 			
2017 CMM Consensus		2		

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 1
 - Present the final TSMO Guidebook and the TSMO Implementation Plan to senior leadership at FDOT.
- Goal 3
 - Develop the business case/one-pager for proven TSMO strategies (likely will involve a series of meetings with MPO/TPO leadership).
 - Develop five or more short videos.
- Goal 4
 - Conduct ongoing coordination to identify and implement TSMO funding sources.
 - Develop and document formal procedures for planning, programming, and project development to limit champion-dependence.

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan)

- Goal 1
 - Develop Guidebook.
- Goal 3
 - Enhance efforts to “make the business case” for TSMO – through infographics, benefit-cost information, one-page handouts, brief/engaging presentations, tie investments to benefits, etc.
 - Step up efforts to promote messaging on TSMO for pedestrian/bicyclist mobility/safety; sustainability; and overall enhanced throughput for transit/auto/bike/ped.
 - Formalize some kind of annual reporting format (before/after studies) that would occur at the MPO/TPO level (right now done for signal timing) (background study on this is underway).
- Goal 4
 - Systematically identify and cultivate TSMO champions in MPO/TPO boards, and support them in selling TSMO.
 - Engage MPO and TPOs for input in the development of D5’s formula for operations funding (business processes).

DIMENSION: Organization and Staffing

	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
Level Criteria	TSMO added on to units within existing structure and staffing, dependent on technical champions	TSMO-specific organizational concept developed within/among jurisdictions with core capacity needs identified; collaboration takes place	TSMO managers have direct report to top management; job specs, certification and training for core positions	TSMO senior managers at equivalent level with other jurisdiction services and staff professionalized
2014 CMM Consensus	1 for MPOs and Counties	2 for FDOT	3 for MetroPlan Orlando	
May 2017 Consortium Poll		2 (44%)	3 (33%)	
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	<ul style="list-style-type: none"> • Goal 1 <ul style="list-style-type: none"> ○ Identify TSMO staff career opportunities (with and without PE). ○ Review necessity for/relevance of PE certification for TSMO positions in the region? Versus professionals with IT, electrical engineering, mechanical engineering, etc. backgrounds. • Goal 2 <ul style="list-style-type: none"> ○ Develop relationship with universities – e.g. the UCF Future Cities program with smart cities focus, which is recruiting staff for smart cities positions. ○ Review any issues associated with high degree of outsourcing (FDOT and local government) and how to overcome. ○ Develop approach for jurisdictions to alert MPOs/TPOs for alerts re: signal maintenance needs. ○ Work to make project selection and corridor focus selection more data driven. 			
2017 CMM Consensus		2		

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 1
 - Fully develop the D5 TSMO organization chart (full details).
- Goal 2
 - Identify opportunities for resource-sharing within the region on personal and infrastructure by 2018.
 - Update the corridor planning study and PD&E scopes to be inclusive of TSMO.

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan)

- Goal 1
 - Address staffing shortfalls and limitations (both in number of FTEs and in capabilities) and connect staffing issue to the TSMO business case (tie need for staff to projected benefits/impacts/performance of additional staff).
 - Continue working on TSMO organization chart, especially in light of shortfall of staff with PEs and the implications of this moving forward.
- Goal 2
 - Identify training to develop needed specialized skill sets.
 - Collaborate with UCF Future Cities program (smart cities focus) for opportunities to build TSMO pre-employment curriculum and outreach; in general, promote outreach to academic institutions to conduct needed operations studies.
 - Develop a call list of “key TSMO contacts” for distribution throughout agencies in the region that is annually updated (position, name, contact information (cell number if applicable)).

DIMENSION: Collaboration

Level Criteria	LEVEL 1 — PERFORMED	LEVEL 2 — MANAGED	LEVEL 3 — INTEGRATED	LEVEL 4 — OPTIMIZING
	Relationships ad hoc and on personal basis (public-public, public-private)	Objectives, strategies and performance measures aligned among organized key players (transportation and public service agencies) with after-action debriefing	Rationalization/sharing/formalization of responsibilities among key players through co-training, formal agreements and incentives	High level of TSMO coordination among owner/operators (state, local, private)
2014 CMM Consensus		2		
May 2017 Consortium Poll		2 (61%)		
Draft FDOT D5 TSMO Imp. Plan: Refinements and Modifications	Goal 1: Improve collaboration with regard to TSMO emergency situations.			
2017 CMM Consensus		2.5		

Priority Actions from FDOT D5 draft TSMO Implementation Plan (See Plan table summary attached)

- Goal 1
 - Develop a notification process for various operational emergency situations.
- Goal 2
 - Add D5 partners to “TSMO Steering Committee”
- Goal 5
 - Review opportunities to reduce existing costs, such as data collection costs (from the planning side).

Steps to Move Forward (Additions to actions in draft FDOT D5 TSMO Implementation Plan)

- Goal 1
 - Develop a notification SOP, and contact list for various operational emergency situations, for example signal damage recovery or hurricane damage response.
- Goal 2
 - Expand D5 TSMO Steering Committee – drop the word “internal”; expand and rename: “District 5 and its partners”.
- Goal 5
 - Review opportunities to reduce existing costs, such as data collection costs (from the planning side)

Summary Tables of Actions from the Draft FDOT District 5 TSMO Implementation Plan (handout)

Business Processes – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan			
Goals	Objectives	Task Action Items	Current
1. Consensus on a regional approach regarding TSM&O project identification process/system-wide evaluation procedure	Consensus on a plan to uniformly identify network goals, deficiencies, B/C, networks, strategies and common priorities by 2018	Create a “Planning for TSM&O” Guidebook to document and promote these uniform processes. Deliverable: Planning for TSM&O Guidebook	In progress
		Organize a task force to assemble a coherent, unified TSM&O program and strategies for the region. Deliverable: Bi-monthly District Five TSM&O Consortium	On-going
		Develop a regional ITS master plan to provide a roadmap for ITS integration Deliverable: District Five ITS Master Plan	Complete
2. Regional program integrated into jurisdictions’ overall multimodal transportation plans with related staged program	Coordination plan for future updates to regional and local transportation plans by 2018	Find common ground between the District Five ITS master plan and those developed or being developed at MPOs and TPOs. Deliverable: Summary of commonalities between ITS Plans	On-going
		Create a TSM&O “Implementation Plan” to outline strategic tasks that can increase our District’s TSM&O capabilities Deliverable: TSM&O Implementation Plan	In progress
		Create a TSM&O “Coordination Plan” that defines specific roles and activities for incorporating TSM&O into transportation plans Deliverable: TSM&O Coordination Plan	Not started
3. Consensus on a standardized and documented TSM&O project development life cycle to include template, project schedules, scoping language and requirements (NEPA, SYS engineering, FTA)	Detail a cradle-to-grave project development process for all FDOT projects by 2018	Establish an on-going working meeting between ITS, Operations, and Planning that meets every week to discuss the TSM&O program Deliverable: Weekly meeting between District Five ITS, Operations, and Planning regarding TSM&O program	Complete
		Introduce TSM&O work items into the standard corridor study and PD&E scope(s) Deliverable: Updated Corridor Study and PD&E Scopes, inclusive of TSM&O	In progress

Business Processes – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current
		Execute and monitor the progress on the tasks in the Implementation Plan Deliverable: Establish a framework for monitoring the progress of FDOT and regional partners in applying the Implementation Plan (see Performance Measures Dimension)	Ongoing
	Clearly define roles and responsibilities of different functional units within the project development life cycle as illustrated in the Organization & Workforce Dimension	Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	In progress
	Identify requirements associated with different improvement strategies (i.e. transit improvements, ITS deployment, environmental impacts) by 2018	Develop list of five to seven “proven TSM&O strategies” and accompanying material	In progress
	Gain consensus on scoping language and standardized project schedules for different project types (i.e. transit improvements, ITS deployment, environmental impacts)	Deliverable: Develop education and outreach materials for several “proven TSM&O strategies”	
4. Develop a programming and budgeting processes for TSM&O	Identify potential TSM&O program funding source(s) by 2020	Engage individual M/TPOs on the topic Deliverable: Conduct ongoing coordination to identify and implement TSM&O funding sources	Initiating
	Gain consensus on system-wide evaluation procedure from regional partners by 2018	In collaboration with MPOs and TPOs, develop a “bare minimum” of evaluation metrics that are to accompany system-wide plans Deliverable: Standardized evaluation metrics (TSM&O Operational Checklist)	Not started

2. Organization and Staffing – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current
<p>1. TSM&O-specific organizational concept developed within/among jurisdictions with core capacity needs identified, collaboration takes place</p>	<p>Establish TSM&O program organizational chart as a resource for local agencies by 2018</p>	<p>Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart</p>	<p>In progress</p>
	<p>Identify opportunities for resource-sharing within the region on personnel and infrastructure by 2018</p>	<p>Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions Deliverable: District Five TSM&O Staffing Plan</p>	<p>Not started</p>
<p>2. Program includes TSM&O program organizational chart for the District with direct access to top management</p>	<p>Establish FDOT District Five TSM&O program Organization and Workforce</p>	<p>Develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart</p>	<p>In progress</p>
	<p>Establish job specifications, certifications and qualifications for each TSM&O program position by 2018</p>	<p>Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions. Deliverable: District Five TSM&O Staffing Plan</p>	<p>Not started</p>
	<p>Establish clearly defined roles and responsibilities within the project development life cycle by 2018</p>	<p>Update corridor planning study and PD&E scopes to be inclusive of TSM&O. Document procedures for project planning to concept to completion, including specific personnel to be engaged at certain timeframes throughout the project development cycle. Deliverable: Corridor Study Planning Only Scope and Corridor Study Concept Development Scope</p>	<p>In progress</p>

3. Culture – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current Progress
1. To establish a formal TSM&O program within the District	Obtain FDOT leadership buy-in on the TSM&O Implementation Plan by 2018	Present the final <i>Planning for TSM&O Guidebook</i> and <i>TSM&O Implementation Plan</i> to senior leadership at FDOT. Deliverable: TSM&O Implementation Plan	In Progress
2. To establish the regional mission to identify TSM&O and its benefits by utilizing a formal program.	Obtain regional stakeholder buy-in on a TSM&O program by 2018	Obtain MOU’s from regional stakeholders. Deliverable: MOUs from regional stakeholders.	Not started
	Support regional partners to develop their own TSM&O program/process by 2018	Create shared labor pools to introduce local agencies to FDOT and promote TSM&O. Deliverable: Labor-sharing agreement.	In progress as follow- up to the <i>Central Florida Regional ITS Architecture</i>
3. To achieve wide public visibility/understanding of TSM&O program benefits within the District.	Producing materials for both leadership and public to illustrate benefit-cost of the TSM&O program and network-operational improvements by 2018	Create graphical one-page summaries of proven TSM&O strategies for easy presentation. Deliverable: “One-pager” for each proven TSM&O strategy.	In progress
		Develop short animated videos of TSM&O program and strategies to present to senior executives or the public. Deliverable: Five or more short videos.	In progress
4. Funding focus shifts from constructing new facilities to more efficiently operating existing ones	Obtain a dedicated funding source for operational improvements by 2020	Engage individual MPOs/TPOs on the topic Deliverable: Conduct ongoing coordination to identify and implement TSM&O funding sources	Initiating
	Implement the TSM&O checklist in all planning projects	Introduce TSM&O work items into the standard corridor study and PD&E scope(s) Deliverable: Updated Corridor Study and PD&E Scopes, inclusive of TSM&O	In progress

4. Collaboration – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current Progress
TSM&O Manager have direct access to District leadership	Formalize a communication plan between District leadership and TSM&O Management Team by 2018	Present the final Planning for TSM&O Guidebook and TSM&O Implementation Plan to senior leadership at FDOT and develop strategy for future communication efforts. Deliverable: Executive approval for Guidebook and Implementation Plan	In progress
Ensure coordination between different functional units within the Department	Establish a communication process consistent with the TSM&O project development life cycle by 2018	Develop an internal TSM&O board with future communication process for prioritization of projects and identification of funding opportunities. Deliverable: TSM&O Steering Committee	Not started
	Establish clearly defined roles and responsibilities of functional units by 2018	Present the final Planning for TSM&O Guidebook and TSM&O Implementation Plan to senior leadership at FDOT and develop a TSM&O-specific organization chart for FDOT D5 Deliverable: District Five TSM&O Organization Chart	In Progress
Identify job specifications, certification, and training for core positions.	TSM&O program job specifications, certifications, and training identified within the Organization & Workforce Dimension	Meet with local agency/MPO leadership to understand need for O&M, their desired approach, and their staffing needs. Investigate funding eligibility for O&M through MPO liaisons. Document existing FDOT contracts and their availability for Local Agency User, and document the process for using an FDOT contract for local agency purposes. Identify additional staff position needs and job descriptions Deliverable: District Five TSM&O Staffing Plan	Not started
Establish regular communication and collaboration between the District and regional/local	Establish a plan for regional collaborative meetings on a bi-monthly or quarterly basis by 2017	Develop a "forum" with appropriate participants, as accomplished via the TSM&O Consortium. Deliverable: Bi-monthly District Five TSM&O Consortium	On-going

4. Collaboration – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current Progress
agencies (i.e. MPOs/TPOs, counties, cities, transit agencies, emergency responders, safety officers)	Establish a resource-sharing forum for education and guidance materials on the Department’s website by 2018	Formalize agreements for the sharing of communications infrastructure between the state and local agencies. Deliverable: Section within District Five ITS Master Plan	Not started
Identify opportunities to share communication infrastructure between the District and local agencies	Identify District and local agency needs for data and communication infrastructure by 2018	Conduct a comprehensive inventory of equipment (including communications infrastructure); develop a strategy for making the business case to upper management regarding funding for asset management efforts. Deliverable: Section within District Five ITS Master Plan	Not started
	Identify opportunities for resource-sharing within the region on personnel and infrastructure by 2018	Extend summary of comprehensive inventory to external agencies and summarize capabilities of external agencies. Develop a strategy and MOU for creation of a regional resource-sharing program. Deliverable: Section within District Five ITS Master Plan	Not started

5. Systems and Technology – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current Progress
Regional ConOps and architectures developed and documented with costs included; appropriate procurement process employed	Produce a districtwide vision for ITS infrastructure following evolving and emerging technology and the applications to the transportation network	Update regional/district architecture as required by emerging plan implications Deliverable: ITSFL and MIMS initiative	In Progress
		Develop consistent region-wide arterial management guidance Deliverable: ITSFL and MIMS initiative	In progress
		Establish database of contracts/agreements for District agencies to utilize common contractors and procurement models Deliverable: Database for Successful Procurement Processes	Contracts/Agreements – Available Database - Not Started
Manage ITS assets and infrastructure proactively	Establish asset management strategies for asset inventory and maintenance records	Establish a TSM&O asset management strategy that includes life cycle considerations for maintenance and replacement Deliverable: TSM&O Asset Management Strategies	Not Started
Systems and technology standardized, documented, and trained statewide, and new technology incorporated (L3)	Provide consistency throughout the district on ITS infrastructure connections across jurisdictions and ensure interoperability	Develop consistent district-wide arterial management guidance Deliverable: ITSFL and MIMS initiative	In Progress
		Develop consistent district-wide guidance for ITS (detection, signal control, etc.) to encourage interoperability. Deliverable: ITSFL and MIMS initiative	In Progress
	Provide training as needed to local agencies on emerging transportation related technology, processes, or requirements	Update standards regularly to stay on the forefront of quickly evolving technologies, with interoperability as the motivating goal. Deliverable: Training Program, led by FDOT	Not Started

5. Systems and Technology – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

	<p>Streamline systems engineering process and provide districtwide consistency with ConOps and System Engineering Management Plan (SEMP) documentation</p>	<p>Provide outreach for new streamlined SEMP, perform SEMP process sufficiently in advance of project submittal deadlines for funding. Agree upon an appropriate time to start SEMP in the project planning framework, and educate staff on the process.</p> <p>Deliverable: Project development checklist resulting from <i>Planning for TSM&O Guidebook</i> -Operational Improvement Checklist</p>	<p>Not Started</p>
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6. Performance Management – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Goals	Objectives	Task Action Items	Current Progress
<p>Identify program performance measures</p>	<p>Establish performance measures for each FDOT Unit which accomplish the overall TSM&O program goals and objectives</p>	<p>Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.</p>	<p>In Progress</p>
	<p>Obtain consensus on District Five performance measures for system-, corridor-, and intersection-level analyses</p>	<p>Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.</p>	<p>In Progress</p>
	<p>Utilize MAP 21 Performance measures, in which data is readily available, or can be efficiently obtained, to provide consistency with</p>	<p>Draft performance measures for each FDOT unit; have the measures finalized by each unit. Deliverable: Finalize Performance Measures for each FDOT Unit, to be included in the TSM&O Implementation Plan.</p>	<p>In Progress</p>

6. Performance Management – Action Item Matrix from the FDOT District 5 TSMO Implementation Plan

Utilize TSM&O performance measure for objective-based program improvements	Develop a system-wide evaluation tool, which is suitable and customizable for all District stakeholders	<p>Integrate transit data systems into the overall performance measurement system. Deliverable: Establish transit performance measures to be used in the system-wide evaluation tool.</p>	In Progress
		<p>Develop a pilot approach to performance measurement using an integrated corridor including freeways and arterials, integrate these facilities into the existing performance measurement data base and analytics to evaluate outcomes Deliverable: Planning Dashboard</p>	In Progress
		<p>Use performance data to facilitate ranking and prioritization for future funding. Deliverable: System-wide evaluation tool that allows for sensitivity adjustments to meet the goals, objectives, and priorities of each individual M/TPO.</p>	In Progress
Utilize performance measures to enhance the District Five roadway operating conditions	Improve the safety on the District Five roadway network by decreasing the overall crash rate by X percent, by YR 2020	<p>Measure, improve, and monitor the safety performance of the District Five roadway network. Deliverable: System-wide evaluation tool and annual reporting procedures</p>	Not Started

**FDOT District 5 – Orlando
TSMO CMM Reassessment Workshop
Attendance**

June 13, 2017

	Participant Name	Organization
1	Doug Jamison	LYNX
2	H. Walker	FDOT/Jacobs
3	Steven Bostel	Space Coast TPO
4	Noel Oteyza	Seminole County
5	David Cooke	FDOT D5
6	Jeremy Dilmore	FDOT D5
7	Jason Klempine	FDOT D5
8	Charlie Wetzel	Seminole County
9	Ken Odom	Ocala/Marion TPO
10	Hazem El-Assar	Orange County
11	Chris Cairns	City of Orlando
12	Carlos Bonilla	Osceola County
13	Annette Brennan	FDOT D5
14	Jon Cheney	Volusia County
15	Eric Hill	MetroPlan Orlando
16	Renzo Nastasi	Orange Country
17	Todd Davis	FDOT/VHB
18	Jorge Barrios	Kittleson & Associates
19	Ryan Cunningham	Kittleson & Associates
20	Joedel Zaballero	Osceola County
22	Steve Lockwood	Steve Lockwood, LLC
23	Daniel Grate	FHWA
24	Katie Blizzard	Cambridge Systematics

**Note that this attendance list is based on names that were registered on the sign-in sheet present at the workshop.*